UNIVERSIDAD DEL ROSARIO

EADA BUSINESS SCHOOL

Acquisition of Tesla Inc by Apple Inc

Final Project International Master in Finance (2019-2020)

Members of the Team.

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Natalia Castro

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Glosario

Valuación: Es el precio y el valor económico que tiene una empresa. Existen muchos métodos diferentes valorar a una empresa, sin embargo, en lo largo del proyecto se utilizan 3 métodos principales los cuales son: Método de flujo de caja descontado, Valor terminal y múltiplos.

Método de flujo de efectivo descontado: Es el valor que se obtiene de una empresa, la cual se calcula mediante todos los valores presentes más el valor terminal. Esto hace una estimación del valor de la empresa, esto mide dentro de la fórmula el crecimiento esperado de la empresa y los retornos esperados a futuro.

Flujo de caja libre: Es la cantidad de dinero que entra o sale de la empresa en un período de tiempo, determinado por los pagos a los proveedores y acreedores, y los cobros de los clientes y deudores.

NOPLAT: Beneficio operativo neto menos impuestos ajustados. Es el margen obtenido después de restar los diferentes costos operativos de los ingresos. Como proceso final, los impuestos se restan de este margen.

Amortización & Depreciación: Son los gastos que sufren los activos fijos al final de cada período. Dado que no son monetarios (no hay salida de efectivo sino una depreciación) se agregan para compensar su deducción anterior en el cálculo del NOPLAT.

Variación del capital de trabajo no monetario: Está relacionado con las ventas de la empresa. Es la suma del inventario más las cuentas por cobrar menos las cuentas por pagar. El efectivo no se incluye porque no crece en la misma proporción que las ventas. En la fórmula, parece restar porque un aumento en el capital de trabajo neto representa una salida de efectivo.

CAPEX: Gastos de Capital, son los fondos que utiliza una empresa para adquirir nuevos activos físicos como edificios, maquinaria, equipos, etc. Se deducen de la fórmula porque representan una salida de efectivo.

WACC: Coste de capital medio ponderado, este cálculo se utiliza en la valoración como la forma en que se descuentan los valores presentes (Tasa de descuento).

Costo de capital: Determina el rendimiento mínimo aceptable para un inversor, que quiere comprar acciones de la empresa para compensar el riesgo asumido.

Valor Terminal: El valor terminal intenta estimar el crecimiento perpetuo y a futuro que tiene una empresa. Esto supone que las empresas se crean con el objetivo de una existencia y crecimiento a perpetuidad; y con un crecimiento exponencial, parecido al de la industria.

Capital del Valor de la Empresa: Esta es la segunda forma de determinar el valor económico de una empresa. Con este método se sabe que el precio de la participación de mercado contiene movimientos especulativos de inversores que pueden distorsionar el valor real de la empresa. Por tanto, para obtener un valor más preciso de su Patrimonio, también se utiliza su valoración fundamental total, la cual, para obtener solo el valor del patrimonio, se resta la deuda neta.

Metodos de multiplos: Esta es la tercera forma de determinar el valor económico de una empresa. Mediante la comparación de las transacciones que han realizado las empresas del mismo sector, lo más similar posible, (tamaño, actividad, área geografía, moneda, sector, etc.), para que la empresa sea valorada.

Riesgo administrativo: Este es un análisis que contiene todos los riesgo importantes que la empresa debe afrontar en el corto y largo plazo, esto hace, que la valoración cambie, pues existen riesgos que pueden ayudar a incrementar o disminuir el valor de la empresa.

Matriz de riesgo: Es una forma visual de observar el impacto y las probabilidades de todo el riesgo que tiene la empresa.

Sinergias: Son los factores que pueden llegar a obtener la empresa compradora de la empresa vendedora. Muchas veces estas sinergias pueden contribuir a mejorar el valor de la empresa vendedora pues beneficia directamente a la empresa compradora, dándole beneficios económicos, de posicionamiento de mercado, entre otros.

Resumen Ejecutivo

Tesla es la empresa líder en el mercado eléctrico de automoción, con unas ventas que van aumentando año a año en un 15% promedio y con un espectacular crecimiento en el precio de sus acciones en los últimos años. Sin embargo, la compañía presenta sistemáticamente pérdidas en su cuenta de resultados, con costos cercanos al 80% de sus ingresos y un margen operativo prácticamente negativo.

Apple, por otro lado, es una compañía líder del sector más orientada a ofrecer servicios, sin embargo, año a año ha ido perdiendo cuota de mercado en su producto estrella, el iPhone, y desarrollando e invirtiendo recursos en proyectos como "Titan", que tenía que ser su coche eléctrico autónomo. Es en este punto donde, dada la situación de las dos compañías, la posibilidad de que Apple adquiera Tesla debería considerarse muy interesante.

Este informe es básicamente un análisis estratégico extremadamente completo de la posible adquisición y/o fusión más grande del mundo.

Hasta donde sabemos, no existen informes detallados sobre la valoración de las dos compañías en un escenario de fusión, así como la valoración de posibles sinergias, por lo que nuestro objetivo es presentar un análisis cualitativo y cuantitativo que debe estar de acuerdo

con el potencial de estas empresas. Para ello, se han utilizado las bases de datos más destacadas para analizar las industrias, la economía actual y la posición estratégica de las empresas. Asimismo, para la valoración independiente de Tesla se han utilizado las técnicas de valoración más avanzadas (método de Flujo de Caja Descontado, Modelo de Valoración de Activos de Capital, método de Múltiplos), así como las fuentes de datos más importantes en el ámbito financiero como Mergermarket, Thomson. Reuters, Damodaran, Duff & Phelps, etc.

Además, se han utilizado paquetes estadísticos avanzados en combinación con técnicas de análisis de riesgo (EViews) para determinar el alcance de posibles crisis o peligros que podrían existir en esta increíble adquisición. Además, nos aseguramos de evaluar posibles sinergias y formas de adquisición, lo que resultó en cifras presentadas en las últimas secciones del proyecto.

Este trabajo ha dado lugar a una sección, al final del informe, en la que se especifican claramente los parámetros y plan de acción con recomendaciones detalladas y alternativas para cerrar con éxito la adquisición propuesta en términos operativos, financieros y legales.

Las partes clave del informe se presentan y describen a continuación:

- - Si bien el margen neto de Tesla es negativo a lo largo de los años, Apple ha tenido un beneficio neto año tras año más del 20% de sus ingresos.
- Tesla tiene costos de producción muy altos, los cuales, como se mencionó anteriormente, representan más del 80% de sus ingresos, por lo que necesita mejorar su estructura de costos.
- Apple tiene una gran cantidad de efectivo, en concreto, 48 mil millones de dólares. Un gran porcentaje de estos, con el objetivo de obtener una rentabilidad en efectivo y no perder valor, podrían servir para financiar la adquisición.

- Apple es una empresa no excesivamente endeudada con un ratio deuda-capital del 70%, lo que nos lleva a pensar que la empresa podría financiar otra parte de la adquisición mediante deuda y absorber la parte correspondiente de Tesla.

Tras este análisis, se encuentra la valoración de Tesla. Dentro de él, y con el objetivo de obtener un estudio más detallado, se utilizaron 3 métodos: el flujo de caja descontado, el capital a valor de empresa y el método de múltiplos. Es importante señalar que una vez calculados los tres, al calcular las sinergias, así como el proceso de adquisición, se utilizó el valor obtenido en el método de flujo de caja descontado, ya que fue el que consideramos más adecuado y confiable. Esto debió a que el Método de múltiplos utiliza el sector de Energia y vehículos, sin embargo, Tesla es una compañía que en la actualidad no es comparable al de otras empresas del mismo sector.

El hecho de que Tesla tenga fuentes de ventas en mercados tan geográficamente diferenciados como Estados Unidos, Europa y China hizo que se utilizaran dos costos de capital diferentes, así como dos costos de capital promedio ponderado (WACC), uno para Estados Unidos junto a Europa (5.54 %) y el otro para China (8,3%). Además, las proyecciones de flujo de caja libre se dividieron en dos, dependiendo del porcentaje actual de ventas en Estados Unidos, Europa y China, respectivamente. Una vez realizados estos cálculos y asumiendo una tasa de crecimiento del 1,22% para Estados Unidos y Europa y del 3,29% para China, se ha obtenido un valor de empresa de 125.742,53 millones de dólares para Tesla.

Los riesgos más importantes se enumeran y explican en detalle, pero cabe destacar la incertidumbre que tiene, para una empresa como Tesla, el Covid-19, provocando probablemente una disminución imprevista en la cantidad de vehículos vendidos.

Si nos centramos en las sinergias obtenidas del proceso de adquisición, es destacable la disminución de los gastos administrativos y de personal por parte de Tesla, así como los gastos

de investigación y desarrollo en patentes y proyectos de Apple relacionados con el vehículo autónomo. Además, gracias a la experiencia de Apple en la fabricación de maquinaria y su capacidad para negociar y obtener economías de escala, Tesla podría obtener grandes beneficios. Dicho esto, se calculó que, una vez adquirido Tesla, su EBIT aumentaría un 10% de 2020 a 2024, obteniendo un nuevo valor empresarial de $ 138.433,50 millones y, por tanto, un valor de sinergias de $ 12.690,97 millones.

Finalmente, mediante nuestro análisis se decide adquirir el 60% de Tesla, pagando el precio de su acción en el período analizado (3 de abril de 2020) de $ 480,01 y sumando una prima del 35% se obtiene un precio de $ 71.583,30 millones. Si se compara con el valor obtenido utilizando el método de flujo de caja descontado y asumiendo el 50% de las sinergias (por el exceso de optimismo que supondría el supuesto del 100%), alcanzando un valor de $ 74.068,81 millones, Apple aún tendría beneficios. en proceso de adquisición, cuantificado en $ 2.485,51 millones.

Palabras Clave: Valoración de empresas, Finanzas, Métodos de Evaluación financiera, Procesos de Adquisición, Sinergias

Executive Summary

Tesla is the leading company in the automotive electrical market, with sales that are increasing year by year by 15% on average and with a spectacular growth in the price of its shares in recent years. However, the company systematically presents losses in its income statement, with costs of goods sold close to 80% of its revenue as well as a practically negative operating margin.

Apple is a company increasingly oriented towards offering services, losing market share in its flagship product, the iPhone, and developing and investing resources in projects such as “Titan”, which had to be its autonomous electric car. It is at this point where, given the situation of the two companies, the possibility of Apple acquiring Tesla should be considered highly interesting.

This report is basically an extremely comprehensive strategic analysis of the potential acquisition of one of the world's largest M&A.

As far as we know, there are no detailed reports on the valuation of the two companies in a merger scenario, as well as the valuation of possible synergies, therefore, our objective is to present a qualitative and quantitative analysis that should be in accordance with the potential of these companies. To do this, the most outstanding databases have been used to analyze the industries, the current economy and the strategic position of the companies. Likewise, for the independent valuation of Tesla, the most advanced valuation techniques have been used (Discounted Cash Flow method, Capital Asset Pricing Model, Multiples method), as well as the most important sources of data in the finance field such as Mergermarket, Thomson Reuters, Damodaran, Duff & Phelps, etc.

Also, advanced statistical packages have been used in combination with risk analysis techniques (EViews) to determine the scope of possible crises or dangers that could exist in

this incredible acquisition. Furthermore, we made sure to evaluate possible synergies and ways of acquisition, which resulted in figures presented in the last sections of the project.

This work has led to a section, at the end of the report, in which the parameters and action plan are clearly specified with detailed and alternative recommendations for successfully closing the proposed acquisition in operational, financial and legal terms.

The key parts of the report are presented and described below:

- While Tesla's net margin is negative over the years, Apple has year after year benefits over 20% of its revenue.
- Tesla has very high production costs, since, as mentioned above, they represent more than 80% of its revenue, thus, it needs to improve its cost structure.
- Apple has a large amount of cash, specifically, 48 billion dollars. A large percentage of these, with the aim of obtaining a cash return and not losing value, could serve to finance the acquisition.
- Apple is a company not excessively indebted with a debt to equity ratio of 70%, which leads us to think that the company could finance another part of the acquisition through debt and absorb the corresponding part of Tesla.

Following this analysis, Tesla's valuation is found. Within it, and with the aim to obtain a more detailed study 3 methods were used: the discounted cash flow, the equity to enterprise value and the multiples method. It is important to note that once all three have been calculated, when calculating synergies as well as the acquisition process, we used the value obtained in the discounted cash flow method, since it was the one, we considered most appropriate and reliable because in the multiples method, the growth potential that Tesla has is not comparable to other companies in the same sector.

The fact that Tesla has sales sources in markets as geographically differentiated as the United States, Europe and China, two different costs of equity were used as well as two weighted average cost of capital (WACC), one for the United States and Europe (5.54%) and the other for China (8.3%). Also, the free cash flow projections were divided in two, depending on the current percentage of sales in the United States & Europe and China, respectively. Once these calculations have been made and assuming a growth rate of 1.22% for the United States and Europe and 3.29% for China, an enterprise value of $125,742.53 million has been obtained for Tesla.

The most important risks are listed and explained in detail, but it is worth noting the uncertainty it has, for a company such as Tesla, the Covid-19, probably causing an unforeseen decrease in the number of vehicles sold.

If we focus on the synergies obtained from the acquisition process, it is remarkable the decrease in administrative and personnel expenses by Tesla as well as the research and development expenses in patents and projects by Apple related to the autonomous vehicle. Also, thanks to Apple's expertise in machinery manufacturing and its ability to negotiate and obtain economies of scale, Tesla could obtain greatly benefits. Having said this, it was calculated that, once Tesla was acquired, its EBIT would increase by 10% from 2020 to 2024, obtaining a new enterprise value of $138,433.50 million and, therefore, a synergies value of $12,690.97 million.

Finally, deciding to acquire 60% of Tesla, paying the price of its share in the analyzed period (April 3, 2020) of $480.01 and adding a premium of 35% it is obtained a price of $71,583.30 million. If it is compared with the value obtained using the discounted cash flow method and assuming 50% of the synergies (due to the excess of optimism that the assumption

of 100% would entail), reaching a value of $74,068.81 million, Apple would still have benefits in the acquisition process, quantified in $2,485.51 million.

Key Words: Valuation of Companies, Finances, Financial Evaluation Methods, Acquisition Processes, Synergies

1. Apple and Tesla

1.1 Autonomous Car System

Before Apple began to develop the star product of its business, the iPhone, which is the most lucrative product of the company, Steve Jobs thought about producing an “Apple Car” and he even took some meeting with several suppliers, but in 2008 he decided to focus on the mobile phone device and postponing this vehicle project.

Since 2016, many speculations began regarding Apple new investments in an innovative software for vehicles, which the main goal was to obtain a “self-driving” car. Furthermore, in the past years, they have been testing the software and the hardware in order to not just think about it but achieving it.

Since 2018, Apple has been opening new offices, investing in car engineering machines, hiring thousands of engineers and rehiring a 5 years ex-chief executive vehicle engineering from Tesla, all of that in order to achieve a self- driving technology. There are speculations about Apple wanting to take out a vehicle model by 2021, with the project name “Titan”, which is underway in California, US.

It is for the aforementioned reason that it has been found interesting to observe the pattern of an acquisition by the giant Apple to the most innovative company in the automotive

industry, Tesla. Also, it will be interesting to analyze the synergies that Apple could obtain from the acquisition of Tesla in order to clearly notice the perfect match between these two companies.

Therefore, it will be interesting to see if the acquisition process is financially viable since, in this way, it could contribute to achieve a greater diversification and a profit growth of the Apple company.

2. Tesla Inc.

2.1 Company Overview

Tesla Motors Inc. is an American electric vehicle and clean energy company based in Palo Alto, California. Tesla designs, develops, manufactures and sells fully electric and advanced vehicles powertrain components and energy storage systems. Furthermore, it provides services for the development of full-electric powertrain systems and components.

In addition, the company also sells and leases solar systems and renewable energy to commercial and residential customers.

Tesla operates in three different segments: Automotive, Energy Generation and Storage and Services and Other.

The Automotive segment is involved in the design, development, manufacturing and sales of electric vehicles. The task of providing after-sales vehicle services must also be taken into account within this segment.

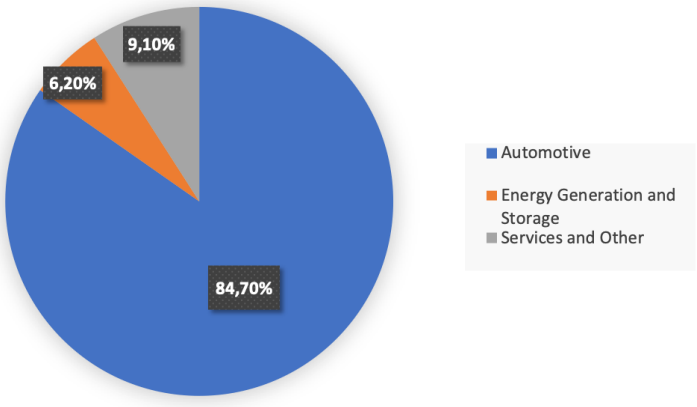
The Energy Generation and Storage segment encompasses all those activities related to the design, manufacture, installation and sale or lease of stationary energy storage products and solar energy systems to residential and commercial customers. It also includes the sale of the electricity generated by the company's solar energy systems to customers.

Under the Services and Other segments, it is found a wide variety of services offered by the company, an example is the Tesla Supercharging Service.

Below is shown the percentage of revenue by company segment:

Figure 1.

Tesla's revenue by segment.

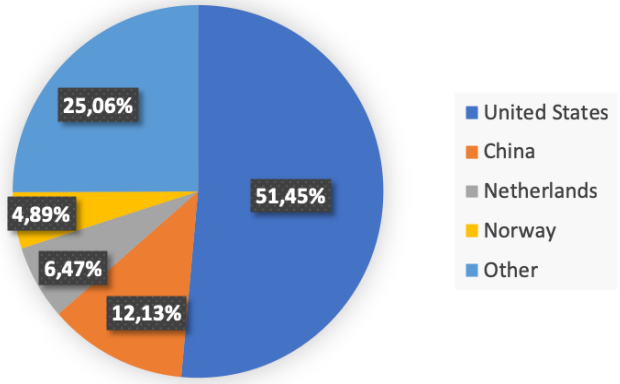


Source: Marketline.

Tesla's operations are carried out in United States, Europe and Asia and the company classifies its operations into five regions namely the US, China, Norway, Netherlands and Other.

Figure 2.

Tesla's revenue by region



Source: Statista.

As it is observable, the country where Tesla has the most business is United States (51.45% of its revenue) followed by China (12.13%) and Netherlands (6.47%).

2.2 History

2.2.1 The founding.

Tesla Inc, (it was originally called Tesla Motors, a name the company changed in 2017) was founded in 2003 by the engineers Martin Eberhard and Marc Tarpenning in San Carlos, California.

At the founding of Tesla, Eberhard served as its CEO and Tarpenning served as CFO. They launched their company to develop and produce an entirely electric car, in part, based on the favorable reaction test markets had to General Motor's previous electric car experiment, the EV1.

It was not until 2004 and thanks to an investment of 30 million dollars in the company that Elon Musk became the chairman of its Board of Directors.

Following, with the aim to visualize its evolution, is added the Tesla's timeline:

2.2.2 Timeline.

Figure 3.

Timeline of Tesla

2004

-Elon Musk gets in the Company. He becomes chairman of the board following an investment of $6.35 million

2006

- Tesla unveils the prototype design for its Roadster.

2009

-Tesla introduces the Model S prototype – March 26th
-Daimler AG acquires a 10% stake in Tesla for $50 million. May 19th

2011

-Musk unveils the prototype of the Model S at a private event at the plant in Fremont, California. October 2nd

2014

-Tesla sells $2 billion in bonds to fund its Gigafactory in Nevada. The factory makes batteries for its Model 3 sedan and energy storage units for its solar business. February

2016

•Tesla unveils the Model 3, it's mass market vehicle.
,Tesla sells $1.46 billion in stock to raise money to ramp up production of the Model

2018

-The Model 3 surpasses the Nissan Leaf as world's best-selling plug-in car. Tesla sold more than 59,000 for the year, while Nissan sold about 57,000.

2003

-Tesla is founded by Martin Eberhard and Marc Tarpenning – July 1st

2005

-Tesla signs a contract with Lotus Cars, who provided the chassis and body design of Tesla's first vehicle.

2008

-Elon Musk takes over as CEO – October

DAIMLER

2010

-Tesla debuts on the Nasdaq at $17 a share. The company's IPO raises $226 million. June 29th

2012

-Tesla announces the Model X, its falcon-winged crossover SUV and its Supercharger Network at an event at the Tesla Design studio in Hawthorne, California.

2015

-Tesla sells 2.69 million shares for $738 million to raise capital for a number of infrastructure projects, including a battery factory and a new production facility for its Model 3.

2019

-Tesla introduces its Model Y SUV.
-Tesla introduces its Cybertruck.

Source: Own elaboration.

2.3 Industry Analysis

The purpose of this section is to gain a broad and global view of the industries where tesla operates, the automotive and energy industries, and to analyze them using techniques, both sectorial and globally.

2.3.1 Electric vehicle industry.

According to Deloitte's battery electric vehicles report, a number of factors, such as improved technology, government measures and progressive consumer awareness, by 2022 the cost of ownership of an electric vehicle will be on par with its internal combustion engine counterpart.

Following this report, there are two main factors that cause this change to the adoption of the electric vehicle:

1) Policy and regulation:

This includes the fuel economy and the recent emissions targets, the city access restrictions adopted and the policies and regulations that are being discussed worldwide.

In the fuel and economy camp it is important to highlight the average CO2 that has to be met for the EU fleet, the PHEV and battery electric vehicles market share that needs to be reached by 2025 and 2030 (10 and 22 percent, accordingly).

Also, the financial incentives have a relevant importance through government subsidies, the vehicle registration tax exemptions and the policies adopted to make electric vehicles more appealing to private and business customers.

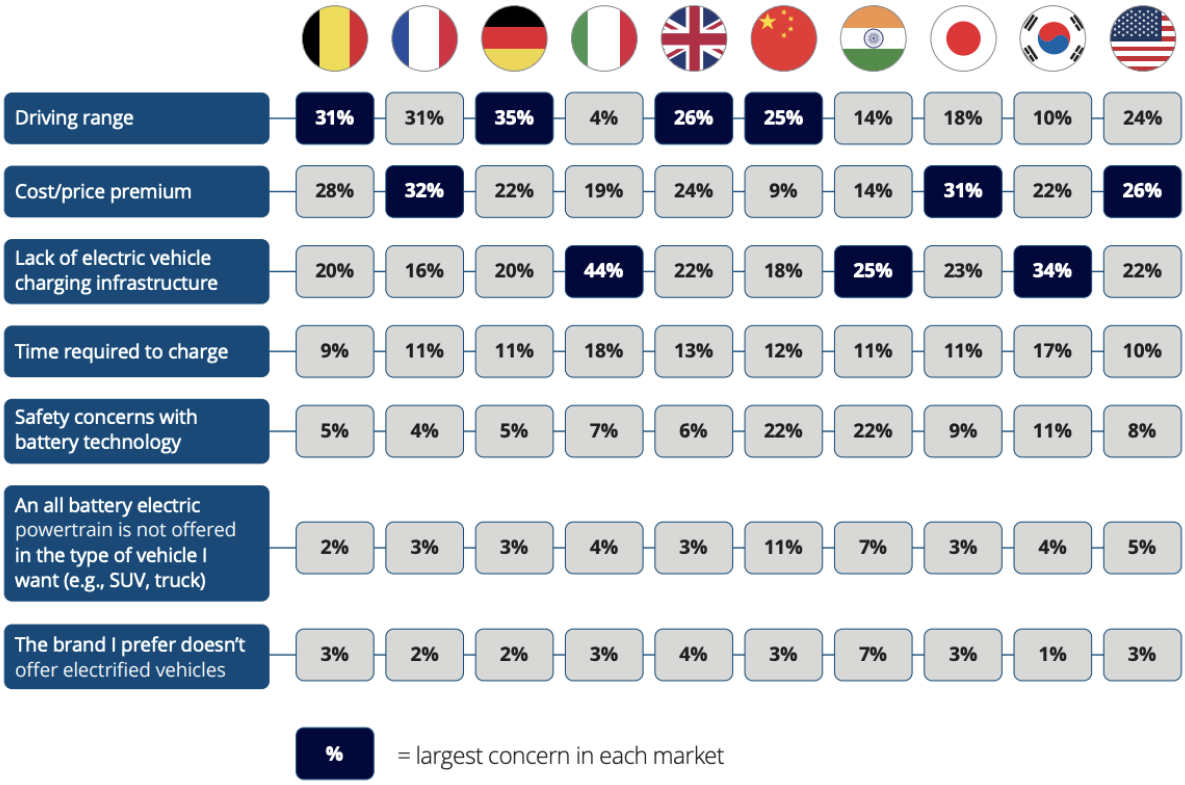
The third measure that has an impact on the policy and regulation factor is the city access restrictions. Some cities have adopted restrictions in this field, for example Paris intends ban all gasoline and diesel vehicles from the city center by 2030 and Oxford proposed banning all non-electric vehicles from its center from 2020.

2) Customer demand

There are still some concerns that affect customer demand in order to adopt electric vehicles. The figure below shows the most important ones and which are the countries with the largest concerns.

Figure 4.

Customer concerns regarding battery electric vehicles



Source: Deloitte Global Automotive Consumer Survey 2018

It is important to highlight and explain the largest three, which are driving range, cost/price premium and the lack of electric vehicle charging infrastructure.

Driving range:

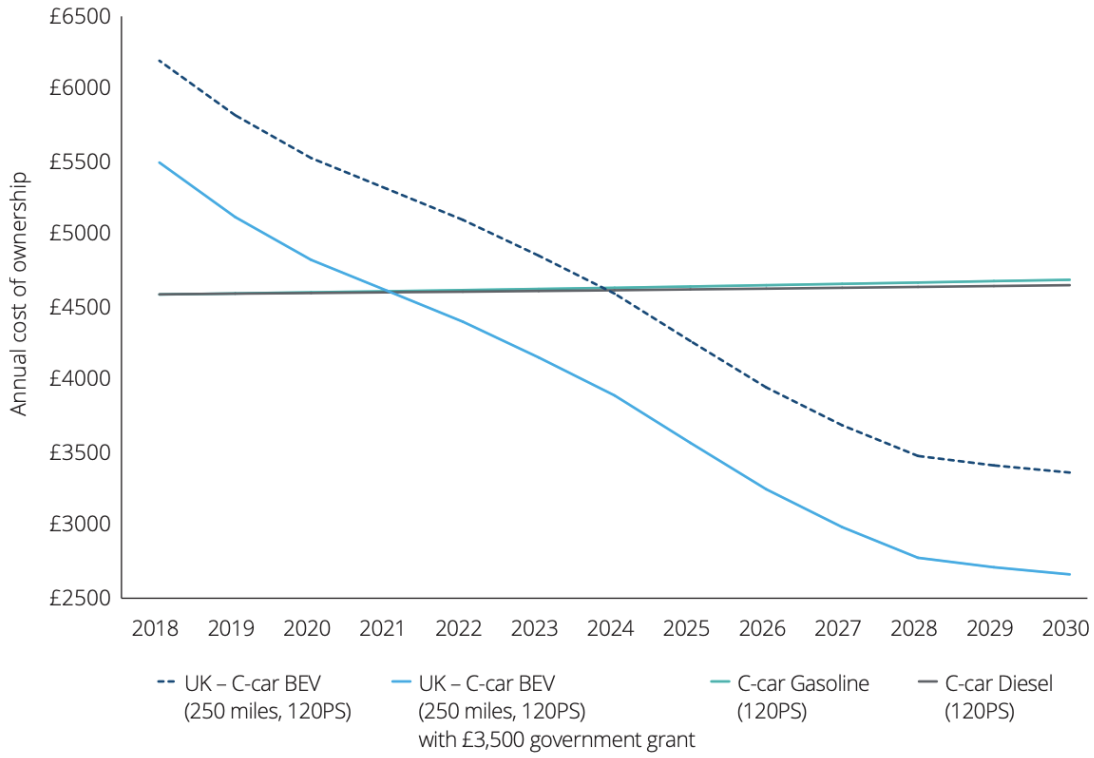
As it is observable in the figure above, driving range is one of the variables that most worries the population of the different countries. The launch of new electric vehicles with improved technology and better battery life is expected to decrease this concern soon.

Cost/price premium:

With regard to the price of the electric vehicle, it is expected to continue decreasing over the years, as can be seen in the graph above. This shows that electric vehicles subsidized in the United Kingdom in 2021 will cost less than combustion vehicles, while the non-subsidized ones will cost less in 2024.

Figure 5.

Annual cost of ownership in UK.



Source: DfT, TfL, AutoTrader, GoCompare, RAC, KwikFit, Deloitte Analysis

Lack of EV charging infrastructure:

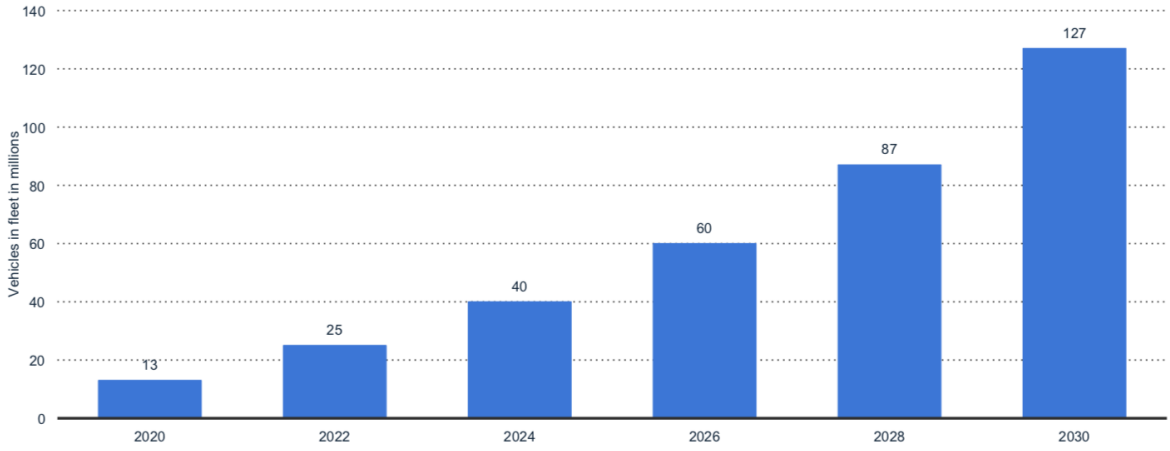
It is clear that in the future, the charger infrastructure will be wider and more accessible to everyone, but at the moment it is one of the main concerns for people who want to buy an

electric car, as the existing low supply acts as an entry barrier. Consideration should also be given to the fact that improvements in fast charging do not waste battery life.

In order to understand the dimension of electric vehicles in the car market, it has been considered appropriate to show the following graphs:

Figure 6.

Projected size of the global electric vehicle



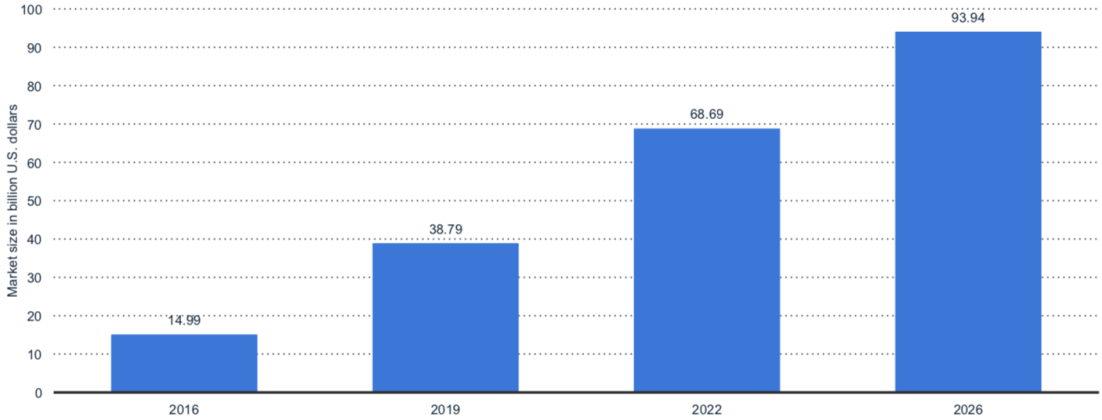
Source: Statista.

As can be seen in the graph above, electric demand for the coming years is projected to increase exponentially, from 13 million vehicles in 2020 to 127 million in 2030, an increase of 877% over the next 10 years, denoting the progressive importance that has nowadays and will acquire over the years.

The following graph shows the revenue that electric vehicles are projected to achieve in the coming years, in billions of dollars,

Figure 7.

Global electric vehicle market 2016-2026.



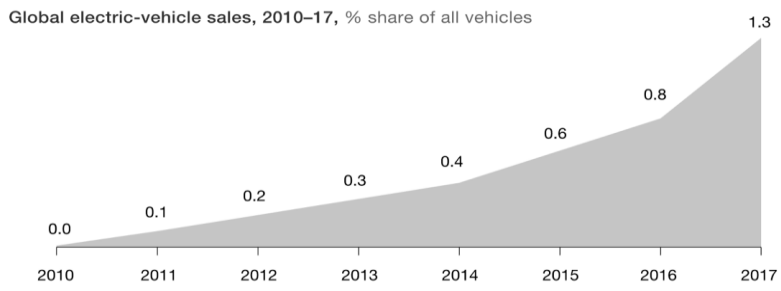
Source: Statista.

The graph reflects the population's awareness of electronic vehicles as well as the large amount of revenue the sector expects to achieve in a few years. Comparing 2026 with 2016, we can see that in just 10 years the sector is expected to amount 526% more.

Following is the share of electric vehicles in the total number of vehicles sold:

Figure 8.

Global electric-vehicles sales from 2010- 2017

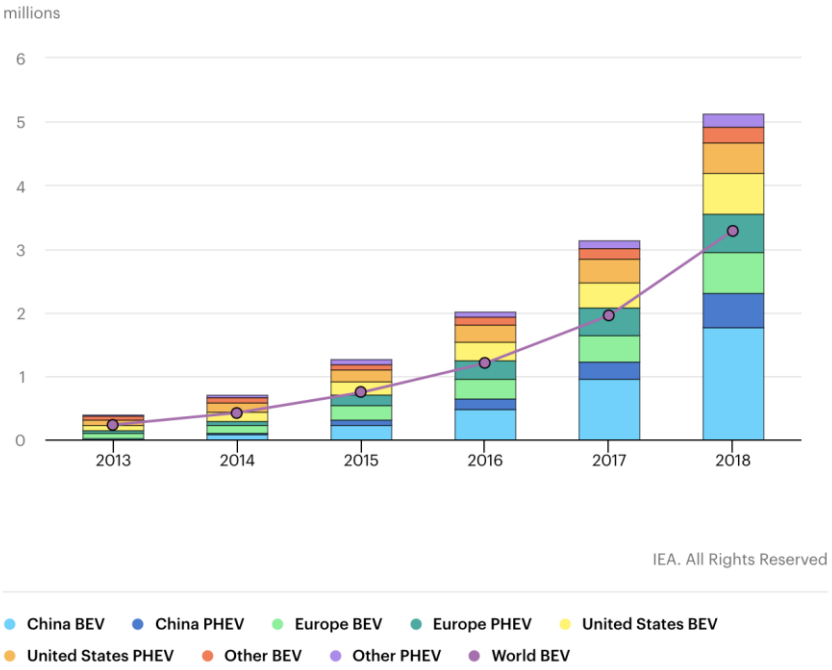


Source: Mckinsey analysis

As the graph shows electric vehicles have gained importance in the car market over the years, going from 0.1% in 2011 to 1.3% in 2017, an increase of 1200% in 6 years. The environmental awareness of the population as well as the various measures taken by the world's governments have contributed greatly to this progressive adoption.

Figure 9.

Electric vehicle deployment from 2013-2108



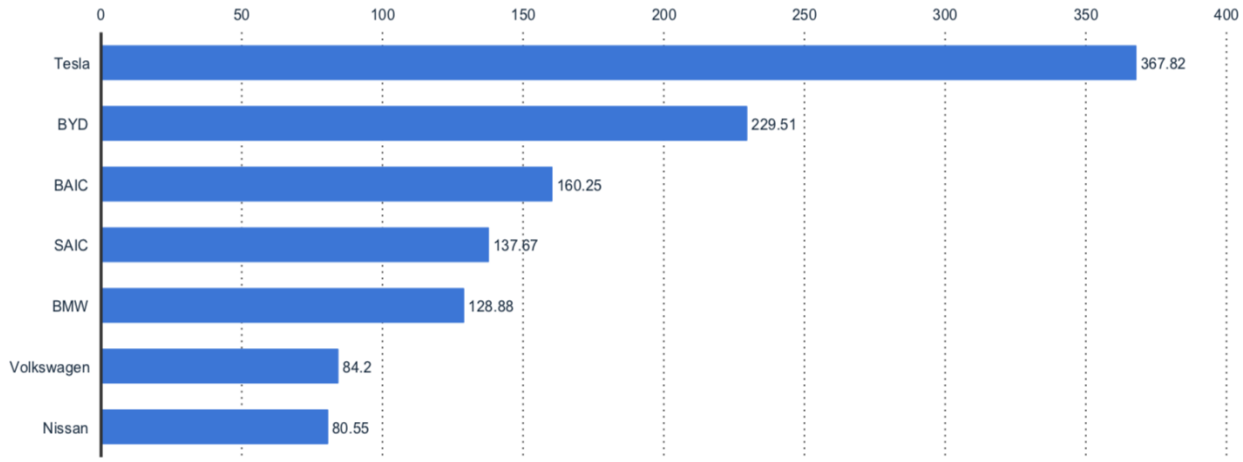
Source: IEA

Over the past 5 years, the electric vehicle deployment has grown to have more than 5 million vehicles in 2018, thus, increasing by 63% from 2017. As the graph shows, the country where electric vehicles are most prevalent is China with 2.3 million vehicles (45% of electric vehicles on the road), followed by Europe with 24% of the global fleet and, finally, United States with 22% of the total.

So far it has been described how the electric vehicle industry has been evolving over the years and how it is expected to be in the near future. It is also important to note which car brands dominate the market as well as the volume of sales they have. The following information can be found in the graph below:

Figure 10.

Electric vehicle sales worldwide in 2019 (in thousands).



Source: Statista

In 2019, the leading sales company in the sector was the American Tesla, with 367.82 thousand vehicles sold. It was followed by the Chinese companies BYD, BAIC and SAIC with 229, 160 and 137 thousand vehicles sold respectively. It is not until the fifth position that appears the first European company, BMW, with sales of, approximately, 129 thousand electric vehicles.

2.3.2 Analysis PESTEL.

The purpose of PESTEL analysis is to identify and examine the various external factors such as the political, economic, social, technological, legal and environmental ones that impact or could impact the business. It is used as a framework and helps to understand the market dynamic.

Political factors

Tesla is a company that operates in different markets around the world, which makes it subject to different regulations and jurisdictions. The company may be affected by the political uncertainties of each particular region as well as the different governments existing in them. At the political level, the trade war between the United States and China, which began in 2019, seems to have reached its last stage, but it does not rule out that it will again have a significant role in the economy in the coming months.

There are also regulations in terms of car safety that the company must comply with, as well as being subject to regulations and deadlines for battery charging stations and electrical infrastructure. In addition, changes in tax regulation in the different countries where it operates, and restrictions on trade and tariffs may play a role.

Economic factors

If it is analyzed the first market in which Tesla has the highest sales (United States), in 2019 its GDP increased by 2.3% and it is predicted that by this year will be of -5.9%. Last year China's GDP growth rate was 6.1% and it is expected, for 2020, a reduction until 1.2%. Europe also expects a decreasing trend, from 6.1% last year to a -6.7% in 2020.

Another aspect to consider is the trade war that started between 2019 between the United States and China, and although its impact on the economy today has been reduced, as stated above, no new sanctions and new tariffs between the two countries are ruled out.

In addition, the duration of the COVID-19, discovered at the beginning of the year in China and spread around the world is a very important risk factor, as it is causing many economic problems through the different economies worldwide.

Social factors

In recent years, the number of people aware of sustainability and environmental impact and the purpose to reduce carbon dioxide emission has increased a lot. Therefore, the idea of vehicles without pollutant emissions has a very promising present and, especially, future. These cars will have lower maintenance costs over the next few years and having them will be socially better. It is for this reason that Tesla can reach even more people who are willing to contribute to climate change reduction. Not only individuals are becoming more and more aware of the problem, but State governments as well as global organizations such as the United Nations are becoming more committed in increasing the fleet of electric vehicles.

Technological factors

Tesla is characterized by being a company with a high technological and for being one of the pioneers on the electric car industry. The fact that technology is advancing at a fast pace is not a problem for the company as it feeds back on this. An example of this consistent feedback is the new software that has come to the market in the most recent update, called the "smart summon", which allows automatic driving in those cars that have this option.

Another example of how the company drives and at the same time benefits from technological improvements is the tool called “Karaoke”, which comprises a multi-language

lyrics bundle allowing it to be connected to the vehicle's center console for those vehicles which have the Netflix application.

Environmental factors

It is well known that Tesla has a wide awareness of environmental impacts as well as its contribution to the preservation of the nature. As mentioned before, both the population and the heads of state in most countries are committed to the cause and are taking steps never seen before. It is in this sense that the environmental factor plays an especially important role and, therefore, the company is constantly incorporating new improvements. Proof of this is that in February, Tesla installed 3.5 Gigawatts of solar cells that produces approximately 13 terawatts of clean emission-free electricity.

In addition, one of the latest improvements has been the production of the largest lithium-ion battery which is helping to produce large scale zero-emission electricity, used by cities daily.

Legal factors

The fact that Tesla has sales around the world makes it subject to the different rules and regulations of each of the countries it operates. That is why the company needs to keep aware of the news regarding the legislation of the different countries. Also, other factors to consider are both copyrights and existing international patents which could cause problems if Tesla omits them.

2.3.3 Porter's five forces.

In order to determine the profitability of the sector, the 5 forces of Porter will be described and analyzed below. It has been found appropriate to use this tool as it clearly shows how the industry is organized at the present moment and how it can be in the near future.

Threat of new entrants

The car industry is characterized by high barriers to entry as it requires a huge investment in different fields (technological, research, engineering, infrastructure, etc.) to compete in the market. Also, brand trust and reputation are very important as well as the economies of scale gained from mass production. Is for these reasons that new companies have it very difficult to enter the market. The threat could come from those who are already installed and want to diversify its production and at the same time introduce a sustainable line, in the form of an electric vehicle to their current offering. Also, another factor that could lead to the entry of new companies into the industry would be the anticipation of great growth in demand due to government incentives to buy such vehicles through subsidies or tax reductions. However, only the most developed European countries and United States have pioneered the use of subsidies. In addition, regulatory adjustments have been made by China, but these are only related to the control of the quality of electric cars offered.

Degree of rivalry

The electric vehicle market is characterized by a high degree of differentiation, which reduces the competition between the players. In addition, it is divided into different segments such as BEVs, EREVs, PHEVs and HEVs which results in a lower concentration and, thus, entails a decrease in competition between companies. Globally, there are different characteristics for each market, for example, Europeans and Americans are less price-sensitive than Asians and those in the Pacific region.

It should also be noted the disparity between the different territories of the world, because, for example, in less developed markets the existence of electric vehicles is very small, whereas in developed countries they increase year after year. The European brands with the most electric vehicles on the market are BMW and Volkswagen, in the US, Tesla and in the Asian continent BYD, BAIC, SAIC Toyota and Nissan.

The companies that lead the Asian market, despite competing in many markets, are trying to reduce the rivalry through differentiation. These markets are characterized by giving high value to home brands, making electric vehicles from abroad difficult to enter the market.

Tesla is different from its competitors by the fact that it is also in the business of energy storage and electrical powertrain business in general, which increases its capacity for innovation in the electric vehicle market.

Finally, it is worth mentioning that the high operating costs and the high exit barriers increase the competition to obtain a market share because of the huge amount of money invested. This could be alleviated it with the increase in demand that is expected in the coming years.

In summary, it can be concluded that the rivalry of the competitors is moderate.

Threat of substitutes

For the electric vehicle market, the main substitutes can be considered all those combustion engine cars, both new and used and alternative forms of personal transport. Also, public transport has considerable importance and is expected to be even more prominent in the near future. Furthermore, such means of transport as bicycles, skateboards and motorcycles could be included in the field of substitute products, although to some extent they do not fulfill the same functions as electric vehicles.

Overall, the threat from substitutes in the electric car market is strong at the moment but it is projected to decrease in the coming years.

Buyer power

Currently, the supply of electric vehicles is smaller than conventional cars. This could be positive for electric vehicle companies as the few options available on the market force consumers to quickly position themselves without too much power of choice. On the other hand, the costs of changing from moving from an electric vehicle to a conventional one is zero, which means that in this sense, the buyer's power increases. Also, some of the potential beneficiaries of the electric vehicle could be price sensitive. This means that if the price of electric vehicles is much higher than the conventional ones, they will opt for the conventional which, again, would increase the power of the buyer. In this sense, the low fuel price during 2020 may lead to an increase in the demand for traditional vehicles instead of electric ones. In the medium term, the increase of environmental awareness and consumer attitudes are likely to move towards non-polluting vehicles, which will reduce the buyer's power.

For all the above reasons, the power of the buyer is considered to be moderate.

Supplier power

In the case of electric vehicles, the fact of be a relatively new industry, implies that there are few suppliers capable of providing the specific parts that are needed which means that the supplier market is concentrated. In addition, these products require a high level of specialization, therefore, in this sense, the supplier's power is high. Developers of charging stations as well as network facilities are considered to be of great importance. In that direction, Tesla has developed its own network, particularly in the United States, gaining a competitive advantage over its competitors and at the same time reducing supplier power. However, the companies that provide the components of electric batteries are indispensable for the electric car industry, and a lack of them can be very detrimental to the industry which means that their power is significant.

The above reasoning goes to say that supplier power is high.

2.4 Business Analysis

2.4.1 SWOT.

Strengths

Vehicles with great design and engineering

Mainly through its innovative design Tesla ranks first among all competitors in the electric car industry. Tesla's power supply can bring to its customers' state-of-the-art technology at a better price than its competitors. The vehicles have a patented charging system, by which, it is possible to load the car into almost any available power outlet. It also has a single electric powertrain which generates a lighter and a more energy-efficient vehicle.

The price of its cars is still high for a middle-class level consumer, but for example the Tesla Model 3 can be achieved at $35000 in the United States, which puts a state-of-the-art model with state-of-the-art technology cheaper than a high-class car.

Research and Development helps improve company performance

Through the R&D department the company seeks to provide solutions to its customers with models that have greater energy efficiency which is a hallmark within the sector. It also seeks to develop new products for a highly competitive market, meaning a great effort and investment in R&D since, for example, in 2019 the company spent $1343 million, representing 5.46% of annual sales and almost the same level in 2018 that was $1460 million.

The effort to develop new products with cutting-edge technology leads to higher sales for the company. It can be seen over the past 3 years from $11.758,8 million in 2017 to $24.578 million in 2019, increasing the gross profit from $2222.5 million in 2017 to $4069 million in 2019, an increase of 83%.

Tesla has the largest electric power supply network

It currently has the largest electric power charging network worldwide with 1870 stations with 1658 superchargers, which is a competitive advantage over its competitors and this number is expected to continue to increase.

Charging costs are $0.28 per kilowatt-hour while an estimated 100 kilometers a Tesla car costs $6 against $10 from a common car powered by naphtha. Superchargers charge the battery quickly and increase its performance as the battery fills up. Overall, the company stipulates that a charge is made in about half an hour which can be seen as a very low inconvenience.

Weaknesses

High production costs

Tesla has a very heavy structure in terms of fixed and variable costs. Prove of this are the cost of goods sold, representing a 80% of its revenues. On the income statement Tesla has not yet been able to achieve a positive net income. Over the last 5 years the best result achieved was in 2016 with losses of $675 million. In 2019 the net income was $ -862 million. As previously stated, these high costs are due to its COGS, but also to the great expenditures made in order to develop products with a huge impact in terms of technology and sustainability.

Demands

The company has received demands from competitors as well as customers. In the case of competitors, the Nikola company filed a $2 billion claim because, in 2018, Tesla did not meet the standards of creation and copied several components such as fenders, middle entry

doors and aerodynamic fuselage. Because of this dispute, Tesla's recruiting area had approached Nikola's chief engineer.

Regarding customer demands, one of them was made by the family of a person who died in an accident while he was driving a Model X in March 2018.

Opportunities

Increase in sustainable products

The alternative energy vehicles market share is actually 5% compared to the total number of cars sold and it is expected that by 2030 it will be almost 40%. Therefore, this increase in demand for the electric cars puts the company in a very favorable situation due to being one of the first participants in the industry and because of better quality in all its cars compared to its competitors.

Purchase power

Through the acquisition, the company can complement its growth and achieve greater geographical expansion. Tesla had acquired Hibar Systems and DeepScale which are related to the manufacture of batteries and computer vision systems, respectively.

Serving other brands with charge and manufacturing networks

It was previously mentioned that Tesla has the largest battery charging network, thus, along with its battery and parts manufacturing capacity, Tesla can creates an opportunity for other companies to make use of its facilities which can provide a new source of income.

Threats

Competition with a downward price spiral

Tesla vehicles compete not only with vehicles in their segment but also with traditional vehicles. Today the company is making an effort to put on the market a vehicle with a more affordable price in order to reach a more popular segment, at $35.000. If the company were able to penetrate these segments, the other brands could start competing in price which would be very costly due to its high-cost manufacturing process.

Low fuel price

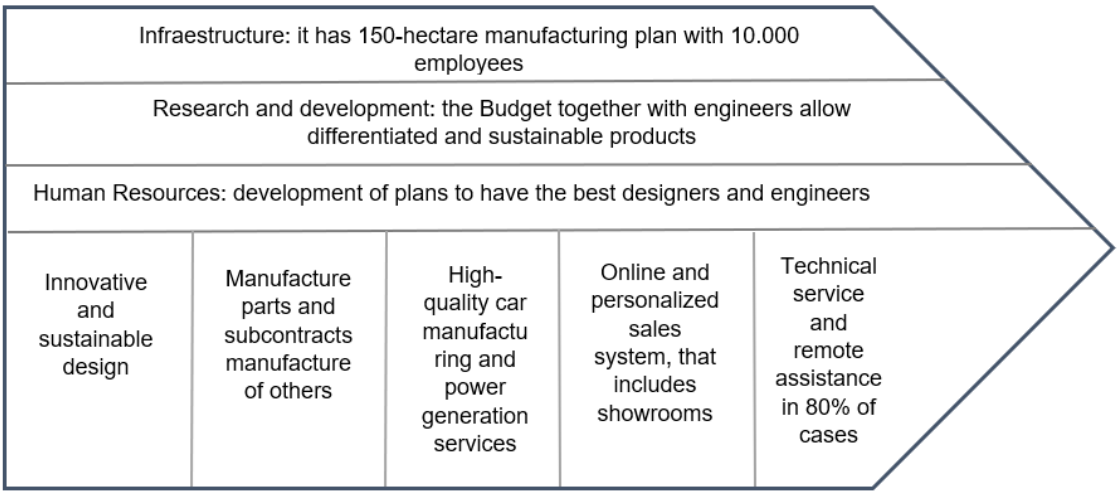
The price of Brent has fallen from $74 from October 2018 to $48 at the end of 2019. This can lead to those people with less sensitivity to environmental impact increase the demand in traditional vehicles at the expense of the electrical ones.

2.4.2 Value chain.

Through the value chain it can be seen how Tesla generates value to its customers through the main functions and process of the company.

Figure 11.

Value Chain of Tesla.



Source: Own elaboration.

As it is shown, Tesla offers innovative and sustainable products to the market as well as services related to electricity generation.

For which, it has its headquarters, of almost 150 hectares, in California where it produces and where 10000 employees, mainly engineers and designers, stand out, as well as the technical machinery needed to develop the products. These lands were previously owned by General Motors, New United Motor Factoring and Toyota.

The high budget in research and development is reflected in 5.46% of the company's total sales, meaning $1343 million that are invested in order to bring cutting-edge models and power generation services to its consumers.

Tesla's after-sales and customer support provides the advantage for the customer to not have to attend, personally, in a repair center because in case of emergency a technician attends where the car is located. Therefore, 80% of the repairs are performed outside the repair center. Tesla's technology enables online diagnostics of car failures and, consequently, coordinate an

appointment through the app. Thus, the supplies are ready when the customer approaches to the repair center. This attention generates added value for the customer by the speed and reduction of repair time compared to traditional cars.

2.4.3 Stock price analysis.

Figure 12.

Technical Analysis of Tesla.

Source: Thomson Reuters Eikon, Own Elaboration.

Related to the graph above, it is worth to highlight several aspects:

After the rise in the share price in 2013 from $50 to $194, it has been maintained during 2014, 2015 and 2016 on a side-channel between roof and support between $177.41 and $267.95 per share, respectively.

At the end of 2016 there was an acceleration in the price that generated an increase of 111.27% in 133 days that brought the share price into a new roof of $385.

In December 2018 began a decrease to the support of the first channel mentioned to $177 per share and began a noticeable price acceleration that generated a yield of 433.8% in 180 days because the price reached its all-time high of $944.78.

Finally, it is seen an important correction up to $400. In principle, it could be listed as a take profit but another factor to be considered is the effect of COVID-19. Beyond that, at the end of March and the first of April the share price rose again to be placed at about $550 per share.

The company has yet to achieve positive results and incurs losses since its inception, but the market emphasizes future sales growth and cost improvement in the coming years. Thus, analyzing Tesla's stock price, it can be said that, at this moment, the market discounts the company's future growth.

Tesla's rising price-per-share has generated numerous reviews because some analysts cannot explain why a company with constantly negative results can achieve the price increase experienced in recent years. One of the answers to this is, as mentioned in the SWOT analysis, a significant increase in sales is expected in the near future. On the other hand, it is also argued that this increase in price could be caused by institutional investors, generating optimism that is not related to the actual results of the company and whose only purpose is to speculate with the company.

2.5 Financial Analysis

In order to understand deeply the financial situation of Tesla, below it can be found the financial analysis of the company, where it is shown its balance sheet, income statement and, finally, the ratios derived from both, taking into account 4 years of data, from 2016 to 2019.

2.5.1 Horizontal analysis.

Figure 13.

Tesla's Balance Sheet Variation.

Balance Sheets- Millions USD	2019	%	2018	%	2017	%	2016
Cash & Short-Term Investments	6.268,0	70,07%	3.685,6	9,43%	3.367,9	-0,75%	3.393,2
Loans & Receivables - Net - Short-Term	1.324,0	39,51%	949,0	84,14%	515,4	3,25%	499,1
Inventories - Total	3.552,0	14,09%	3.113,5	37,55%	2.263,5	9,48%	2.067,5
Prepaid Expenses - Short-Term	713,0	94,98%	365,7	36,26%	268,4	38,00%	194,5
Other Current Assets - Total	246,0	27,76%	192,6	23,97%	155,3	47,19%	105,5
Total Current Assets	**12.103**	**45,71%**	**8.306,3**	**26,42%**	**6.570,5**	**4,96%**	**6.259,8**
Receivables & Loans - Long-Term	393,0	-6,77%	421,6	-7,69%	456,7	-9,81%	506,3
Property, Plant & Equipment - Net - Total	20.199	2,58%	19.691	-3,91%	20.492	36,28%	15.037
Other Non-Current Assets - Total	1.077,0	11,04%	969,9	35,68%	714,9	47,42%	484,9
Intangible Assets - Total - Net	537,0	53,14%	350,7	-16,86%	421,7	12,12%	376,1
Total Non-Current Assets	**22.206**	**3,61%**	**21.433**	**-2,95%**	**22.085**	**34,63%**	**16.404**
Total Assets	**34.309**	**15,36%**	**29.740**	**3,78%**	**28.655**	**26,44%**	**22.664**

Source: Thomson Reuters Eikon, Own elaboration.

Regarding Tesla's current assets, in 2019 the company increased its cash around 70% compared to the previous year, as well as its short term prepaid expenses, (by 95%). In 2019, the company reduced its increases in account receivables and inventories (39,51% and 14,09%) compared to 2018 which increased by 84.14% and 37.55%, respectively. Overall, this led to an abrupt rise in its current assets in 2019 (45.71%) compared with 2018 (26,42%).

In 2017, property, plant and equipment increased by more than 36% compared to the previous year, but a year later, in 2018, the company stopped investing in this type of assets with a slight increase in 2019. On the other hand, the intangible assets decreased by 16.86% in 2018, but in the following year shot up by more than 50%.

Over the years, Tesla has been taking a strategy to invest more in working capital than non-current assets. The company maintains an equilibrium between these two asset classes because, as it is observable, when the investment is high in current assets, is low in non-current assets and vice versa.

Generally, Tesla has been increasing its investment but not constantly, because as it is seen, in 2018 the growth of the total assets was just 3.78% but in 2019 continued increasing much more, by 15.36%.

Figure 14.

Tesla's Horizontal Analysis.

Balance Sheets- Millions USD	2019	%	2018	%	2017	%	2016
Trade Accounts Payable & Accruals - Short-Term	6.676,0	42,06%	4.699,5	26,51%	3.714,8	27,33%	2.917,5
Short-Term Debt & Current Portion of Long-Term Debt	1.785,0	-30,48%	2.567,7	186,40%	896,6	-22,05%	1.150,2
Other Current Liabilities - Total	2.206,0	-7,17%	2.376,3	-17,42%	2.877,6	79,12%	1.606,5
Total Current Liabilities	**10.667**	**6,75%**	**9.992,1**	**30,20%**	**7.674,7**	**31,71%**	**5.827,0**
Debt - Long-Term - Total	11.634	23,72%	9.403,7	-0,16%	9.418,4	57,54%	5.978,3
Other Non-Current Liabilities - Total	3.898,0	11,91%	3.483,1	-41,26%	5.930,0	19,71%	4.953,7
Minority Interest - Non-Equity	643,0	15,66%	556,0	39,78%	397,7	8,36%	367,0
Total Non-Current Liabilities	**16.175**	**15,62%**	**13.990**	**-11,15%**	**15.746**	**39,36%**	**11.299**
Total Liabilities	**26.842**	**11,93%**	**23.982**	**2,40%**	**23.421**	**36,76%**	**17.126**
Shareholders' Equity - Total	6.618,0	34,42%	4.923,2	16,19%	4.237,2	-10,85%	4.752,9
Minority Interest - Equity	849,0	1,75%	834,4	-16,34%	997,4	27,02%	785,2
Total Shareholders' Equity	**7.467,0**	**29,69%**	**5.757,6**	**9,99%**	**5.234,6**	**-5,48%**	**5.538,1**
Total Liabilities & Equity	**34.309**	**15,36%**	**29.740**	**3,78%**	**28.655**	**26,44%**	**22.664**

Source: Thomson Reuters Eikon, Own elaboration.

Regarding the analysis of current liabilities, it can be noticed a surprising event in 2018 in the short-term & current portion of long-term debt, which increased by 186.4%. It is also important to highlight that in 2017, the other current liabilities increased by 79.12% and plunk down in the following two years.

Moving to the non-current liabilities, related to the long-term debt, in 2017 and in 2019 the company experienced an increase of 57.54% and 23.72%, respectively. In relation to the total non-current liabilities, in 2017 they increased by 39.36% and then, for 2018 and 2019 the company achieved a balance on them.

The equity, in 2018 and 2019 has been increasing due to the issue of new shares in order to face the losses of those years. So, the 2018 and 2019 increase in cash, has been, in part, as a consequence of this issuance.

Income Statement

Figure 15.

Tesla's Income Statement Horizontal Analysis

Income Statement- Millions USD	2019	%	2018	%	2017	%	2016
Revenue from Business Activities - Total	24.578	14,52%	21.461	82,51%	11.759	67,98%	7.000,1
Cost of Operating Revenue	20.509	17,74%	17.419	82,66%	9.536,3	76,57%	5.400,9
Gross Profit - Industrials/Property - Total	**4.069,0**	**0,67%**	**4.042,0**	**81,87%**	**2.222,5**	**38,97%**	**1.599,3**
Selling, General & Administrative Expenses - Total	3.989,0	-7,12%	4.294,9	11,42%	3.854,6	70,06%	2.266,6
Operating Profit before Non-Recurring Income/(Expense)	**80,00**	**-131,64%**	**-252,8**	**-84,51%**	**-1.632,1**	**144,57%**	**-667,3**
Financing Income/(Expense) - Net - Total	-641,0	0,62%	-637,0	59,55%	-399,3	143,19%	-164,2
Other Non-Operating Income/(Expense) - Total	45,00	120,91%	20,37	-111,47%	-177,7	-308,61%	85,17
Income before Taxes	**-665,0**	**-33,81%**	**-1.004,8**	**-54,52%**	**-2.209,0**	**195,98%**	**-746,4**
Income Taxes	110,0	90,18%	57,84	-108,37%	-691,1	-2688,39%	26,70
Net Income after Tax	**-775,0**	**-27,06%**	**-1.062,6**	**-30,00%**	**-1.517,9**	**96,36%**	**-773,1**
Income before Discontinued Operations & Extraordinary Items	-775,0	-27,06%	-1.062,6	-30,00%	-1.517,9	96,36%	-773,1
Minority Interest	87,00	-200,59%	-86,49	-69,02%	-279,2	184,50%	-98,13
Income Available to Common Shares	**-862,0**	**-11,69%**	**-976,1**	**-50,24%**	**-1.961,4**	**190,62%**	**-674,9**

Source: Thomson Reuters Eikon, Own elaboration.

The revenues of the company have been increasing over the years, specifically in 2017 by 67.98% and 2018 by 82.52%. In 2019 they increased but lightly, by 14.52%. This percentage of growth indicates that Tesla is a good opportunity to invest in, with potential growth prospects. Nonetheless, if it is evaluated the increment of sales and the increment of the costs of goods sold it is important to note that the last ones have been increasing more than the sales, therefore it is a sign of some problems with the management of the product´s costs. In order to see it in detail, it is observable that in 2017, 2018 and 2019 the COGS increased by 76.57%,

82.66% and 17.74% respectively; each increase higher than the increase in sales mentioned before.

Regarding the general and administrative expenses it is noticeable that in 2017 the increase on them was huge (70.06%), but in 2018 the growth was much lower (11.42%) and even in 2019 when the sales didn´t grow as the company expected, Tesla experimented on them a 7,12% reduction.

In the 4 past years the company experienced losses in every single one, with a peak in 2017 (-1.961,4 million) and -190.62% compared to 2016. Over the recent years, its losses became smaller and experienced a variation of -50% in 2018 compared to 2017 and -11,7% in 2019 compared to 2018.

2.5.2 Vertical analysis.

Balance Sheet

Figure 16.

Tesla's Balance Sheet Vertical Analysis.

Balance Sheets- Millions USD	2019	%	2018	%	2017	%	2016	%
Cash & Short-Term Investments	6.268,0	18,27%	3.685,6	12,39%	3.367,9	11,75%	3.393,2	14,97%
Loans & Receivables - Net - Short-Term	1.324,0	3,86%	949,0	3,19%	515,4	1,80%	499,1	2,20%
Inventories - Total	3.552,0	10,35%	3.113,5	10,47%	2.263,5	7,90%	2.067,5	9,12%
Prepaid Expenses - Short-Term	713,0	2,08%	365,7	1,23%	268,4	0,94%	194,5	0,86%
Other Current Assets - Total	246,0	0,72%	192,6	0,65%	155,3	0,54%	105,5	0,47%
Total Current Assets	**12.103**	**35,28%**	**8.306,3**	**27,93%**	**6.570,5**	**22,93%**	**6.259,8**	**27,62%**
Receivables & Loans - Long-Term	393,0	1,15%	421,6	1,42%	456,7	1,59%	506,3	2,23%
Property, Plant & Equipment - Net - Total	20.199	58,87%	19.691	66,21%	20.492	71,51%	15.037	66,35%
Other Non-Current Assets - Total	1.077,0	3,14%	969,9	3,26%	714,9	2,49%	484,9	2,14%
Intangible Assets - Total - Net	537,0	1,57%	350,7	1,18%	421,7	1,47%	376,1	1,66%
Total Non-Current Assets	**22.206**	**64,72%**	**21.433**	**72,07%**	**22.085**	**77,07%**	**16.404**	**72,38%**
Total Assets	**34.309**	**100,00%**	**29.740**	**100,00%**	**28.655**	**100,00%**	**22.664**	**100,00%**

Source: Thomson Reuters Eikon, Own elaboration.

During all the years analyzed, the balance sheet of Tesla shows a higher amount invested in non-current rather than current assets, however the proportion has been declining year after year. In 2019, its non-current assets accounted for 64.72% of the total investment in the company. Within this group it is important to highlight property, plant and equipment which represented a significant value (58.87%) of the total of 2019 but in 2017 the same ones had a higher proportion (71.51%). This can lead to think that the major part of investments in fixed assets has been done and the amortization expenses won't increase more in the following years.

One the other hand, current assets experienced a growth year by year, representing in 2019 35.28% of its total assets while in 2017, 22.93%. It is important to note that every year, cash and short-term investment have represented the largest proportion of current assets.

Figure 17.

Tesla's Balance Sheet Vertical Analysis.

Balance Sheets- Millions USD	2019	%	2018	%	2017	%	2016	%
Trade Accounts Payable & Accruals - Short-Term	6.676,0	19,46%	4.699,5	15,80%	3.714,8	12,96%	2.917,5	12,87%
Short-Term Debt & Current Portion of Long-Term Debt	1.785,0	5,20%	2.567,7	8,63%	896,6	3,13%	1.150,2	5,07%
Other Current Liabilities - Total	2.206,0	6,43%	2.376,3	7,99%	2.877,6	10,04%	1.606,5	7,09%
Total Current Liabilities	**10.667**	**31,09%**	**9.992,1**	**33,60%**	**7.674,7**	**26,78%**	**5.827,0**	**25,71%**
Debt - Long-Term - Total	11.634	33,91%	9.403,7	31,62%	9.418,4	32,87%	5.978,3	26,38%
Other Non-Current Liabilities - Total	3.898,0	11,36%	3.483,1	11,71%	5.930,0	20,69%	4.953,7	21,86%
Minority Interest - Non-Equity	643,0	1,87%	556,0	1,87%	397,7	1,39%	367,0	1,62%
Total Non-Current Liabilities	**16.175**	**47,15%**	**13.990**	**47,04%**	**15.746**	**54,95%**	**11.299**	**49,85%**
Total Liabilities	**26.842**	**78,24%**	**23.982**	**80,64%**	**23.421**	**81,73%**	**17.126**	**75,56%**
Shareholders' Equity - Total	6.618,0	19,29%	4.923,2	16,55%	4.237,2	14,79%	4.752,9	20,97%
Minority Interest - Equity	849,0	2,47%	834,4	2,81%	997,4	3,48%	785,2	3,46%
Total Shareholders' Equity	**7.467,0**	**21,76%**	**5.757,6**	**19,36%**	**5.234,6**	**18,27%**	**5.538,1**	**24,44%**
Total Liabilities & Equity	**34.309**	**100,00%**	**29.740**	**100,00%**	**28.655**	**100,00%**	**22.664**	**100,00%**

Source: Thomson Reuters Eikon, Own elaboration

Additionally, the second most invested figure within current assets is the inventories maintained by the company representing 10.35% of the total assets in 2019.

Analyzing the proportion of liabilities and equity it is noticeable that Tesla has a high percentage of liabilities compared to its equity. Liabilities, in 2019, represented 78.24% of its total assets while equity just 21.76%. As a result, it is worth saying that the company is highly leveraged.

In 2019, the non-current liabilities were higher than the current ones (47.15% and 31.09%) respectively. The accounts more representative were long-term debt by 33.91% of the total liabilities and equity and accounts payable, by 19.46%. The past recent years show a similar proportion of leverage management, but current and noncurrent liabilities have been changing up and down over the years (as in the horizontal analysis). Furthermore, the percentage of other non-current liabilities was 11.36% of the total in 2019 and 20.69% in 2017.

The shareholders equity has been increasing since 2017 where in that year represented 14,79% of the total assets in 2019 represented 19,29%, a 4,5% increase from 2017.

Income Statement

Figure 18.

Tesla's Income Statement, Vertical Analysis.

Income Statement- Millions USD	2019	%	2018	%	2017	%	2016	%
Revenue from Business Activities - Total	24.578	100,00%	21.461	100,00%	11.759	100,00%	7.000,1	100,00%
Cost of Operating Revenue	20.509	83,44%	17.419	81,17%	9.536,3	81,10%	5.400,9	77,15%
Gross Profit - Industrials/Property - Total	**4.069,0**	**16,56%**	**4.042,0**	**18,83%**	**2.222,5**	**18,90%**	**1.599,3**	**22,85%**
Selling, General & Administrative Expenses - Total	3.989,0	16,23%	4.294,9	20,01%	3.854,6	32,78%	2.266,6	32,38%
Operating Profit before Non-Recurring Income/(Expense)	**80,00**	**0,33%**	**-252,8**	**-1,18%**	**-1.632,1**	**-13,88%**	**-667,3**	**-9,53%**
Financing Income/(Expense) - Net - Total	-641,0	-2,61%	-637,0	-2,97%	-399,3	-3,40%	-164,2	-2,35%
Other Non-Operating Income/(Expense) - Total	45,00	0,18%	20,37	0,09%	-177,7	-1,51%	85,17	1,22%
Income before Taxes	**-665,0**	**-2,71%**	**-1.004,8**	**-4,68%**	**-2.209,0**	**-18,79%**	**-746,4**	**-10,66%**
Income Taxes	110,0	0,45%	57,84	0,27%	-691,1	-5,88%	26,70	0,38%
Net Income after Tax	**-775,0**	**-3,15%**	**-1.062,6**	**-4,95%**	**-1.517,9**	**-12,91%**	**-773,1**	**-11,04%**
Income before Discontinued Operations & Extraordinary Items	-775,0	-3,15%	-1.062,6	-4,95%	-1.517,9	-12,91%	-773,1	-11,04%
Minority Interest	87,00	0,35%	-86,49	-0,40%	-279,2	-2,37%	-98,13	-1,40%
Income Available to Common Shares	**-862,0**	**-3,51%**	**-976,1**	**-4,55%**	**-1.961,4**	**-16,68%**	**-674,9**	**-9,64%**

Source: Thomson Reuters Eikon, Own elaboration.

Through the vertical analysis of Tesla's income statement every year, the cost of goods sold represented more than 80% of the sales. The worst percentage was in 2019, where the cogs were 83,44% of its revenue. Therefore, it is assumed, looking at these numbers, that the company is having issues with the cost of the raw materials, technology, and workforce.

Also, the percentage of the overall expenses has been decreasing year by year. In 2017 was 32.78% of the total sales and in 2019 this number was lower, 16.23%.

As can be seen, in the recent years the company is losing less. In 2019 the percentage of losses with respect to sales was -3.51%, in 2018 -4,55%, and -16.68% in 2017. Thus, Tesla is improving the income-expenses relation over the years.

2.5.3 Ratios.

Figure 19.

Tesla's Profitability Ratios.

PROFITABILITY	Industry mean	2019	2018	2017
Gross Margin	20.5%	16.56%	18.83%	18.90%
EBITDA Margin	9.1%	9.10%	7.70%	0%
Operating margin	4.6%	0.33%	-1.18%	-13.88%
Net margin	3.8%	-3.51%	-4.55%	-16.68%
ROE	7.5%	-11.54%	-16.95%	-37.47%
ROIC		-3.8	-5.6	-8.6
Pretax ROA	4.4%	-2.1	-3.4	-8.6

Source: Thomson Reuters Eikon, Own elaboration.

Tesla has a bad performance in terms of profitability. Comparing its gross margin to the industry, it is seen a lower figure, 16,6% vs 20,5%, respectively. Furthermore, this number is declining over the years, from 18,9% in 2017 to 16,6% in 2019, so, the increase in the cost of goods sold is higher in percentage than the increase on the revenues. This tells that the company, as said before, still does not know how to manage its costs properly. Then, looking at other profitability ratios like the operating margin, net margin, return on equity and return on invested capital are negative because from the operating income (not include) to the net income, Tesla has negative results.

Figure 19.

Tesla's Liquidity Ratios.

LIQUIDITY	Industry Mean	2019	2018	2017
Current Ratio	0.96	1.13	0.83	0.86
Quick ratio	1.23	0.80	0.52	0.56
Cash ratio(Days)	55.3	0.59	0.37	0.44
Working Capital Requirement		1,436	-1,686	-1,104
WC to Assets		4.19%	-5.67%	-3.85%

Source: Thomson Reuters Eikon, Own elaboration.

Regarding the liquidity ratios, Tesla has been performing below the industry average in the quick and current ratios. In relation to the current ratio, which measures the ability of the company to pay its current liabilities with its current assets, Tesla had problems in 2017 and 2018 to pay its short-term debts. This means that every dollar of current liabilities was not covered by its current assets, just 0.86 and 0.83 respectively. In 2019 the company showed a better ratio, 1.13, still below than the industry average. The same issue happened with the quick ratio, which measures almost the same but only considering the most liquid current assets (cash, short term investment, and net accounts receivable).

Analyzing the working capital for 2017 and 2018 is arrived at the same conclusion than before (the company had problems with it due to the high current liabilities compared to its current assets). In 2019 Tesla solved this issue and had a positive working capital by $1,436 Million.

Figure 20.

Tesla's Operating Ratios.

ASSET MANAGEMENT	Industry Mean	2019	2018	2017
A/R Turnover	**4.1**	21.60	29.30	23.30
A/R Turnover days	**88.8**	16.90	12.46	15.80
Inventory Turnover	**8.4**	6.20	6.50	4.21
Inventory Turnover days	**43.5**	59.50	56.50	83.10
A/P Turnover		5.72	6.01	4.49
A/P Turnover in days	**41.5**	64.00	60.90	81.60
Fixed Assets Turnover	**2.32**	1.23	1.07	0.66

Source: Thomson Reuters Eikon, Own elaboration.

Regarding the management of the assets, it is necessary to evaluate what are the conditions set by suppliers and what are the conditions set by the company to its customers. The accounts affected are the accounts receivable, inventories, and accounts payable. The accounts receivable turnover shows how many times the company is collecting its credit from its sales. Tesla has a good asset management because it was higher than the industry that was only 4.1 times compared with Tesla that had an annual average, from 2017 to 2019 of 24.7 times. Nonetheless the company has to be very careful because an A/R Turnover too high could affect the sales growth. Looking at the average days of collecting the accounts receivable it is noticeable that Tesla has been giving to its clients more flexibility to pay, 17 days in 2019 compared to 13 days in 2018.

Analyzing the inventories turnover, which measures the ease of the company to merchandise its inventories into the cost of goods sold, Tesla performed worse than the industry, with an average, over the years, of 5,7 and the worst performance can be found in 2017 (4.4) versus 8.4 times by the industry. The number of days that the company holds its inventories improved in 2018 (57 days) compared to 83 in 2017 and increased it a bit in 2019 (60 days).

Finally, the accounts payable ratio measures how many times in a year the company pays to its suppliers. In this case Tesla pays from 4 to 6 times in a year, meaning that the company delays 69 days of its suppliers' payments.

It is worth noting that over the years the cash conversion cycle is superior to the industry since the company takes, on average, 13 days from making inventory purchases until it receives the money from its sales while the industry takes 55,3 days.

Figure 20.

Tesla's Leverage Ratios.

LEVERAGE	Industry mean	2019	2018	2017
Assets/Equity	2.76	5.78	6.04	6.76
Debt/Equity	0.90	2.03	2.43	2.43
Times interest earned	8.50	0.12	-0.38	-3.46

Source: Thomson Reuters Eikon, Own elaboration.

The debt to equity ratio shows the proportion of the liabilities relative to the total equity the company has. Therefore, Tesla is financing its assets, as seen before, with more debt than equity. Specifically, in 2019 its assets were financed by 2.03 times more debt, thus the company is highly indebted, and it is reaffirmed by the asset to equity ratio.

Regarding the times' interest earned in 2017 and 2018, the company had no earnings to cover its interest expenses due to its negative Ebit. In 2019, with a very low positive EBIT, Tesla only covered 0.1% of its interest, very far from the numbers of the industry.

3 Apple Inc.

3.1 Company Overview

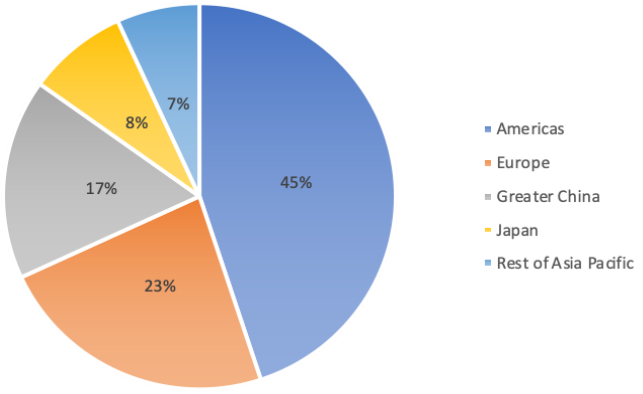
Apple Inc. (Apple) designs, manufactures, and commercializes mobile communication and media devices, personal computers (PCs), portable and wearable devices. The company also offers related software, services, accessories, networking solutions, and third-party digital content and applications. Apple's product portfolio includes iPhone, iPad, Mac, iPod, Apple Watch and Apple TV. It offers various consumer and professional software applications such as iOS, macOS, iPadOS, and watchOS operating systems, iCloud, AppleCare, Apple Pay, and accessories.

Apple sells and delivers digital content and applications through the Apple Store, App Store, Mac App Store, TV App Store, Watch App Store and Apple Music. The company's business operations span the US, Europe, the Middle East and Asia-Pacific. Apple has its headquarters in Cupertino, California, the US.

The distribution of revenues by segment and regions are shown below:

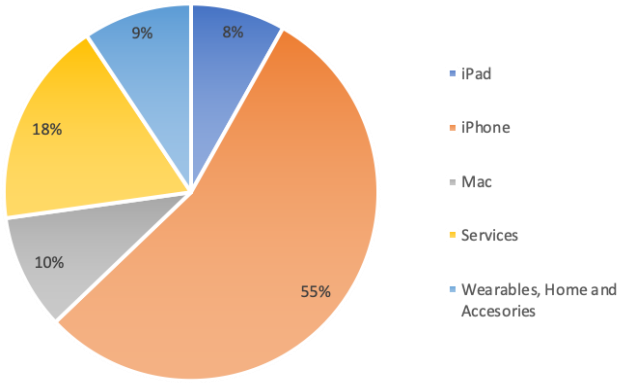
Figure 21.

Apple's revenue by segment (%, FY 2019)



Source: Marketline.

Figure 22.



Apple's revenue by region (%, FY 2019).

Source: Marketline

Worldwide, the most important markets for Apple are the Americas, Europe and China, while by-product, the most representative is the iPhone followed by the services the company provides.

3.2 History

3.2.1 The founding.

Apple was founded in April 1976 by Steve Wozniak, then 26 years old, and Steve Jobs, 21, both college dropouts, in Steve's parents' home on Crist Drive in Los Altos, California.

The company's first product was the Apple I, a computer designed and hand-built entirely by Wozniak, and first shown to the public at the Homebrew Computer Club.

Apple Computer, Inc. was incorporated on January 3, 1977, without Wayne, who had left and sold his company's share back to Jobs and Wozniak for $800 only twelve days after having co-founded Apple. The multimillionaire Mike Markkula provided essential business expertise and funding of $250,000 during the incorporation of Apple. During the first five years of operations, revenues grew exponentially, doubling about every four months. Between September 1977 and September 1980, yearly sales grew from $775,000 to $118 million, an average annual growth rate of 533%.

3.2.2 Timeline.

Figure 23.

Timeline of Apple.

Source: Own Elaboration.

3.3 Industry Analysis

Consumer Electronics Industry

Market Analysis

In order to do this analysis, it is used the most recent information available, which corresponds to the year 2018. The database used is Marketline.

The global consumer electronics market accelerated slightly in 2018, with growth remaining moderate overall. In the forecast period, growth is expected to continue healthily, albeit at a slightly lower rate.

Some markets which were seeing rapid growth were beginning to mature in 2018, whilst the fastest-growing markets were quite evenly distributed between regions. India continues to lead the pack, along with Egypt, Vietnam, and Argentina.

Sales through online pure-play retailers have been the leading growth-driver globally. Increasing levels of internet access in emerging economies and the rise of middle-class consumers with disposable income to spend on smartphones have made e-commerce an increasingly attractive option in this retail market.

The market had total revenues of $1.3tn in 2018, representing a compound annual growth rate (CAGR) of 4.9% between 2014 and 2018. In comparison, the Asia-Pacific and US markets grew with an annual growth rate of 7.6% and 3.2% respectively over the same period, to reach respective values of $528.2bn and $324.2bn in 2018.

A major factor in the Asia-Pacific region, in particular, was the increase in cross-border trading, with consumers often comfortably turning to e-commerce sites based in neighboring countries for their electronics needs. The strength of logistics networks is, however, highly variable: China has seen huge government investment in its logistics network, whilst Indonesia and the Philippines continue to experience significant geographical obstacles. Logistics represents a major area for investment which could unlock huge growth for consumer electronics retail online.

European markets were the most mature and showed the slowest growth, with the notable exceptions of Poland, the Czech Republic, and Portugal. Portugal's growth is slightly above the European average, and the rapid growth of online pure play at the expense of declining specialist stores would appear to put it on a similar trajectory to more mature markets such as the UK.

The UK is the third-biggest retail market, but its rate of growth is well below both the European and the world average. The stagnant performance of high street retailers, with multiple high-profile closures over the last several years, is particularly to blame, and can, in turn, be attributed to the rise of e-commerce.

The communications equipment segment was the market's most lucrative in 2018, with total revenues of $465.6bn, equivalent to 36.8% of the market's overall value. The computer hardware and software segment contributed revenues of $279.3bn in 2018, equating to 22.1% of the market's aggregate value.

Consumer confidence improved in the US, the world's largest national consumer electronics market, thanks to lower levels of unemployment and a higher average wage. This was particularly pronounced in contrast to the economic hardships of the previous decade. On the other hand, consumer spending growth has generally been outpacing wage growth, which is unlikely to be sustainable.

The performance of the market is forecasted to follow a similar pattern with an anticipated CAGR of 4.8% for the five-year period 2018 - 2023, which is expected to drive the market to a value of $1.6tn by the end of 2023. Comparatively, the Asia-Pacific and US markets will grow with CAGRs of 6.7% and 2.9% respectively, over the same period, to reach respective values of $731.5bn and $374.6bn in 2023.

Constraining factors in the forecast period will include the Covid-19 pandemic, and the US-China trade war with an increasing intensity of competition. Consumer electronics have been caught up in President Trump's tariffs on Chinese goods, and this has been particularly damaging to the US market due to its significant dependence on the outsourcing of products and parts to Chinese manufacturers. Asia-Pacific markets besides China have also been impacted collaterally by tariffs on Chinese goods.

In order to illustrate the consumer electronics industry, below it can be found the Apple's electronic market by categories:

Figure 24.

Apple's electronic market by categories.

Category	**2018**	**%**
Communications Equipment	465,589.5	36.8%
Computer Hardware & Software	279,267.3	22.1%
Household Appliances	253,456.1	20.0%
Consumer Electronics	238,102.7	18.8%
Photographic Equipment	29,592.6	2.3%
Total	**1,266,008.2**	**100%**

Source: 2018 Apple's annual report.

Within the electronic market, the most relevant component has been communications equipment in 2018, representing more than 35% worldwide.

Considering that more than 55% of Apple's sales came from the iPhone, which is a mobile device, it can be inferred that Apple's principal industry is the mobile industry.

Market share

Apple is one of the most important smartphone producers worldwide but there are other participants sharing the market. Some of these competitors are Samsung, Huawei, and OPPO.

The next graph shows the smartphone shipments worldwide by vendor:

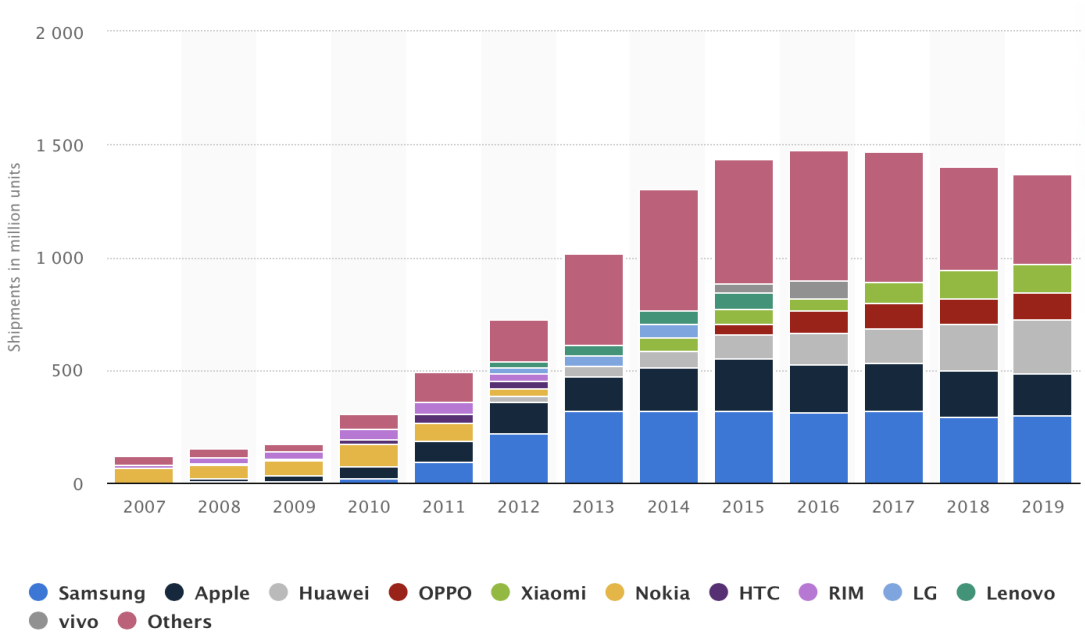


Figure 25.

Smartphone shipments by vendor.

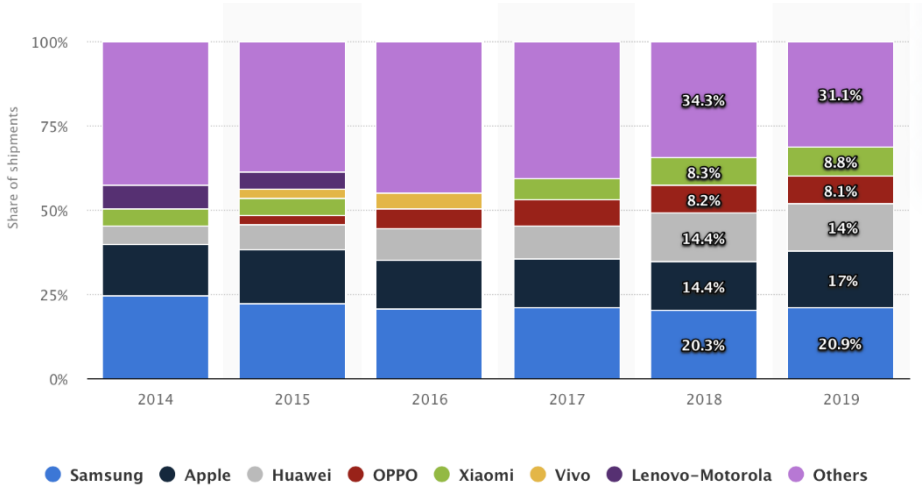
Source: Statista.

The delivery of smartphones worldwide since 2010, reached its peak in 2016. As of these years, the industry has been somewhat stable, showing a point of maturation as it is observed, and a gradual decrease from 2017.

The following graph indicates the distribution of the global smartphone market among its competitors.

Figure 26.

Smartphone Market.



Source: Statista.

As it can be seen, the global smartphone Apple's market share has been stable since 2014 at approximately 15-17% of the global market despite the entry of new competitors.

3.3.1 Analysis PESTEL.

Political Factors

Apple is one of a number of American technology companies that has accumulated a large amount of cash over the years. It had $48.84 billion in the bank on December 2019. This is generating calls for higher corporate taxation in the United States, where income inequality has become a major political issue. It is heavily dependent on lower cost manufacturing in China and social and political unrest in that country could disrupt manufacturing or increase

manufacturing costs on it. Furthermore, there have been calls to restrict Chinese imports in the United States in an effort to boost American manufacturing.

The cost of finding alternatives to Chinese manufacturing could be high for Apple. This dependence makes the company vulnerable and it is possible that this could lead, in the near future, to an increase of its prices due to the restrictions or sanctions imposed by China.

Apple could become the target of growing nationalism and anti-Americanism in China, which could reduce its market share and become a political issue in countries like the United States and Japan if China were to be perceived as a threat.

Apple's dominant position in fields like music could lead to antitrust concerns and political pressure to break the company up or limit its market share.

Economic factors

Increased labor costs in China could take away the cost advantage of some Apple products. Also, stagnating middle-class incomes in some developed countries, including the United States, could shrink the potential market for higher-end consumer goods such as those marketed by Apple.

A strong U.S. dollar could increase exchange rates, making it more expensive for Apple to do business in key markets like Europe and China.

Finally, it is worth mentioning that the economic consequences that the COVID-19 is taking on the population as a whole, as well as on world trade, will significantly affect the company's income.

Social Factors

The biggest growth in consumer spending in the coming decades will be in areas of the world such as Africa where people are unfamiliar with Apple products.

There is a backlash against expensive and stylish products among some customers in the United States and Europe as some ethical concerns about Apple's manufacturing in China could limit its products' appeal among socially conscious consumers.

Apple's close association with China could offend some potential customers in other regions, such as North America and Europe, particularly if tensions with China rise.

Technological Factors

Competitors such as Google and Samsung have demonstrated a strong ability to duplicate Apple's products and services. It took less than a year for Google to roll out a payment app; Android Pay, with the same capabilities as Apple Pay. This means that many of Apple's signature services and products are no longer unique. Many of its new offerings, such as Apple TV, will have a limited market.

The growing use of smartphones and tablets will lower the demand for Apple's popular personal computer. Also, its proprietary operating system can limit the variety of applications available to smartphone users.

The growing capabilities of cybercriminals make Apple's systems less secure and take away one of its strongest competitive advantages: its reputation for high levels of security and safety.

Legal Factors

Apple has recently entered the highly regulated financial services sector via Apple Pay. This could increase the level of regulation and government oversight it faces. By offering financial services, Apple could face increased levels of litigation.

News reports indicate that Apple is planning to enter into another highly regulated sector: automobile manufacturing. Entering into the auto business could increase regulatory, insurance, and litigation costs for Apple. It would depend on the variety of products covered by intellectual property laws, such as software and music. This could do the company highly vulnerable to both piracy and litigation.

Environmental Factors

The biggest environmental issue facing Apple is the disposal of used or non-working electronic devices. The expense of disposing of devices, particularly those containing lithium batteries, could be high. Apple could be forced to assume that expense because of concerns about such devices in landfills.

Pollution and other environmental side effects from manufacturing facilities in China are a growing concern. This could lead to increased regulation and higher manufacturing costs at some point in the future. China's efforts to cut greenhouse gases and limit fossil fuel used, could increase electricity rates and manufacturing costs for Apple in that country. Climate change created by global warming could disrupt transoceanic shipping and Apple's supply chain.

Concerns about energy use and other side effects from data centers could lead to increased regulation and, therefore, the company's costs. Furthermore, Apple is highly vulnerable to increases in electricity costs because of its dependence on data centers and other Internet infrastructure.

3.3.2 Porter's Five Forces.

Apple from its Macintosh computers and operating system, to the iPhone, including the iPad and other products, has achieved massive success as a company despite going through up and down moments on its historical performance.

Apple got the distinction of being the first U.S. company to reach a market capitalization greater than $1 trillion. This success has been attributed to its capacity for innovation and bringing unique products to the market that have captivated its customers.

Below is analyzed the Porter's Five Forces of Apple. That analysis will show that industry competition and bargaining power of buyers are the two strongest marketplace forces that can impact Apple's profitability in the near future. The bargaining power of suppliers, the threat of buyers opting for substitute products, and the threat of new entrants to the marketplace are all weaker elements among the key industry forces.

Industry Competition

The level of competition among the major companies that compete directly with Apple in the technology sector is high. Apple is in direct competition with companies such as Google, Inc., the Hewlett-Packard Company, Samsung Electronics Co., Ltd., and Amazon, Inc. All of these, expend significant capital on research and development (R&D) and marketing, just like Apple. Thus, the competitive force within the industry is strong.

One thing that makes the industry so highly competitive is the relatively low switching cost. It does not require a substantial investment for a consumer to ditch Apple's iPad for an Amazon Kindle or other tablet computers. The threat of marketplace competition is a key consideration for Apple, which it has dealt with primarily through continually developing new and unique products to increase and strengthen its market share position.

Bargaining Power of Buyers

The element of low switching cost referred above strengthens the bargaining power of buyers as a key force for Apple to consider. There are essentially two points of further analysis within this force: the individual bargaining power of buyers and their collective bargaining power. For Apple, individual bargaining power is a weak force, since the loss of any one customer represents a negligible amount of revenue for Apple. However, the collective marketplace bargaining power of customers, the possibility of mass customer defections to a competitor is a strong force.

Apple counters this strong force by continuing to make substantial capital expenditures in R&D, enabling it to keep developing new and unique products such as the Air pods and the Apple Watch, and by building significant brand loyalty. Apple has been very successful in this area of competition, establishing a large customer base that, basically, would not consider abandoning its iPhones in favor of another smartphone competitor.

The threat of New Entrants to the Marketplace

The threat of a new entrant to the marketplace that could seriously threaten Apple's market share is relatively low. This is primarily due to two factors: the extremely high cost of

establishing a company within the industry and the additional high cost of establishing brand name recognition. Any new entrant to the marketplace of personal computing or smartphones needs to have a massive amount of capital just to spend on R&D and manufacturing to develop and produce its own products portfolio prior to ever bringing its products to market and beginning to generate revenue. Such an entrant faces the already identified strong competition within the industry that exists between Apple and its major competitors, all of which are large, well-established firms. The secondary challenge is establishing brand name recognition within an industry that already has several companies, such as Apple, Google, and Amazon, with very strong brand recognition.

Although it is possible some new company, perhaps a Chinese firm with financial backing from the government might eventually challenge Apple's position within the industry, for the immediate future, the likelihood of such a challenger arising is remote. Nonetheless, it is important for Apple to continue strengthening its competitive position through new product development and building brand loyalty to place any potential new entrants to the industry at a larger competitive disadvantage.

Bargaining Power of Suppliers

The bargaining power of suppliers is a relatively weak force in the marketplace for Apple's products. The bargaining position of suppliers is weakened by the high number of potential suppliers for Apple and the large amount bought by the company. Apple is free to choose from among a large number of potential suppliers for component parts for its products. The industries of its parts suppliers, such as the manufacturers of computer processors, are themselves highly competitive.

The switching cost for Apple to exchange one supplier for another is relatively low and not a significant obstacle. Plus, Apple is a major customer for most of its parts suppliers, and, therefore, one of its suppliers are very reluctant to risk losing. This strengthens Apple's position in negotiating with suppliers, while conversely weakening their positions. The bargaining power of component parts suppliers is not a major consideration for either Apple or its major competitors.

Threat of Buyers Opting for Substitute Products

Substitute products, within the framework of Porter's Five Forces Model, are not products that directly compete with a company's products but possible substitutes for them. In the case of Apple, an example of a substitute product is a landline telephone that might be a substitute for owning an iPhone.

This market force is relatively low for Apple due to the fact that most potential substitute products have limited capabilities compared to Apple's products, as in the example of a landline telephone compared to an iPhone that has the capability to do much more than just make telephone calls.

3.4 Business Analysis

3.4.1 SWOT.

Strengths

Distribution Channels

Apple distributes its products both directly and indirectly to reach its customers. Regarding the direct channel, it normally locates its retail shops in high-traffic locations, such as shopping centers or main streets. These shops also help to create a brand image based on luxury and high-quality.

In respect of indirect channels, Apple uses third-party cellular network carriers, wholesalers, retailers, and value-added resellers. Apple also provides these ones some programs to increase their level of product expertise and support services.

R&D

Apple has a really strong R&D department backed up with large investments every year as in this industry innovation is a key factor of success. The company is continuously working on developing new technologies and up-grading their products. These large investments helped the firm to launch its new products at the right moment. Last year, Apple invested $16,217 million in R&D.

Liquidity position

The company has a current ratio higher than its main competitors. This allows to capture new opportunities that arise in the market, as well as acquiring small startups that could increase the value-added of apple.

Weaknesses

Lawsuits

Apple has been accused during these years of including scheduled obsolescence to its products. Basically, the batteries of their products reduced their performance after every update. This could result in huge fines. Apple offered to pay $500 million to settle litigation filed, which is yet to be approved by the US District Judge, meaning that the sentence could be higher in case he doesn't give his approval.

Financial Performance

Its financial performance decreased in 2019. The firm revenues experienced a decline of 2% in 2019 compared to 2018. This decline was due to the decrease in the net sales of the iPhone, its flagship product. Its net income has also been affected by its decrease in sales, it decreased by 7.2% in 2019.

Opportunities

Mobile 5G Commercialization Market

5G subscription is expected to reach 806.9 million by 2023. This reflects that demand for higher speed connectivity is increasing. Apple acquired Intel in 2019, this entailed the acquisition of a large number of technology patents. Thanks to this acquisition the firm has a great advantage in this new technology compared to its competitors.

Strategic initiatives

Apple is taking several strategic initiatives to expand its business. It signed a multi-year contract with Broadcom with the main objective to receive components to use them in its products. This will help to improve its products. Apple acquired some intelligence software start-up to improve the smart home platform and get more expertise on AI than its competitors.

Facilities and stores expansion

Apple is continuously expanding through new regions to increase its revenues. In 2019 the company started the construction of a new campus in Austin. This new facility will be fully run by renewable energy. The firm also opened a store in Marunouchi - the most expensive and large in Japan till date -, and another one in Antronix – the largest one in India -.

Launch of new products

Apple launches a new iPhone every year with some improvements that give higher performances compared to previous versions. Also, the company is starting to launch more affordable versions to increase the range of their products.

Threats

Foreign Exchange risks

Apple operates around the world, so it is vulnerable to the volatility of the US dollar against other currencies. However, in order to minimize the effect of these fluctuations, the firm hedges its currency.

Intense competition

The company operates in a really highly competitive industry. This competition is normally based on price-cutting and, at the same time, on the performance on the devices sold, normally based on technological innovations. These factors lead to a decline in the margins of every company.

Dependence on network

Apple has a great dependence on its network carriers. The termination of the contract with any of its network carriers may expose the company to a huge reduction in its profitability.

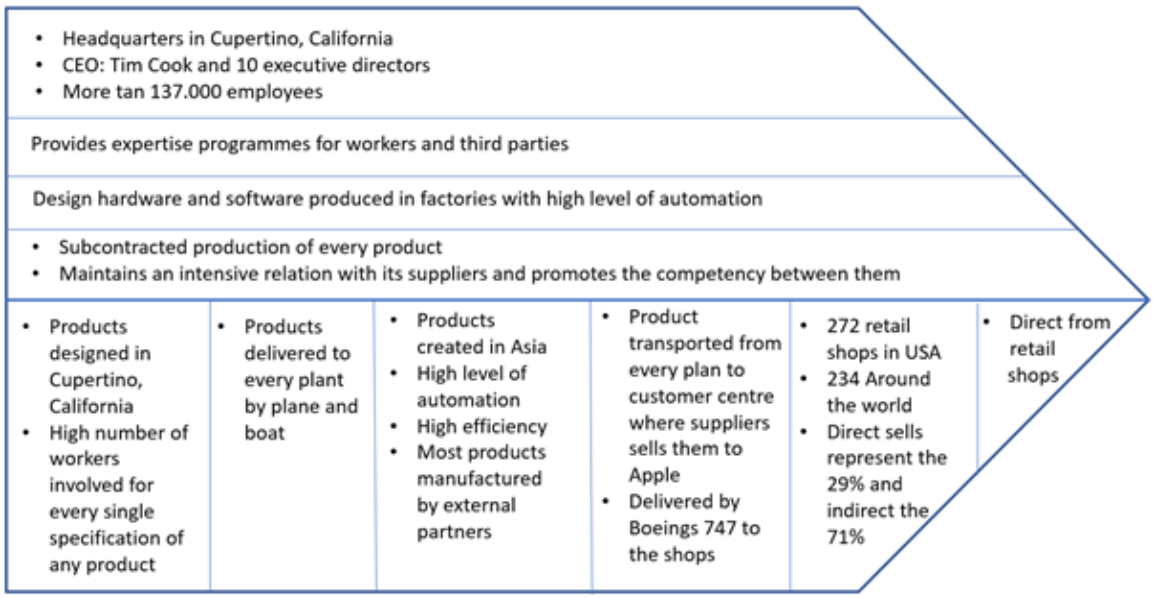
Technological changes

Innovation is crucial to not lose consumer acceptance. One of the major challenges that Apple must face is the introduction of new products with the right technology innovations to satisfy the continuously changing requirements and preferences of its customers.

3.4.2 Value chain.

Figure 27.

Apple's Value Chain.



Source: Own Elaboration.

The previous figure shows the process of value creation of Apple along its primary and support activities.

As it can be seen Apple has more than 137,000 employees, most of them dedicated to the design of every product. The firm has a high focus on the details and innovation of every single product, for this reason, there is a high number of workers involved in the design of every specification of every product.

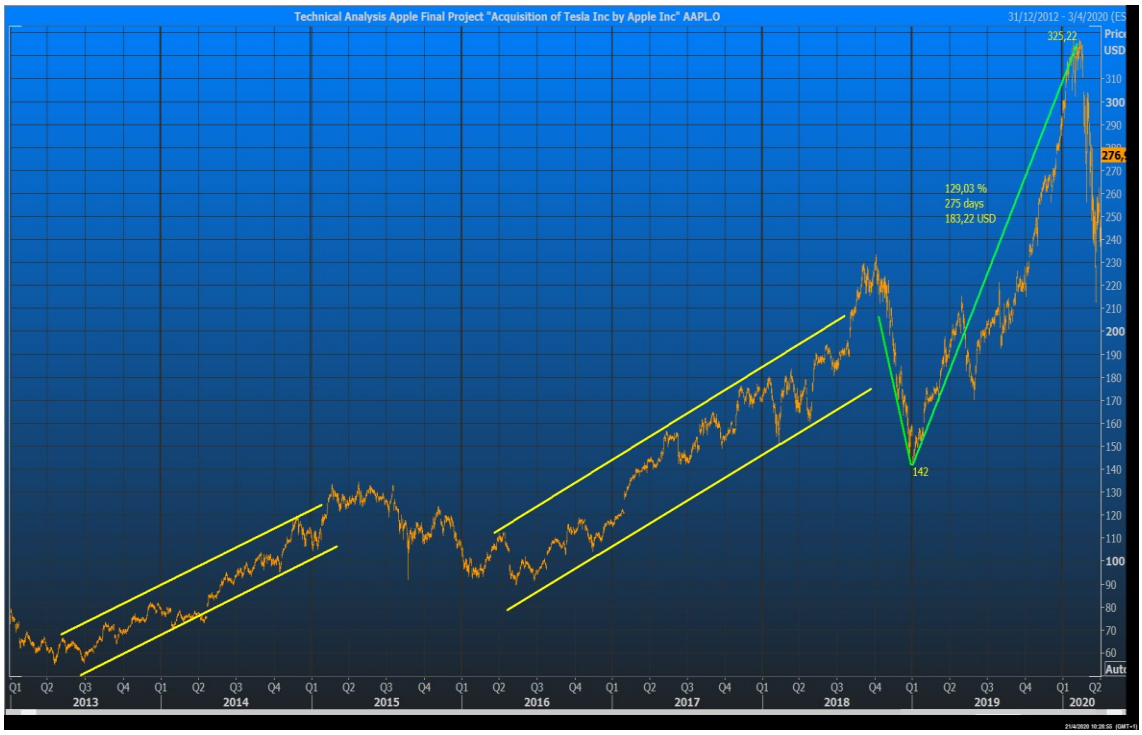
Asia, due to its low cost of labor, is the region where the various Apple products are manufactured. Once the process is complete, they are transported by plane to the different distribution centers where they continue on their way to the more than 600 retail stores the company has spread around the world.

3.4.3 Stock price analysis.

Following it is observable the evolution of the Apple stock price over the years:

Figure 28.

Apple's Technical Analysis.



Source: Thomson Reuters Eikon, Own elaboration.

Regarding Apple stock price, it can be noted that from May 2016 to September 2018 moves on an upstream channel ranging from $89.23 to $227.48 per share, representing an increase of 154.93% in just over two years.

It is seen a correction in the price from $230 to $140 and then re-forms an upward channel, showing an acceleration in the share price from $142 to $325 per share, i.e. an increase of 129.03% in 275 days.

The correction of the last months of 2018 may have been a takeover of investors, but since it accumulated for 2 years a yield of almost 155%, therefore, it makes sense that investors wanted to take the returns of that time. Then, when 2019 started, again the share price soared close to tripling its value in a year which for investors was extremely positive.

3.4.4 Stock ratios analysis.

Figure 29.

Apple and Industry Stock Ratios.

	AVERAGE	APPLE
Hist Price/Rev/Shr (dil.), FY	2.63	3.91
Hist Price/EBITDA/Shr (dil), FY	8.82	13.30
Hist P/E, FY	13.28	18.41
Hist P/E Normalized (dil), FY	15.18	18.41
Hist Price/CF/Shr (dil.), FY	10.45	15.00
Hist Price/FCF/Shr (dil.), FY	29.71	23.55
Hist Price/OCF/Shr (dil.), FY	13.67	14.66
Hist Price/FOCF/Shr (dil.), FY	20.64	22.72
Hist Price/Bk, Tot Eqty, FY	4.12	10.74
Hist Div Yield Comm Stk Primary, %, FY	1.90%	1.37%

Source: Thomson Reuters Eikon, Own elaboration.

In the previous table, it is shown some ratios of Apple compared with an average of the sector. This average hadn't been calculated taking into account all of the companies of the sector, just the ones that have a similar size or similar revenues.

It is observable how these ratios reflect the willingness of the market to pay a higher amount for one share of Apple rather than another share of the sector, even if the return based on the dividends is lower for the Apple ones. However, this can be explained by an appreciation of an Apple share. Normally dividends remain stable during the years – especially in companies of this size – so when the stock price increases its dividend yield decreases.

3.5 Financial Analysis

3.5.1 Horizontal analysis.

Figure 30.

Apple's Balance Sheet, Horizontal Analysis (in $ million).

Apple Balance Sheet	2019	%	2018	%	2017	%	2016
Cash & Cash Equivalents	48.844	88,49%	25.913	27,72%	20.289	-0,95%	20.484
Marketable Securities Short term investment- Total	51.713	28,04%	40.388	-25,06%	53.892	15,47%	46.671
Account Receivables	22.926	-1,12%	23.186	29,72%	17.874	13,46%	15.754
Vendor no-trade receivables	22.878	-11,36%	25.809	45,00%	17.799	31,41%	13.545
Inventories - Total	4.106,0	3,79%	3.956,0	-18,52%	4.855,0	127,72%	2.132,0
Other Current Assets - Total	12.352	2,19%	12.087	-13,27%	13.936	102,44%	6.884,0
Total Current Assets	**162.819**	**23,97%**	**131.339**	**2,09%**	**128.645**	**20,38%**	**106.869**
Marketeable Securities Long term Investment	105.341	-38,32%	170.799	-12,28%	194.714	14,25%	170.430
Property, Plant & Equipment - Net - Total	37.378	-9,51%	41.304	22,26%	33.783	25,08%	27.010
Other Non-Current Assets - Total	32.978	48,00%	22.283	22,59%	18.177	107,57%	8.757,0
Intangible Assets - Total - Net		0,00%		0,00%		-100,00%	8.620,0
Total Non-Current Assets	**175.697**	**-25,04%**	**234.386**	**-4,98%**	**246.674**	**14,83%**	**214.817**
Total Assets	**338.516**	**-7,44%**	**365.725**	**-2,56%**	**375.319**	**16,67%**	**321.686**

Source: Thomson Reuters Eikon, Own elaboration.

Apple's assets have been decreasing since 2017, this was mainly due to the decrease in the total non-current assets that have decreased since that year by 28.77%, with 2019 representing the largest reduction by 25.03%; while total current assets have been increasing since 2016 by 52.35%, with 2019 being the year that increased the most, by 23.96% compared to 2018. The main accounts that have generated this change are discussed below.

On one hand, within total current assets, the account that has increased the most compared to the others was cash & cash equivalents by 88.49%. This large increase was due to the decrease in the net change in operating assets and liabilities, net income from sales and maturities of marketable securities, and the net income from the issuance of term debt. Likewise, the increase in Marketable securities - short term investment - (28.04%) in 2019 was due to the income generated and invested in U.S Treasury Securities (+29,08%), U.S Agency securities (+529%) and commercial paper (this account was one that increased the most from 2018 to 2019 because Apple issued unsecured short-term promissory notes increasing from 910 million to 7.240, an increase of 695%). Apple uses this account to minimize any risk that

generates capital losses, which despite a decrease of 25.05% from 2017 to 2018, managed to increase last year. However, the account that generated the greatest decrease was a receivable non-trade vendor with -11.35%. This was generated since it has non-commercial accounts receivable from some of its manufacturing suppliers.

On the other hand, in the total non-current assets, the most significant account is other non-current assets, which has had an increase every year since 2016. The account that decreased the most was the Marketable Securities account: long-term investment, due to income generated by US Treasury securities. In the USA, in 2018 it had 36,875 while in 2019 it had 14,282, a decrease of -61.27%, and corporate debt securities also decreased by 37.69%.

It should be noted that accounts receivable and the inventories have had changes but they have not been of a great proportion; account receivable has been an account that has remained almost constant throughout the years but inventors had an increase of 127% in 2017, and since then it has decreased by 18.5% in 2018 and increased again by 3.7% in 2019.

Property plant and equipment since 2016 increased, especially in 2018 due to the fact that in that year the company invested in land, buildings and machinery, equipment and, internal-use software. Likewise, in 2019 Apple invested in these segments but the reduction of 9.5% was due to increased accumulated depreciation and amortization.

Figure 31.

Apple's Balance Sheet, Horizontal Analysis (in $ million).

Apple Balance Sheet	2019	%	2018	%	2017	%	2016
Trade Accounts Payable & Accruals - Short-Term	46,236	-17.27%	55,888	26.323%	44,242	-24.04%	58,245
Short-Term Debt & Notes Payable (commericial paper)	5,980.0	-50.02%	11,964	-0.109%	11,977	47.77%	8,105.0
Current Portion of Long-Term Debt including Capitalized Leases	10,260	16.80%	8,784.0	35.222%	6,496.0	85.60%	3,500.0
Other Current Liabilities - Total	43,242	10.05%	39,293	3.134%	38,099	363.83%	8,214.0
Total Current Liabilities	**105,718**	**-8.81%**	**115,929**	**14.993%**	**100,814**	**27.60%**	**79,006**
Debt - Long-Term - Total	91,807	-2.06%	93,735	-3.572%	97,207	28.88%	75,427
Deferred Tax & Investment Tax Credits - Long-Term				-100.000%	31,504	21.08%	26,019
Other Non-Current Liabilities - Total	50,503	3.25%	48,914	316.396%	11,747	-9.53%	12,985
Total Non-Current Liabilities	**142,310**	**-0.24%**	**142,649**	**1.560%**	**140,458**	**22.74%**	**114,431**
Total Liabilities	**248,028**	**-4.08%**	**258,578**	**7.173%**	**241,272**	**24.73%**	**193,437**
Retained Earnings - Total	45,898	-34.80%	70,400	-28.404%	98,330	2.04%	96,364
Common Equity - Contributed	45,174	12.37%	40,201	12.084%	35,867	14.77%	31,251
Total Shareholders' Equity	**90,488**	**-15.55%**	**107,147**	**-20.068%**	**134,047**	**4.52%**	**128,249**
Total Liabilities & Equity	**338,516**	**-7.44%**	**365,725**	**-2.556%**	**375,319**	**16.67%**	**321,686**

Source: Thomson Reuters Eikon, Own elaboration

Apple's total liabilities decreased by 4.08% in 2019 compared to 2018, despite the fact that previous years it had been growing annually; total current liabilities and total non-current liabilities showed the same behavior, a decrease of 8.08% and 0.23% respectively compared to 2018. Likewise, total shareholders' equity grew during the period 2016-2018, but in 2019 it decreased. In general, total liabilities & equity had an increase in the 2016-2017 period, but since then, this has been decreasing until 2019. The main accounts that have generated these changes are analyzed below.

On one hand, we have the most representative increase in the account of other non-current liabilities with a change of 316% between 2017 to 2018 and 3.24% between 2018-2019. This increase has been due to the increase in long-term tax payable. Likewise, other current liabilities have increased permanently every year.

On the other hand, the account that has decreased the most was short term debt & a current portion of long-term debt by 21.72%, mainly due to the decrease that Apple has had in commercial paper liabilities.

The long-term debt account has been decreasing from 2017 to the present. This was because in the first place Apple decreased the debt issuance of 2013-2018 which is composed of floating-rate notes and fixed-rate notes that decreased 40.2% and 6.9% respectively from 2018 to 2019. Also, Apple made another debt issuance in 2019 of 7000 USD. These actions generated that the total term debt in 2019, decreased 2.4%, furthermore Apple increased the current portion of term debt.

Total Shareholders' Equity has decreased radically due to the decrease in the company's net income that remained as retained earnings which have been decreasing since 2017 and compared to 2018, decreased by 34.80%. Likewise, the drastic decrease in retained income, which had been low every year resulted in a reduction of 28% in 2018 and in 2019 of 43%.

Income statement

Figure 32.

Apple's Income Statement, Horizontal Analysis (in $ million).

Apple Income Statement	2019	%	2018	%	2017	%	2016
Revenue from Business Activities - Total	**260,174**	**-2.04%**	**265,595**	**15.86%**	**229,234**	**6.30%**	**215,639**
Cost of Revenues - Total	161,782	-1.21%	163,756	16.10%	141,048	7.36%	131,376
Gross Profit - Industrials/Property - Total	98,392	-3.38%	101,839	15.48%	88,186	4.66%	84,263
Selling, General & Administrative Expenses - Total	34,462	11.38%	30,941	15.27%	26,842	10.74%	24,239
Operating Profit before Non-Recurring Income/(Expense)	**63,930**	**-11.61%**	**70,898**	**15.57%**	**61,344**	**2.20%**	**60,024**
Financing Income/(Expense) - Net - Total	1,385.0	-41.72%	2,446.0	-15.01%	2,878.0	13.17%	2,543.0
Other Non-Operating Income/(Expense) - Total	422.0	-72.22%	-441.0	231.58%	-133.0	-88.87%	-1,195.0
Income before Taxes	**65,737**	**-11.68%**	**72,903**	**13.75%**	**64,089**	**4.43%**	**61,372**
Income Taxes	10,481	-8.77%	11,857	-24.66%	15,738	0.34%	15,685
Income Taxes for the Year - Current	10,821	-326.98%	45,962	370.34%	9,772.0	-9.07%	10,747
Income Taxes - Deferred	-340.0	683.78%	-34,105	-671.66%	5,966.0	20.82%	4,938.0
Net Income after Tax	**55,256**	**-12.67%**	**61,046**	**26.26%**	**48,351**	**5.83%**	**45,687**
Extraordinary Activities - after Tax - Gain/(Loss)			-1,515.0				
Net Income Available to Common Shares	**55,256**	**-9.36%**	**59,531**	**23.12%**	**48,351**	**5.83%**	**45,687**

Source: Thomson Reuters Eikon, Own elaboration.

Figure 33.

Apple's Composition of Revenues (in $ million).

Disaggregated Revenue	2019	%	2018	%	2017	%	2016
iPhone	**$ 142,381**	-13.6%	**$ 164,888**	18.3%	**$ 139,337**	1.93%	**$ 136,700**
MAC	**$ 25,740**	2.2%	**$ 25,198**	-1.5%	**$ 25,569**	11.99%	**$ 22,831**
iPad	**$ 21,280**	15.8%	**$ 18,380**	-2.2%	**$ 18,802**	-8.85%	**$ 20,628**
Wearables, home and accessories	**$ 24,482**	40.9%	**$ 17,381**	35.5%	**$ 12,826**	15.22%	**$ 11,132**
Services	**$ 46,291**	16.5%	**$ 39,748**	21.6%	**$ 32,700**	34.30%	**$ 24,348**
Total net sales	**$260,174**		**$265,595**		**$229,234**		**$215,639**

Source: Apple's Annual Report, Own elaboration.

As it can be seen in the income statement, Apple decreased its revenues in 2019, by 2.04%, while in the previous year, the increase was by 15.86%.

On the one hand, these changes have been mainly caused by changes in sales of its main technological product, the iPhone, which is also its main source of income. Its demand increased in 2017 and 2018 by 1.93% and 18.3% respectively, but in 2019 decreased by 13.6%. On the other hand, the sales generated by mac have maintained a constant increase over the years. Likewise, the revenue from wearables, home, and accessories was the one that had the biggest impact in its income in 2019, by 40.9% and compared to 2016 an increase of 219%. iPad has been the product that has had the lowest sales compared to other items, however, in 2019 it managed to overcome this decrease by increasing its sales by 15.8%.

Gross profit increased in 2017 by 4.65% and in 2018 by 15.48%, while in 2019 it decreased by 3.38% due to the drop in the company sales. Likewise, the cost of revenues increased from 2016 to 2018 but in 2019 it also decreased due to the drop in sales that Apple had.

Selling, general and administrative expenses have increased steadily over the years. On the one hand, it has been due to the fact that the company has high costs in research and development, which increased by 13% compared to 2018, since Apple seeks to obtain future growth and thus improve its competitive position in the sector. On the other hand, the company increased its expenses related to personal and in marketing and advertising departments. It is important to note that over the years administrative costs are increasing more and more.

It is from the increase in these costs and the reduction in gross profit that the 11.6% decrease in operating profit before non-recurring income was generated. This account, since 2016, had increased year by year, in 2017 by 2.19% and in 2018 by 15.57% (the main cause of sales). Apple also went from having non-operating expenses in the years 2016-2018 to generating income in 2019 despite the fact that the financed income they had in the year 2019 decreased by 41.7% compared to the years 2018, which had also decreased by 15% compared

to 2017. Taxes have decreased since 2017, in 2018 they decreased by 24% and in 2019 by 8.73%.

Finally, all of the aforementioned results in net income, in 2019, compared to the previous year decreased by 9.35%, while in 2018 increased by 23.12%.

3.5.2 Vertical analysis.

Balance sheet

Figure 34.

Apple's Balance Sheet, Vertical Analysis (in $ million).

Apple Balance Sheet	2019	%	2018	%	2017	%	2016	%
Cash & Cash Equivalents	48,844.00	88.49%	25,913	27.72%	20,289	-0.95%	20,484	6.37%
Marketable Securities Short term investment- Total	51,713.00	28.04%	40,388	-25.06%	53,892	15.47%	46,671	14.51%
Account Receivables	22,926.00	-1.12%	23,186	29.72%	17,874	13.46%	15,754	4.90%
Vendor no-trade receivables	22,878.00	-11.36%	25,809	45.00%	17,799	31.41%	13,545	4.21%
Inventories - Total	4,106.00	3.79%	3,956.0	-18.52%	4,855.0	127.72%	2,132.0	0.66%
Other Current Assets - Total	12,352.00	2.19%	12,087	-13.27%	13,936	102.44%	6,884.0	2.14%
Total Current Assets	**162,819.00**	**23.97%**	**131,339**	**2.09%**	**128,645**	**20.38%**	**106,869**	33.22%
Marketeable Securities Long term Investment	105,341.00	-38.32%	170,799	-12.28%	194,714	14.25%	170,430	52.98%
Property, Plant & Equipment - Net - Total	37,378.00	-9.51%	41,304	22.26%	33,783	25.08%	27,010	8.40%
Other Non-Current Assets - Total	32,978.00	48.00%	22,283	22.59%	18,177	107.57%	8,757.0	2.72%
Intangible Assets - Total - Net		0.00%		0.00%		-100.00%	8,620.0	2.68%
Total Non-Current Assets	**175,697.00**	**-25.04%**	**234,386**	**-4.98%**	**246,674**	**14.83%**	**214,817**	66.78%
Total Assets	**338,516.00**	**-7.44%**	**365,725**	**-2.56%**	**375,319**	**16.67%**	**321,686**	

Source: Thomson Reuters Eikon, Own elaboration.

This analysis begins based on the fact that the impact that total non-current assets have on the total assets has always been greater than the total current assets in all the years; Although

in the years prior to 2019 it had a greater impact (between 64% and 66%), in the last year its impact decreased to 51.9%, while total current assets between 2018 and 2016 were between 35% and 33%, in 2019 it became 48%, having a significant increase. To analyze the impact that each account had on total assets, it is important to start breaking down the differences that were generated year by year.

In 2016, the accounts with the greatest impact were marketable securities long term investment by 52.9% and marketable securities short term investment by 14.5%; while the one with less impact was inventories with 0.66%.

In 2017, the accounts with the greatest impact were marketable securities long term investment with 51.8% and marketable securities short term investment with 14.35%; while the one with the least impact was inventories with 1.29%.

In 2018, the larger accounts were marketable securities, long term investment with 46.7% and property, plant & equipment with 11.29%; while the one with the least impact was inventories with 1.08%.

In 2019, the accounts with the greatest impact were marketable securities long term investment with 31.1%, marketable securities short term investment with 15.27% and cash-cash equivalents with 14.42%; while the one with the least impact was inventories with 1.21%.

It is important to highlight from the above that the account that has had a great impact on the total asset of the company was marketable securities long term investment, which through the years has always been one of the main sources of non-current assets. On the other hand, Apple's inventories have always been very low, because it manages a very good supply chain, through a first-in-first-out system, which makes the company be very efficient.

Figure 35.

Apple's Balance Sheet, Vertical Analysis (in $ million).

Apple Balance Sheet	2019	%	2018	%	2017	%	2016	%
Trade Accounts Payable & Accruals - Short-Term	46,236	13.66%	55,888	15.28%	44,242	11.788%	58,245	18.11%
Short-Term Debt & Notes Payable (commericial paper)	5,980.0	1.77%	11,964	3.27%	11,977	3.191%	8,105.0	2.52%
Current Portion of Long-Term Debt including Capitalized Leases	10,260	3.03%	8,784.0	2.40%	6,496.0	1.731%	3,500.0	1.09%
Other Current Liabilities - Total	43,242	12.77%	39,293	10.74%	38,099	10.151%	8,214.0	2.55%
Total Current Liabilities	**105,718**	**31.23%**	**115,929**	**31.70%**	**100,814**	**26.861%**	**79,006**	**24.56%**
Debt - Long-Term - Total	91,807	27.12%	93,735	25.63%	97,207	25.900%	75,427	23.45%
Deferred Tax & Investment Tax Credits - Long-Term		0.00%		0.00%	31,504	8.394%	26,019	8.09%
Other Non-Current Liabilities - Total	50,503	14.92%	48,914	13.37%	11,747	3.130%	12,985	4.04%
Total Non-Current Liabilities	**142,310**	**42.04%**	**142,649**	**39.00%**	**140,458**	**37.424%**	**114,431**	**35.57%**
Total Liabilities	**248,028**	**73.27%**	**258,578**	**70.70%**	**241,272**	**64.285%**	**193,437**	**60.13%**
Retained Earnings - Total	45,898	13.56%	70,400	19.25%	98,330	26.20%	96,364	29.96%
Common Equity - Contributed	45,174	13.34%	40,201	10.99%	35,867	9.56%	31,251	9.71%
Total Shareholders' Equity	**90,488**	**26.73%**	**107,147**	**29.30%**	**134,047**	**35.72%**	**128,249**	**39.87%**
Total Liabilities & Equity	**338,516**		**365,725**		**375,319**		**321,686**	

Source: Thomson Reuters Eikon, Own elaboration.

The impact of total non-current liabilities through the years always have been the one that most influenced total liabilities & equity since 2017 (37.4%), 2018 by 39.0%, and 2019 by 42.03%. Since 2016, total shareholders' equity had the greatest impact on the total liabilities and equity, by 39.8%. On the one hand, total current liabilities in 2016 and 2017 were one with the less weight, since it represented only 24.5% in 2016 and 26.8% in 2017, while total non-current liabilities were 37.4% in 2017 and 35.5% in 2016, and total shareholders' equity was 35.72% and 39.87%. On the other hand, as of 2018, total shareholders' equity decreased its impact, becoming the account that least influenced total liabilities & equity, contributing only 26.73% in 2019 and 29.3% in 2018; Likewise, total current liabilities increased their impact, going from 31.6% in 2018 to 31.2% in 2019.

During the last three years, the most representative account within total liabilities has been long term debt, 23.4% in 2016, 25.9% in 2017, 25.6% in 2018, and 27.1% in 2019. This was due to its two large long-term debts acquired in 2013 (which were completed in 2018) and the new debt acquired in 2019. Likewise, trade accounts payable & accruals also had a great

impact on total liabilities, decreasing through the years, starting in 2016 with an impact of 18.1% and reducing it in 2019 by 13.6%. On the other hand, the least representative accounts within total liabilities were the current portion of long-term debt and short term debt & notes payable.

Income statement

Figure 36.

Apple's Income Statement, Vertical Analysis (in $ million).

Apple Income Statement	2019	%	2018	%	2017	%	2016	
Revenue from Business Activities - Total	**260,174**	**100.0%**	**265,595**	**100.00%**	**229,234**	**100.00%**	**215,639**	**100.00%**
Cost of Revenues - Total	161,782	62.2%	163,756	61.66%	141,048	61.53%	131,376	60.92%
Gross Profit - Industrials/Property - Total	98,392	37.8%	101,839	38.34%	88,186	38.47%	84,263	39.08%
Selling, General & Administrative Expenses - Total	34,462	13.2%	30,941	11.65%	26,842	11.71%	24,239	11.24%
Operating Profit before Non-Recurring Income/(Expense)	**63,930**	**24.6%**	**70,898**	**26.69%**	**61,344**	**26.76%**	**60,024**	**27.84%**
Financing Income/(Expense) - Net - Total	1,385.0	0.5%	2,446.0	0.92%	2,878.0	1.26%	2,543.0	1.18%
Other Non-Operating Income/(Expense) - Total	422.0	0.2%	-441.0	-0.17%	-133.0	-0.06%	-1,195.0	-0.55%
Income before Taxes	**65,737**	**25.3%**	**72,903**	**27.45%**	**64,089**	**27.96%**	**61,372**	**28.46%**
Income Taxes	10,481	4.0%	11,857	4.46%	15,738	6.87%	15,685	7.27%
Income Taxes for the Year - Current	10,821	4.2%	45,962	17.31%	9,772.0	4.26%	10,747	4.98%
Income Taxes - Deferred	-340.0	-0.1%	-34,105	-12.84%	5,966.0	2.60%	4,938.0	2.29%
Net Income after Tax	**55,256**	**21.2%**	**61,046**	**22.98%**	**48,351**	**21.09%**	**45,687**	**21.19%**
Extraordinary Activities - after Tax - Gain/(Loss)		0.0%	-1,515.0	-0.57%		0.00%		0.00%
Net Income Available to Common Shares	**55,256**	**21.2%**	**59,531**	**22.41%**	**48,351**	**21.09%**	**45,687**	**21.19%**

Source: Thomson Reuters Eikon, Own elaboration.

As it is observable, Apple's net income has remained constant from 2016 to 2019, which has been between 21% to 22%.

Operating expenses, which include the cost of revenues and selling, general & administrative expenses had the biggest negative impact on the net income over the years. Within operating expenses, the cost of revenue was the largest expense because from 2016 to

2019 it represented more than 60% of Apple's total revenue. Furthermore, selling, general & administrative expenses also increased, inversely proportional, in 2019 by 13.2% being in the previous years around 11.5%.

Despite all the costs that Apple had, over the years its net margin has always been greater than 20% which leads us to say that it is a highly profitable company.

3.5.3 Ratios.

Figure 37.

Apple's Liquidity Ratios.

LIQUIDITY	Industry Mean	2019	2018	2017	2016
Current Ratio	1.66	1.54	1.13	1.28	1.35
Quick ratio	1.34	1.50	1.10	1.23	1.33
Cash ratio		0.46	0.22	0.20	0.26
Working Capital		$ 57,101	$ 15,410	$ 27,831	$ 27,863
Cash Convertion Cycle		-39.72	-43.71	-45.71	-44.53

Source: Thomson Reuters Eikon, Own elaboration.

The aim to analyze liquidity ratios is to provide an evaluation and overview of how Apple manages its sources in order to pay its current liabilities.

From these ratios, the most important thing to highlight is that Apple has a very good working capital since it has the ability to face its current liabilities with its current assets. From the current ratio, it can be seen that Apple is able to pay off its short-term debts which have increased year by year.

Analyzing the quick ratio, it is observable that, in 2019, for each dollar of its current liabilities, the company had $1.50 of quick assets, so if the company come due immediately it can offset all of them. It is important to note that since 2016 there has always been a decrease in this ratio, but in 2019 the company managed to increase it. Lastly, regarding the cash ratio, it significantly increased, showing the ability to pay its current liabilities from cash and cash equivalents.

It is important to compare these proportions with those of the industry since it shows the efficiency that Apple has in paying its current obligations through its current assets. On the one hand, Apple had a lower current ratio compared to the industry, showing that it was less able to pay its current obligations across all of its assets compared to its competitors. On the other, Apple had a higher quick ratio, proving that, compared to its competitors, it can use all of its assets that are more easily converted into cash to pay for its current liabilities.

In conclusion, these liquidity ratios demonstrate that Apple can meet all of its short-term liabilities in a timely and efficient manner. Also, the company had a pretty good operating cycle in 2019, ($57.10), which increased year by year.

Figure 38.

Apple's Leverage Ratios.

LONG TERM DEBT	Industry Mean	2019	2018	2017	2016
Leverage ratios					
Debt Ratio		73.27%	70.70%	64.28%	60.13%
Debt to Equity		2.741	2.413	1.800	1.508
Interest coverage ratio	5.0	17.88	21.88	26.41	41.23

Source: Thomson Reuters Eikon, Own elaboration.

Regarding the situation of how Apple deals with its debt, following it is analyzed its leverage ratios.

Through the debt indices, it is worth to say that the company has a moderate degree of financial leverage, in addition, it shows that it uses a lot of debt to finance its assets. This may indicate that Apple has a possible risk of insolvency since its debt is very high and increases year by year.

The debt to equity ratio shows us that the company is financing almost all of its activities through the external debt it is acquiring and not through equity. Since 2016 this ratio is increasing, meaning that the company opts for external financing rather than issue more shares.

By means of interest coverage ratio, it is worth to say that income before interest and taxes was 17.88 times the amount needed for its interest expenses. This has been decreasing over the years which shows that the return the company gets on the new debt is greater than the interest it has to pay on it.

Figure 39.

Apple's Operating Ratios

ASSET MANAGEMENT	Industry Mean	2019	2018	2017	2016
A/R Turnover	5.5	5.49	6.27	7.06	7.23
A/R Turnover days	66.8	66.68	58.34	52.86	50.61
Inventory Turnover	6.1	40.13	37.17	40.37	58.64
Inventory Turnover days	59.7	9.12	9.85	9.24	6.24
A/P Turnover		3.17	3.27	3.46	3.61
A/P Turnover in days	75.7	115.52	111.90	107.81	101.38

Source: Thomson Reuters Eikon, Own elaboration.

Above it can be found the analysis of the asset management ratios in order to determine and evaluate Apple's ability to sell its merchandise inventory and its ability to collect receivables and payables.

First is the analysis of the rotation of the accounts receivable. This ratio has been decreasing since 2016 showing that the company is taking longer and longer to receive cash from its customers. In 2019, Apple collected accounts receivable 5.49 times, (every 66.68 days) showing that Apple has a poor collection process.

Continuing with the inventory turnover it is observable that Apple has a facility to sell its inventory in a short time. The number of days in which the inventory became a sale has increased, going from 6.24 in 2016 to 9.12 in 2019.

Finally, Apple paid its bills 3.17 times a year, which shows that it lasts many days without paying its suppliers. This relationship has no significant changes over the years.

In conclusion, Apple collects its accounts receivable faster than it takes to pay its accounts payable, showing that the company has a very good management in the money collected from its customers having time to pay its suppliers without any trouble. Likewise, Apple has great inventory management, because its operational cycle is very effective.

Below it is analyzed the profitability ratios in order to determine and measure the way Apple generates income (profit) through its net sales.

Figure 40.

Apple's Profitability Ratios.

PROFITABILITY	Industry mean	2019	2018	2017	2016
Gross Profit Margin	40,20%	37,82%	38,34%	38,47%	39,08%
Operating Profit Margin	6,10%	24,57%	26,69%	26,76%	27,84%
Net Profit Margin	4,80%	21,24%	22,41%	21,09%	21,19%

Source: Thomson Reuters Eikon, Own elaboration.

Regarding the gross profit margin, it is seen that over the years it has been reduced, however, it was still high enough to cover its operating expenses and also earn net income. When comparing it with the industry, it is seen a lower number but not so far from the average.

Apple's net profit margin has been decreasing over the years, despite this, the business earned, in 2019, 21.24% on every dollar from its sales. By comparing this ratio with the industry, it is noted the great competitive advantage that Apple has compared to its direct competitors, which its net profit margin was 4.8%.

4 Valuation of Tesla

The objective of this section is to know, through different methods and procedures, the enterprise value of Tesla. Firstly, the cash flow discount method will be used, explaining and detailing the variables used as well as their sources and the reason for their choice. Next, the multiples method will be shown, both for sales and EBITDA. Finally, the value of the company's equity will be found once the value of Tesla will be known.

Additionally, all the data for the analysis, except the market value of the equity, which, in order to be as accurate as possible is taken into account on April 3, 2020, are gathering until December 31, 2019, thus the valuation will be calculated at that specific day.

4.1 Discounted Cash Flow Method

The discounted cash flow or fundamental method is one of the most used when evaluating companies. The formula is equal to the sum of the forecasted free cash flows in each period divided by one plus the discounted rate, called WACC, raised to the power of the period number plus a terminal value. In order to understand it better, below is illustrated:

$$Enterprise\ value = Present\ value = \frac{CF1}{1+r} + \frac{CF2}{(1+r)^2} + \cdots + \frac{CFn}{(1+r)^n} + Terminal\ Value$$

Where:

CF = FCF; r = WACC

Each of the variables used are explained and detailed below:

4.1.1 Free cash flow.

The free cash flow is the amount of money that enters or leaves the company in a period of time, determined by the payments to the suppliers and creditors and the collections of the clients and debtors. It is important to note that when a valuation is made, free cash flows are generally projected to 5 years. So as to obtain it, the following formula is used:

NOPLAT (Net Operating Profit Less Adjusted Taxes) + Amortization & Depreciation - Variation in Non-Cash Working Capital - Capex

a) NOPLAT: is the margin obtained after subtracting the different operating costs from income. As a final process, taxes are subtracted from this margin.

b) Amortization & Depreciation are the expenses that the fixed assets suffer at the end of each period. Since they are not monetary (there is no cash outflow but rather a depreciation) they are added to compensate for their previous deduction in the calculation of the NOPLAT.

c) Variation in Non-Cash Working Capital: it is related to the sales of the company. It is the sum of the inventory plus accounts receivables minus accounts payable. Cash is not included because it does not grow in the same proportion that sales do. In the formula, it appears subtracting because an increase in net-working capital represents an outflow of cash.

d) CAPEX: are the funds used by a company in order to acquire new physical assets such as buildings, machinery, equipment, etc. They are deduced from the formula because they represent an outflow of cash.

4.1.2 WACC.

The weighted average cost of capital (WACC) is used in the valuation of a company as the discount rate. It is calculated as follows:

$$WACC = \frac{E}{V} * Re + \frac{D}{V} * Rd * (1 - Tc)$$

Where:

E = Market value of Equity

D = Market value of Debt. It is assumed that the market value of Debt equals to its Book-Value

V = E+D

Re = Cost of Equity

Rd = Cost of Debt

Tc = Tax rate

In order to calculate the WACC is needed to know some variables such as cost of equity, cost of debt, Market Value of Equity, Market Value of Debt, and the appropriate tax rate, which, all of them are not present in the financial statements.

a) Market value of Equity

With the aim to calculate the market value of equity for listed companies, it is used the price per share of the company on April 3rd 2020, multiplied by its outstanding number of shares. It is important to highlight and be careful not to use the book value. Below it is shown the calculation:

$480.01 (per share) x 184,109,586 (number of outstanding shares) = $88,374 million (M).

The market value of equity for Tesla at 3rth of April is: **$88,374M.**

b) Cost of Equity

The cost of equity determines the minimum acceptable return for an investor, who wants to buy shares of the company to compensate for the risk assumed. In order to calculate it, is used the CAPM formula plus the size premium of the country in which the company operates. In the case of Tesla, taking into consideration its sales volume, the countries in which it has the largest market are US, Europe, and China, so, these geographies have been taken into account. It is important to note that Europe and US have approximately the same cost of equity, therefore the analysis only distinguished the US from China. The formula used is the following:

Ke = Rf (today) + Beta (Equity Risk Premium + Country Risk Premium) + Size Premium

Where:

Beta = Beta of the Equity

In order to achieve the Cost of Equity, the first factor determined is the Risk-Free (Rf) for both countries, which is obtained taking the 30 years Bond Yield, in that case, 1.21% (US) and 3.28% (China). Then, it is taken as an approximation of the main data sources (Damodaran and Duff and Phelps) for the Equity Risk Premium which coincides to attribute a 6%. The China Country Risk Premium is 1.29%, which is added in the CAPM formula while EUA is 0%. Finally, it is needed the Beta of the company, which measures the company's exposure to the movement of the market. Taking Eikon data, the beta of Tesla is 0.74 (5 years average). Finally, the company size premium is not taken into consideration, because Tesla is already a big company thus, this adjustment is not needed.

Below is the table with the data obtained:

Figure 41.

Cost of Equity Valuation.

Cost of equity, DATA (03/04/2020)		
Region	**USA & EU**	**CHINA**
30 Years Bond Yield	1.21%	3.28%
Equity Risk Premium	6.0%	6.0%
Country Risk Premium	0%	1.29%
Beta de Eikon (5 years)	0.74	0.74

Source: Thomson Reuters Eikon, Own elaboration.

Adding those data to the CAPM formula previously seen the two costs of equity are:

•For USA & EU: **5.65%**

•For China: **8.68%**

These two numbers will be incorporated later into the WACCs formula to obtain the two WACCs for both countries, China and the US (Including Europe).

c) Market value of Debt

For the market value of debt, in this valuation it is used the company's Net Value of Debt, which is extracted from Eikon and is calculated as follows:

The sum of:

- Total Debt
- Redeemable Preferred Stock
- Preferred Stock – Non-Redeemable, Net
- Minority Interest

Less Cash and Short-Term Investments, further delineated into:

- Cash
- Cash & Equivalents
- Short-Term Investments

In the case of Tesla, the total debt equals to $13,419M. Adding minority interest of debt equals to $1,492M and deducting the cash and short-term investment equal to $6,268M, it is obtained a value of net debt of **$8,640M** for December 2019.

d) Cost of Debt

Regarding Tesla's cost of debt, the effective interest rate is calculated as follows:

$$Kd = \frac{Interest\ Expense\ 2019}{((Interest + Bearing\ Debt\ initial\ 2019) + (Interest + Bearing\ Debt\ final\ 2019)) / 2}$$

$$Kd = \frac{\$685.00}{(\$13,074.47 + \$\ 13,568.24) / 2}$$

In this formula are considered all the interest expenses included in the income statement and all the interest-bearing obligations including all short term and long-term financial debt.

Applying this formula, the cost of debt obtained and used to determine the WACC is **5.05%**.

e) Tax rate

The US imposes a tax rate of 21% on the resident corporations but due to the fact that Tesla didn't reach any positive result since its creation, it is not proper to use this rate for the WACC. At the same time, it is not adequate to consider the average of the taxes paid by the company in the past years as it is expected for Tesla to reach positive results in the future.

Taking these two facts into consideration, it is decided to use the tax rate provided by Eikon. Eikon estimations consider the amount of taxes paid in the past years, the projections of positive results assumed in the valuation, and the US law regarding the compensation of carried losses. Having said so, the tax rate used to determine the WACC is **12.66%.**

Tesla's WACC:

Plugging the numbers found into the WACC formula, for the two countries is obtained:

$$Wacc\ USA/EU = \frac{\$88{,}374{,}442{,}375.86}{\$\ 97{,}014{,}442{,}375.86} * 5.657\% + \frac{\$\ 8{,}640{,}000{,}000}{\$\ 97{,}014{,}442{,}375.86} * 5.05\% * (1 - 12.66\%)$$

WACC USA & EU: **5.54%**

$$Wacc\ China = \frac{\$88{,}374{,}442{,}375.86}{\$\ 97{,}014{,}442{,}375.86} * 8.683\% + \frac{\$\ 8{,}640{,}000{,}000}{\$\ 97{,}014{,}442{,}375.86} * 5.05\% * (1 - 12.66\%)$$

WACC China: **8.30%**

Tesla DCF Results:

The part of the value of the company that is calculated by discounting the free cash flows expected until 2024 for the two regions is as follows:

$$Enterprise\ value\ (USA/EU) = \frac{-542.90}{1 + 0.055459} + \frac{2246.84}{(1 + 0.055459)\text{^}2} + \frac{3542.04}{(1 + 0.0555459)\text{^}3} + \frac{3884.73}{(1 + 0.05459)\text{^}4} + \frac{3262.61}{(1 + 0.055459)\text{^}5}$$

$$Enterprise\ value\ (CHINA) = \frac{-74.94}{1 + 0.08302} + \frac{310.16}{(1 + 0.08302)^2} + \frac{488.96}{(1 + 0.08302)^3} + \frac{536.27}{(1 + 0.08302)^4} + \frac{450.39}{(1 + 0.08302)^5}$$

The EV without adding the terminal value for USA/EU is $10,136.35M, taking a WACC of 5.54%, plus $1,272.22M for China, with a WACC of 8,30%. Therefore, the value of the discounted free cash flows for Tesla is **$11,408.57M.**

4.1.3 Terminal value.

Companies are created, normally, with the objective of existence and perpetual growth, so based on this assumption, valuation seeks to take these estimates into account. To achieve this, free cash flows must be infinitely estimated, which is totally impossible because we are in a very changing world and it would not be a practical way to do it.

For this reason, to achieve this estimate, it is needed to create a Terminal Value that determines the present value of all future free cash flow. To calculate it, is used the fundamental method with discounted cash flow, also called perpetuity.

In order to calculate the perpetuity, two formulas are used. The first one assumes a perpetual growth of the company “g” whereas the second one, does not.

$$\text{Perpetuity} = \frac{\frac{NOPLAT}{WACC - g}}{(1 + WACC)^5}$$

Where:

NOPLAT: Net Operating Profit Less Adjusted Taxes.

g: represents the perpetual growth of the company. To calculate it is assumed that steady-state growth rate can be approximated to the country's risk-free rate (30 years bond yield).

WACC: the weighted average cost of capital.

n: the number of years in which it is projected the Discounted free cash flow.

It is applied to this formula for both, the United States (including Europe) and China, which are, as noted before, the countries in where Tesla has more revenue. To calculate the steady-state growth rate for cash flows into perpetuity, the assumption that the company will grow with the overall economy is made.

a) United States and Europe:

$$\text{Perpetuity} = \frac{5{,}867.95}{\frac{(5.54\% - 1.22\%)}{(1 + 5.54\%)^5}}$$

Which gives a result of $103,491.28M.

b) China:

$$\text{Perpetuity} = \frac{810.04}{\frac{(8.30\% - 3.29\%)}{(1 + 8.30\%)^5}}$$

Which gives a result of $10,842.69M.

So, in conclusion, the Terminal value of Tesla applying this formula gives us a result of **$114,333.97M.**

As mentioned before, it was assumed that Tesla will grow at the same rate as the country in terms of its risk-free, however, Tesla is a multinational company which is going to generate different growth rates, which is not only totally correlated by the United States or China growth.

From the aforementioned, at some point, the WACC and the return on investment capital of Tesla will be equal forever, meaning that no more growth will be expected. In this way, the new formula that would replace the previous one would be the following:

$$\text{Perpetuity} = \frac{NOPLAT}{WACC}$$

Applying the formula for the United States and Europe the perpetuity will be:

$$\text{Perpetuity} = \frac{5{,}867.95}{5.54\%}$$

Which gives us a result of $105,807.32M.

Applying the formula for China the perpetuity will be:

$$\text{Perpetuity} = \frac{810.04}{8.30\%}$$

Which gives us a result of $9,757.14M.

So, in conclusion, the Terminal value of Tesla applying this formula is **$115,564.46M** ($105,807.32M + $9,757.14M).

4.1.4 DCF Results including Terminal Value.

With the Fundamental Method, included the discounted free cash flows and the terminal value, it is obtained a Tesla value of $**125.742,53M** with company growth and a value of **$126,973.04M** without it.

4.2 Equity from Enterprise Value

It Is known that the market share price contains speculative movements of investors who can distort the real value of the company. Therefore, to obtain a more accurate value of its Equity, it is also used its total fundamental valuation, which, in order to obtain only the equity value is subtracted the net debt seen before. Given said so, the equity value will be the total amount that a buyer must pay to acquire the company after debts have been paid off.

The formula to obtain the equity value from the fundamental valuation is as follows:

Equity value = Fundamental Value (DCF) – Net debt

a) With perpetual growth:

$125,742.53M - $8,640.00M = **$117,102.53M**

b) Without perpetual growth:

$126,973.04M - $8,640.00M = **$118,333.04M**

4.3 Multiples Method

This is another method used in company valuation which consists of comparing the transactions made by companies in the same sector, as similar as possible, (size, activity, geography, etc.), for the company to be valued. The method only serves to value companies that are traded, that is, they are not private since the multiples obtained from the transactions are from traded ones.

Generally, the most used multiples are two: the value of the company on revenues and on EBITDA. In this case, does not make sense to do the Tesla's valuation with the multiple of the EBITDA since the company, as can be seen in its income statement, shows a very low result, due to its high operating costs. Thus, the multiples of the revenues are used instead of the multiples of the EBITDA.

In order to achieve the most accurate valuation, it has been based on the percentage of revenues that the company had in the two industries in which it operates: electric automotive and energy & services. Last year Tesla's revenues accounted for $24,578 million, of which, $20,821 million (84.7%) came from electric automotive and $3,757 million (15.3%) from energy and services. Therefore, the multiples of each industry were applied in the same percentage, respectively. They are extracted from Mergermarket (see Appendix 3 and 4), a database specialized in mergers and acquisitions. Below it is explained in detail the characteristics of the parameters used in the search for both industries:

The geographic region used is North America which is the most accurate for this analysis because of the company location. In order to fit with the company size, the transactions were filtered with a minimum value of $1,000 million. Then, for the electric car industry the date range selected was from January 2018 to April 2020, whereas for the energy industry, with the aim to obtain more transactions and thus, be more precise, the date range selected was from January 2015 to the same month.

It is important to note that the use of the average of the multiples is not correct since the average tends to overestimate the typical value (because the multiples transaction data do not follow a normal distribution). In that case, the statistical tool used is the median.

Once applied the previous criteria, the multiples obtained for the electric car and energy & services are 2.9x and 3.6x, respectively. Below the results are represented:

Enterprise Value = Multiple * Revenues

Enterprise Value (electric car) = 2.9 * $20,821M = $60,380.90M

Enterprise Value (energy & services) = 3.6 * $3,757M = $13,525.20M

Hence, Tesla's Enterprise Value through the multiples method is **$73,906.10M.**

5 Tesla's Risk Management

5.1 Types of Risks

Risk management is very important for companies since it allows them to identify, supervise and monitor those factors that are likely to modify their expected results. Once those risk factors have been identified, it is vitally important that the company put all its resources in controlling and mitigating them.

The main types of risk that the company faces are outlined and described below:

5.1.1 COVID-19 Risk.

Coronavirus impact is currently considered the most important risk factor facing the company. The uncertainty about the virus as well as its duration and the lack of foresight to obtain a vaccine or medicine that eliminates it, are causing serious economic and social consequences throughout the world. Economic forecasts lead to say that the greatest depression since 1929 will be suffered from an expected GDP growth rate for 2020 of -5.9% for the United States, of -6.7% for Europe and a -1.2% for China (the markets where Tesla has more sales).

With the aim of mitigate these risks and the sales losses that it will entail, it would be essential the reduction, to a great extent, of its variable costs. Following this point, the company has already announced a 75% reduction in the employees of its Nevada Gigafactory.

5.1.2 Operational Risks.

Operational risks are those derived from the company's workers, from the processes and machines used for production, or due to failures in technological resources.

As can be seen in Tesla’s income statement, during the last three years, operating costs have meant around 80% of the company's revenues. This means that resources and technology are not being used efficiently, and proof of this is the message that the CEO of the company, Elon Musk, addressed to his employees during 2018:

“If you are able to help in any way with getting Model 3 production to a steady 1000 per day at excellent quality, everyone at the company should please consider this their top priority. Body production currently appears to be our limiting factor, so it needs the most

support right now. Please focus on simplification and reducing cycle time first and then uptime."

It is also relevant to show this other message from Musk, where it is revealed that the cost of producing Model 3 is higher than its sale price (currently at $35,000 dollars):

"It's important to bear in mind that the cost of the car is made up of about 10,000 unique parts and processes. Depending on how you count it, the current cost of a standard range Model 3 would be around $38,000, so each part or process step only costs around $3.80. That means finding cost efficiencies is a game of pennies, even though it might not seem so."

In order to mitigate this risk, it would be necessary to establish more cost control measures and indicators, as well as implement an effective communication policy within the company where all workers would know what to do and how, in an efficient way.

5.1.3 Competitors / New entrants.

Apart from Chinese electric vehicle competitors, BYD and BAIC, more and more automobile companies are choosing to incorporate electric vehicles into their fleet. Proof of this is the new models of Chevrolet and Nissan, specifically the Chevrolet bolt and the Nissan leaf that, with a price of $29,999 and $36,000 respectively, are direct competitors to the new Tesla 3. Other internationally renowned automobile companies such as BMW, Mercedes, Volkswagen, and Ford are incorporating electric vehicles in their offerings, which will undoubtedly lead to greater competition in this industry in the coming years.

One strategy that the company could adopt to mitigate this risk would be to carry out advertising campaigns stating that Tesla has been one of the first companies to implement electric vehicles, with which the experience they have in the sector is highly superior to the rest of its new competitors.

5.1.4 Customer concerns.

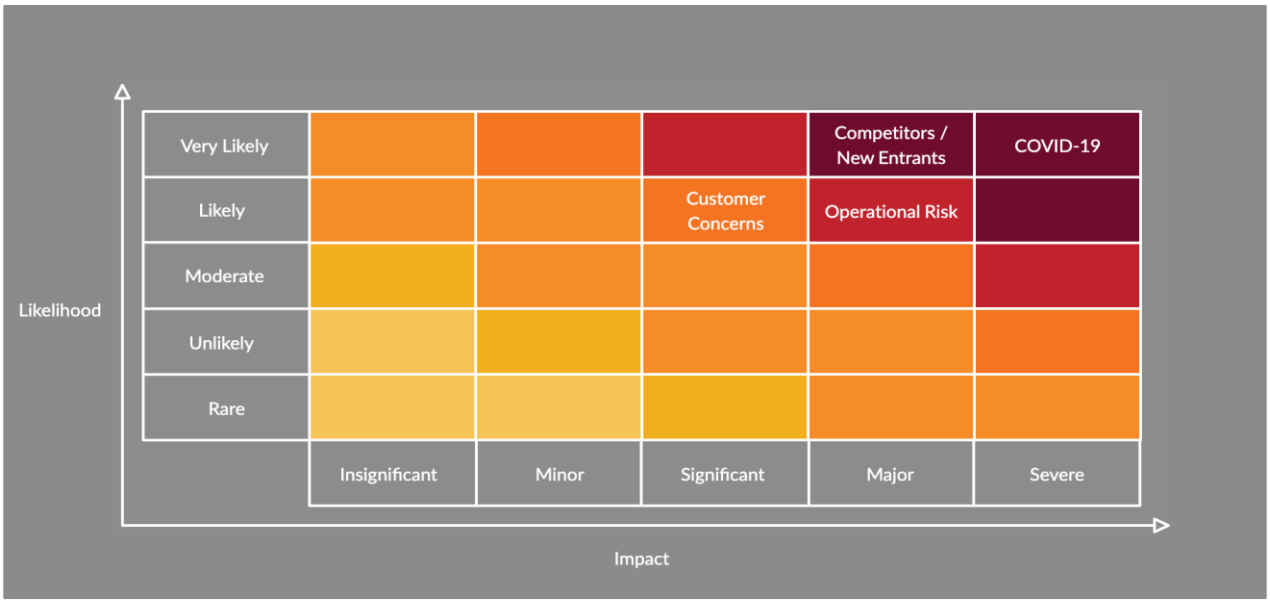
One of the most important risks factors and categorized as market risk is that of the price of fuel. This commodity can play a fundamental role in the valuation when purchasing an electric vehicle. At the end of April 2020, a negative price of West Texas oil has been seen for the first time in history, which leads many experts to think that it will remain relatively low in the following years. This, together with the expected economic depression, it is foreseeable that drivers will reconsider their purchase options in favor of traditional vehicles, cheaper and more comfortable to use nowadays.

5.1.5 Risk Matrix.

Below is shown the Tesla's risk matrix, appropriate to observe the impact and probability of all the risks mentioned before:

Figure 42.

Tesla's Risk Matrix.



Source: Own Elaboration.

As can be seen, most of them have a high probability of affecting the company as well as a very important impact on it. It is for this reason that Apple should take it into account when planning its acquisition.

5.2 Quantitative Risk

Taking the returns of Tesla's stock price and calculating its volatility through an analysis of its standard deviation gives a quantitative measure of the stock price risk in the

market. In this case, the mean used is from the last 8 years of daily data, assuming 250 trading days.

After calculating the volatility with several models and approaches as Equally Weighted Average (EWA), Equally Weighted Moving Average, Exponentially Weighted Moving Average (EWMA), Garch, Egarch and Historical Volatility model, the best and more reliable option is doing a regression between Realized Volatility as a dependent variable and Implied Volatility (IV) as independent variable, which takes into account the average prices of put and call options. The equation to take into consideration for estimations is: RV= 0.097 + 0.726IV

As it is shown in the table below, it has been obtained a R^2 of 26,42%, meaning that the Implied Volatility explain in 26.42% to Realized Volatility.

Figure 43.

EViews Results of Realized Volatility with Implied Volatility.

Dependent Variable: RV
Method: Least Squares
Date: 05/09/20 Time: 13:19
Sample: 1 89
Included observations: 89
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.097399	0.068023	1.431851	0.1558
IV	0.726082	0.148231	4.898320	0.0000

R-squared	0.264217	Mean dependent var	0.456808
Adjusted R-squared	0.255759	S.D. dependent var	0.172048
S.E. of regression	0.148425	Akaike info criterion	-0.955264
Sum squared resid	1.916597	Schwarz criterion	-0.899340
Log likelihood	44.50927	Hannan-Quinn criter.	-0.932723
F-statistic	31.24134	Durbin-Watson stat	2.013759
Prob(F-statistic)	0.000000	Wald F-statistic	23.99354
Prob(Wald F-statistic)	0.000004		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	3.134172	(2, 87)	0.0485
Chi-square	6.268345	2	0.0435

Null Hypothesis: C(1)=0, C(2)=1
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1)	0.097399	0.068023
-1 + C(2)	-0.273918	0.148231

Restrictions are linear in coefficients.

Source: Eikon/EViews

Wald Test shows that α is 0 meaning that is a reliable estimator for future predictions and β equal to 1, noticing that is both, significative and trustworthy.

The conclusions are as follows:

- The annual standard deviation of Tesla's stock price is 48.79%.
- Using test χ^2 with a 95% of confidence, the standard deviation is found in an interval from 45.77% to 54.56%.
- Observing the graphics of returns (appendix 5) and the percentage obtained for the standard deviation, it can be said that the returns of Tesla's stock price are very volatile.
- Almost in every year the returns have a peak, which means that you can achieve huge profits in one day and lose a large amount in a few, thus, investors have to be very careful to invest in this company because high returns lead to high risk.
- The autocorrelation of the share price in year t-1 with respect to year t is 0, so investors cannot trust the past to predict the future. In this case they only should take into account the short-term market movements.

6 Synergies

Normally, the main reasons for the acquisition of a company by another are the synergies that can be obtained from the result of the acquisition. This section details and describes the synergies that Apple could obtain from the acquisition of Tesla, separating them by different categories and quantifying a good part of them.

a) Growth option synergy:

It can be achieved by combining resources from both companies, which gives the acquiring company the option of growing more than if they were not united. Within this category is found research and development, creative resources, licenses and patents.

Extrapolating it in the case study, this category would include Tesla's know-how in the manufacture and development of electric vehicles, its patents (highlighting the patent for its electric motor), as well as the research carried out by Apple in relation to the autonomous vehicle.

b) Financial synergy:

This category is related to the improvement of the financial conditions that Tesla could obtain from the fact of being acquired by Apple. As seen in the analysis of the Tesla's ratios, its cash ratio was 0.59 in 2019, a fairly low figure that could be improved with cash contributions from Apple. Furthermore, the company could get better capital access, more leverage opportunities and, in conclusion, better financial conditions.

c) Cost Synergy:

This is the most important synergy it could be obtained from the Tesla acquisition. The expected decrease in costs would be achieved due to the economies of scale that Apple has, with a great negotiation capacity associated with them, translating into a decrease in prices for

the components of the electric vehicles. Also, in order to avoid duplication, administrative staff and administrative resources would be reduced. Ultimately, Apple would cut its costs by benefiting from Tesla's research and development in the automotive industry, and therefore less part of the research and development expenses on automotive-related projects would be required.

The fact that it is very difficult to quantify the increase in sales that Apple would have through the acquisition has made us focus on quantifying, especially, the reduction in costs produced by the deal.

The quantification is based on a Deloitte study on the synergies that occur in a M&A transaction.[1]

As can be seen, for the telecommunications, media and technology industry, the reduction in costs is quantified at 6% (3Q), which we raise it to 10% since Apple's additional income was not taken into account.

The synergies have been quantified in a 10% increase of Tesla's EBIT from 2020 to 2024 (the period forecasted). The free cash flows have also increased and modified by the same percentage they represented on EBIT without synergies (see Appendix 6). It has been found opportune to calculate it in this way since if administrative and other indirect expenses had been reduced by 10% it would have resulted in exorbitant and unreasonable free cash flows (see Appendix 7).

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[1] For further information, visit: https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/mergers-acqisitions/ch-en-fa-st-gallen-mergers-acquisitions-study-v2.pdf

Applying synergies, the new value of the company using the fundamental method would be calculated as follows:

$$EV\ (USA/EU = \frac{-488.61}{1+0.055459} + \frac{2{,}471.52}{(1+0.055459)^2} + \frac{3{,}896.24}{(1+0.055459)^3} + \frac{4{,}273.21}{(1+0.055459)^4} + \frac{3{,}588.87}{(1+0.055459)^5}$$

$$EV\ (CHINA) = \frac{-67.45}{1+0.08302} + \frac{341.18}{(1+0.08302)^2} + \frac{537.86}{(1+0.08302)^3} + \frac{589{,}89}{(1+0.08302)^4} + \frac{495.43}{(1+0.08302)^5}$$

The EV for USA & EU and China would be **$11,252.86M** and **$1,413.28M** respectively. Once this value is obtained, it is still required to add the perpetuity value that would be calculated in the following way:

$$\boldsymbol{Perpetuity}\left(\frac{USA}{EU}\right) = \frac{6{,}454.75}{\frac{(5.54\% - 1.22\%)}{(1+5.54\%)^5}}$$

$$\boldsymbol{Perpetuity}\ (CHINA) = \frac{891.05}{\frac{(8.30\% - 3.29\%)}{(1+8.30\%)^5}}$$

The perpetuity values obtained are **$113,840.40M** for USA & EU and **$11,926.95M** for China.

Taking into consideration these previous calculations the final Enterprise value obtained with the synergies included is **$138,433.50M**.

Therefore, if it is compared with the one obtained without the synergies, it can be said that synergies are quantified in $138,433.50M - $125,742.53M = **$12,690.97M.**

7 Process of Acquisition

It is important to note that only the DCF valuation has been taken into consideration in this acquisition process. The reason for this discard is due to the fact that multiples valuation does not reflect the reality of the willingness to pay for acquiring Tesla as there hasn't been any similar transaction. Despite that there have been some transactions in the electric car and energy sectors, the technological devices included in their products are not as advanced as the ones used by Tesla, so using these multiples won't reflect the real disposition of the market to pay for it, which would be much higher.

In the US there are two ways to acquire a public company, the first one is through a public tender offer and the second one through a direct negotiation with stakeholders, with no involvement with the public markets.

The normal time that a public tender offer takes to be completed is about 1 month, while in the case of a direct negotiation can take from 2 to 3 months. Due to the exceptional current situation, this difference would be critical as the current market price of Tesla shares is much lower than the price, they should have according to the DCF calculations. For this reason, it is considered that the acquisition should be performed through a takeover bid in order to take advantage to the current situation.

The aim of Apple is to acquire the 60% of shares to ensure the complete control of Tesla. In order to determine the cost of this acquisition, different scenarios taking into consideration different premiums have been performed and compared them to our DCF calculations.

It is important to note that the prices taken into account are the market price of Tesla at 3 of April which was $480.01 per share and the value of shares according to our DCF calculations, which are $636.05 (synergies not included) and $670.51 (50% of the synergies value included).

Figure 44.

Comparison between share price with a premium and DCF valuation

Premium	Price + Premium	DCF - Value of share	DCF - Value of share (Synergies)
10%	$ 528.01	$ 636.05	$ 670.51
15%	$ 552.01	$ 636.05	$ 670.51
20%	$ 576.01	$ 636.05	$ 670.51
25%	$ 600.01	$ 636.05	$ 670.51
30%	$ 624.01	$ 636.05	$ 670.51
35%	$ 648.01	$ 636.05	$ 670.51
40%	$ 672.01	$ 636.05	$ 670.51
45%	$ 696.01	$ 636.05	$ 670.51
50%	$ 720.02	$ 636.05	$ 670.51

Source: Own elaboration.

According to the previous table, even paying a premium of 35% over the stock price, the assumed cost would be below the stock value according to the DCF calculations (with the 50% of the value of the synergies included). Clearly, the main objective would be to acquire the shares offering the lower premium as possible.

Only the 50% of value of the synergies are included as its the reasonable part that Apple would be willing to assume, otherwise the acquirer would be paying most of them and therefore, not making all the profit it could through the acquisition.

Considering these different scenarios, the difference between the total cost assumed by Apple and the total value of the shares with the 50% of the value of the synergies added are shown in the following table:

Figure 45.

Comparison between total cost of the acquisition and DCF valuation (in $ million).

Premium	(Price + Premium) * 60% Shares	Value of share (DCF with Synergies) * 60% Shares	Profit	%
10%	$ 58,327.13	$ 74,068.81	$ 15,741.68	21%
15%	$ 60,978.37	$ 74,068.81	$ 13,090.45	18%
20%	$ 63,629.60	$ 74,068.81	$ 10,439.21	14%
25%	$ 66,280.83	$ 74,068.81	$ 7,787.98	11%
30%	$ 68,932.07	$ 74,068.81	$ 5,136.75	7%
35%	$ 71,583.30	$ 74,068.81	$ 2,485.51	3%
40%	$ 74,234.53	$ 74,068.81	-$ 165.72	0%
45%	$ 76,885.76	$ 74,068.81	-$ 2,816.95	-4%
50%	$ 79,537.00	$ 74,068.81	-$ 5,468.19	-7%

Source: Own elaboration.

According to the tables above and analyzing the balance sheet of Apple which had, in 2019, $100B of cash and short-term investment, it is suggested to do the acquisition through 60% cash and 40% debt because this proportion won't affect, excessively, the leverage of the company. It is considered to start with an initial offer of a 10% premium; however, it is predicable to end at 30% premium, paying, thus, $68,932.07M.

8 Conclusions

The main objective of this project has been studying the viability of the acquisition of Tesla by Apple. As it has been observed, the automotive electric industry has a great growth potential and many analysts predict that its market size, in billions of dollars, will increase over

the next six years by 140% (see figure 7), which indicates that very likely, companies like Tesla will be very positively impacted by this trend.

Tesla is a company with very high manufacturing costs which has resulted in systemic losses over the years. The hint of skill in managing costs as well as the large amount of administrative expenses incurred each year, makes us think that the company would benefit from its acquisition as it would help it increase margins without losing the quality supplied.

On the other hand, Apple is a financially solid company with a large amount of cash and not excessively indebted, whose sources of income are being modified in recent periods, going from the iPhone as its star product to an increase in service revenues. These reasons suggest that it could further exploit the services it offers through the electric vehicle and, at the same time, diversify the range of its products and help to promote the new image it wants to give as a more service focused company.

Furthermore, it is found that an acquisition of 60% of Tesla through cash and debt in 60% and 40% proportions, respectively, would be appropriate since it would contribute to give a positive return on its cash while maintaining the financial stability of the company, not forgetting that Apple would have control of one of the most promising companies on the market.

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