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**Huddersfield ISC**

**International Study Centre**

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***Tutor Name:*** Kelechi.

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|  |  |
| --- | --- |
| *Student Name:* | *Umer Munir* |
| *Student ID. Number:* | *2257319* |

***Finance for Professional Engineers***

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***Tesla, Inc.***

Automotive company

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# **Introduction: -**

A red sports car driving on a road

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Figure 1: Electric cars (Electric cars, solar & clean energy. (n.d.). Tesla. <https://www.tesla.com/en_gb>)

TESLA, Inc. is a transnational American automobile and sustainable energy firm with its headquarters in Austin, Texas. Tesla develops and produces electric vehicles (electric cars and trucks), home- and grid-scale battery energy storage, solar panels, solar roof tiles, and escolar roof tiles, and associated goods and services. With a market value of more than US$760 billion, Tesla is one of the most expensive companies on the planet and continues to be the most valuable carmaker. In 2020, the firm sold the most battery electric vehicles and plug-in electric vehicles globally, taking 23% of the battery-electric (purely electric) market and 16% of the plug-in market (which includes plug-in hybrids). The business creates and is a significant installer of solar systems in the US through its subsidiary Tesla Energy.

Diagram

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Figure 1: VFD MOTORS (Diaz, J. (2016). Tesla model S. Carson-Delisa Publishing).

Martin Eberhard and Marc Tar penning established Tesla Motors in July 2003. Nikola Tesla, an inventor, and electrical engineer is honoured in the corporate name. With a $6.5 million investment in February 2004, Elon Musk rose to the position of the company's largest shareholder. He assumed the position as CEO in 2008.

A person holding his hand up

Description automatically generated with medium confidence

Figure 3: Elon musk (Hawthorne, N. (2014). Tesla: The life and times of an electric Messiah. Chartwell Books.)

Musk claims that Tesla's goal is to hasten the transition to environmentally friendly energy and transportation, using solar energy and electric cars as the primary sources. The Roadster sports car, which was Tesla's first vehicle model, entered manufacturing in 2009. The Model S sedan arrived in 2012, the Model X SUV appeared in 2015, the Model 3 sedan appeared in 2017, and the Model Y crossover appeared in 2020. The Model 3 is the plug-in electric vehicle with the highest global sales volume, and, in June 2021, it became the first electric vehicle to sell one million units worldwide. Tesla sold 936,222 vehicles globally in 2021, a rise of 87% over the previous year, and its overall sales reached 2.3 million vehicles at the end of the year. Tesla became the sixth corporation in American history to have a market valuation of $1 trillion when it did so in October 2021.

# organisational and managerial structure: -

A picture containing timeline

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Figure 4: organization structure of tesla (Tesla Inc. (2022, 25). MarketWatch. https://www.marketwatch.com/investing/stock/tsla/financials/cash-flow)

Robyn Denholm is the chair of tesla who is responsible for the CEO Elon Musk and the board of directors which includes ELON MUSK, Antonio -Gracias, Wilson Thompson, HIRO MIZUNZO, IRA EHRENPREIS, James Murdoch, LARRY ELLISION and Kimball musk.

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Graphical user interface, application

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Figure 5: people reporting to musk (Niedermeyer, E. (2019). Ludicrous: The unvarnished story of Tesla Motors. Benelli Books.)

Elon Musk who is the responsible for Zachary Kirker (chef president officer), JB Traubel (chief technology Officer), Vaibhav Taneja (Chief accounting Officer), Jerome Guillen (President, Heavy Duty Trucking), Andrew Bag lino (SVP Powertrain and energy engineering), Bill Berry (vice president, Litigation) , Laurie Shelby ( Vice president environmental safety, and health ) , Karn budhiraj ( Vice president, Supply Chain), Lrs Moravy (Vice president , vehicle engineering), Troy Jones(Vice president, North America sales) and Valerie C. Workman(Vice president, people) and many more.

The organisational structure of Tesla, Inc. (formerly Tesla Motors, Inc.) promotes ongoing corporate expansion. The corporate structure or organisational architecture of a firm determines the patterns of interactions between its many parts. Given the company's management emphasis and control, together with its restricted operational development in the worldwide market, the organisational structure of Tesla in this business research example is typical. For instance, Tesla Inc. leverages its corporate structure to enable substantial control over the company as a producer of electric cars, batteries, solar panels, and related transportation and energy solutions. The capacity of the company structure to disseminate and assist the implementation of fresh business expansion and improvement plans determines how effectively Elon Musk leads. Through its organisational structure, the corporation maximises its capacity to conduct fresh initiatives and oversee its operational tasks and goals. The success of Tesla's operations management depends on how well the organisational structure supports strategy adjustments and implementations.

The organisational structure of Tesla is functional or U-shaped. Organizational function serves as the primary distinguishing characteristic of the unitary-form (U-form) structure. For instance, the business employs a structural group for engineering and another group for sales and service. Even if they are less pronounced, several structural traits of other corporate structure types are also present in Tesla. The business function grouping stands out as the most important aspect in this firm research example. Important aspects of Tesla's organisational structure include the following:

hierarchy based on function (most important)

Centralization

Divisions

These advantages allow Tesla to use its organizational structure to continue its international growth and strengthen its competitiveness with Toyota Motor Corporation, Honda Motor Company, Nissan Motor Company, General Motors Company, Volkswagen, Bavarian Motor Works (BMW) and auto manufacturers. The organizational structure allows the company to centrally control the development of competitive advantages., Tesla Inc. Organizational structure should be reformed to increase the degree of autonomy of overseas offices.

Tesla's corporate structure has the drawback of being inflexible, which slows down organisational change. Global centralization, for instance, is a structural trait that hinders the autonomy of foreign offices to quickly address problems they encounter in their own regional markets. It is advised that Tesla Inc. modify its organisational structure to raise the amount of autonomy of international offices in order to overcome this drawback.

Tesla organizational structure comprises several divisions such as energy, engineering and production, HR, and communications, legal and finance, sales, and software. Each division is led by several vice presidents, except software division, which is led by one vice president and Director of Artificial Intelligence.

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Figure 6: Elon musk responsivities (Higgins, T. (2021). Power play: Tesla, Elon Musk, and the bet of the century. Doubleday.)

# Cash Flow and Balance Sheet: -

Chart, bar chart, histogram

Description automatically generated

*Figure 7: Tesla revenue from 2008 TO 2021(Tesla cash flow from financial activities 2010-2022 | TSLA*. (n.d.). Macrotrends | The Long-Term Perspective on Markets. https://www.macrotrends.net/stocks/charts/TSLA/tesla/cash-flow-from-financial-activities)

In the year 2017, the net income of tesla is 2.24 billion and pay 1.04 billion taxes. The other assets of tesla in 2017 is 388.21 million with net operating cash flow of 842.25 million. The capital expenditures this year is 4.08 billion and the sales decreased by 37%. Then they lost about 31% of the net intersecting cash flow of 3.63 billion.

Although, with the beginning of 2018, things are getting more worse the net income reduced to just 1.06 billion and the company must pay 1.9 billion as a tax. And the net operating cash flow growth reduced to 2.41 billion. In addition to that, the other assets reduced to only 2.1 billion. Due to that, there is a need of investment then the company invest more 2.32 billion on the company. But the capital expenditures decrease by 34.71 % and the capital expenditure reduced to only 2.32 billion and there is a decrease of 8.85 % from the net intersecting cash flow/sales.

With the beginning of 2019, things are getting more worse. The capital expenditure reduced to only 1.44 billion with a decrease of 5.85 % sales. Then the company again invest 1.16 billion on the company.

Although, things remain same with the beginning of 2020, there is just a slight increase in the net income. The net income goes to 862 million and 2.11 billion spend on the Depreciation and Depletion of the company. Then, the company pays 5.76 billion as Deferred Taxes &

investment Tax Credit. As well as there is an increase in the liabilities of the company. The company must pay 5.94 billion at the liabilities.

Then there is a need of investment. The company invest more 3.24 billion but the capital expenditure growth decreases by 125.61 % as well as the sale is also decreased by 10.28 %. At that time, people think that tesla is at his end.

However, everything is changed in 2021, the capital expenditure of tesla is 8.01 billion. The company have 6.51 billion as fixed assets. The net invested cash flow at this time is 7.87 billion. There is an increase of 147.19 % in the Capital Expenditures Growth. The net invested cash flow is increased by 153.09 % this year.

By looking the cash flow and balance sheet of the tesla, we can understand that in the beginning of 2017 tesla is in loss and remain in loss till 2019. But in 2020 everything is changed. The revenue of tesla jumped to thirty-one billion. And in 2021it reach fifty-four billion.

Chart, bar chart

Description automatically generated

*Figure 8: Gross profit of tesla (*Maamoun, A. (2021). Elon Musk and Tesla: An electrifying love affair)

So, in conclusion, we can say that 2021 is the most profitable year for tesla. because Tesla annual gross profit for 2021 was $13.606B, a 105.22% increase from 2020.Tesla annual gross profit for 2020 was $6.63B, a 62.94% increase from 2019.Tesla annual gross profit for 2019 was $4.069B, a 0.67% increase from 2018.

Graphical user interface

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*Figure 9: tesla share price (*Prospero, L. (2020, July 20). Is Tesla’s stock really that high? Medium. <https://medium.datadriveninvestor.com/is-teslas-stock-really-that-high-a33fa7219eb1?gi=9d5053eb879d>)

# Expansion journey:

## The Founding of Tesla

The engineers Martin Eberhard and Marc Tarpenning established Tesla in San Carlos, California, in 2003. The company's previous name, Tesla Motors, was changed in 2017.

Nikola Tesla, a 19th-century inventor best known for his discovery of the characteristics of rotating electromagnetic fields, inspired the company's name. Alternating current, the type of electrical transmission still in use today, was made possible thanks to his efforts. (This contrasts with Thomas Edison's preferred "direct current," a much less effective approach.) In the last several decades, Tesla has developed into a pop culture star among engineers. Tesla is historically renowned for his enormous contributions to electrical engineering and sciences.

Eberhard and Tarpenning had originally envisioned creating an all-electric sports automobile. Their Tesla Roadster prototype was debuted in 2006, and it went into production in 2008.

Tesla CEO: Elon Musk

Elon Musk has established himself as the face of Tesla and is sometimes mistaken for its creator. Musk is a Canadian-American who was born in South Africa and has engineering training. He graduated from the University of Pennsylvania with a double bachelor of science degree in economics and physics.

# **Tesla’s problem:**

In 2018, Tesla hoped to build 5,000 new Model 3 electric cars per week. It has so far been unable to produce even half of that number. Elon Musk, the company's CEO, responded when asked about the issue by saying that "people are underestimated" and that "extreme automation was a mistake."

He is correct; the contemporary push for complete automation has neglected the value of flexibility. Humans are still far better at adapting to change than machines are (AI). Long-term, AI may displace human laborer’s, but for the time being, leaders must choose the appropriate rate of change.

The Silicon Valley Tesla facility has a high level of automation. Early on, Musk realised that robots and artificial intelligence (AI) could automate any operation that followed a set of predetermined procedures and occurred in a relatively controlled setting, like a factory floor. And it is for this that he deserves praise.

While autonomous systems are evolving quickly, humans continue to be far better at adjusting to unanticipated changes. This should not be taken lightly when it comes to intricate production operations. Musk probably overlooked the significance of adaptation in production when he looked back on Tesla's productivity challenges. The likelihood of minor mistakes and unanticipated circumstances increases with process complexity, especially when the process occurs in the physical world.

## **Competition from Colonizers:**

Wall Street is an effective market that takes both positive and bad news about listed firms into account. As a result, shares spike before positive news and plummet before bad news. To borrow Benjamin Graham's language, Mr. Market can be overconfident at times, driving listed company shares way over their intrinsic or fundamental worth. When Mr. Market is too gloomy, shares of publicly traded corporations sometimes trade for far less than they are actually worth.

By many measures, the value of Tesla's stock is excessive. Tesla's 12-month-trailing return on equity, for instance, is estimated by TipRanks to be a meagre 12.41 percent, and estimations place Tesla's intrinsic value at $160.11, far lower than its current price.

## **Rising Material Costs**

Due to supply chain disruptions brought on by the COVID-19 epidemic, Tesla and other traditional automakers are also experiencing significant material shortages. This is projected to limit Tesla's frenetic expansion.

Musk told investors, "While we're producing vehicles at full capacity, the worldwide chip scarcity problem remains pretty critical. According to him, a variety of chips would act as the growth brake for the remainder of this year. "For the rest of this year, our growth rates will be dictated by the slowest element of our supply chain," he said.

## **Wall Street's Take**

Tesla now has 11 Buy, 7 Hold, and 4 Sell ratings, which is a Moderate Buy according to the analyst consensus.

The average Tesla price forecast is $741.76, suggesting an increase of 7.9%.

Chart, line chart

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# Discussion:

When I am reaching about tesla, I discover that tesla is not a big firm in the beginning but now it is one of the largest cars manufactures in the world. By seeing that, I learned that if you want to become a millionaire you have to do challenging work. Another thing that, you fail one time do not loose hope try again until you get success. We can see that first tesla revenue is exceptionally low but then they struggle and now Elon musk is the richest person on earth.As Elon musk also said that “What makes innovative thinking happen? … I think it is really a mindset. You must decide.”

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* Tesla Inc. (2022, 25). MarketWatch. <https://www.marketwatch.com/investing/stock/tsla/financials/cash-flow>
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# Appendices: -

Operating Activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ITEM  Net Income before Extraordinaries  Net Income Growth  Depreciation, Depletion &  Amortization | 2017 | 2018 | 2019 | 2020 | 2021 |
| (2.24B) | (1.06B) | (775M) | 862M | 5.64B |
|  | 52.58% | 27.06% | 211.23% | 554.76% |
| I. 64 B | 1.9B | 2.15B | 2.32B | 2.91B |
| Depreciation and  Depletion  Amortization of  Intangible Assets |  |  | 2.11B | 2.27B | 1.91B |
|  |  | 44M | 51M | 1B |
| Deferred Taxes &  I investment Tax Credit  Deferred Taxes  Investment Tax Credit Other Funds from Operations  Extraordinaries  Changes in Working  Capital  Receivables  Accounts Payable  Other Assets/Liabilities  Net Operating Cash Flow  Net Operating Cash  Flow Growth |  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 1.04B | 1.2B | 1.38B | 2.58B | 2.42B |
| 435.95M | 2.04B | 2.75B | 5.76B | 10.98B |
|  |  |  |  |  |
| (496.6M) | 57.95M | (349M) | 184M | 518M |
| (24.64M) | (496.73M) | (367M) | (652M) | (130M) |
| 388.21M | 1.72B | 646M | 2.1B | 4.58B |
| 841.25M | 69.84M | 565M | 228M | (2.22B) |
| (60.65M) | 2.1B | 2.41B | 5.94B | 11.5B |
|  | 3,558.64% | 14.64% | 147.11% | 93.45% |

Investing Activities All values USD.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ITEM    Capital Expenditures  Capital Expenditures Growth  Capital Expenditures /  Sales | 2017 | 2018 | 2019 | 2020 | 2021 | | (4.08B) | (2.32B) | (1.44B) | (3.24B) | (8.01B) | |  | 43.17% | 38.05% | -125.61% | -147.19% | | -34.71% | -10.81% | -5.85% | -10.28% | -14.89% | | Capital Expenditures (Fixed Assets)  Capital Expenditures  (Other Assets) | (4.08B) | (2.32B) | (1.43B) | (3.23B) | (6.51B) | |  |  | (5M) | (10M) | (1.5B) | | Net Assets from  Acquisitions  Sale of Fixed Assets & Businesses | (114.52M) | (17.91M) | (45M) | (13M) |  | | 789.7M | 437.13M | 279M | 24M | 2M | | Purchase/Sale of  I investments  Purchase of Investments  Sale/Maturity of  Investments Other Uses  Other Sources  Net Investing Cash Flow  Net Investing Cash Flow Growth  Net Investing Cash Flow  / Sales | (223.09M) |  |  |  | (132M) | | (223.09M) |  |  |  | (132M) | |  |  |  |  |  | |  |  |  |  |  | | 287.21M |  |  |  |  | | (3.63B) | (1.9B) | (1.16B) | (3.11B) | (7.87B) | |  | 47.64% | 39.11% | -168.63% | -153.09% | | -30.86% | -8.85% | -4.71% | -9.86% | -14.61% | |  |
| | **ITEM**  **ITEM** | **2017** | **2018** | **2019** | **2020** | **2021** |  | | --- | --- | --- | --- | --- | --- | --- | | Capital Expenditures  Capital Expenditures | (4.08B) | (2.32B) | (1.44B) | (3.24B) | (8.01B) |  | | Capital Expenditures Growth  Capital Expenditures Growth | - | 43.17% | 38.05% | -125.61% | -147.19% |  | | Capital Expenditures / Sales  Capital Expenditures / Sales | -34.71% | -10.81% | -5.85% | -10.28% | -14.89% |  | | Capital Expenditures (Fixed Assets)  Capital Expenditures (Fixed Assets) | (4.08B) | (2.32B) | (1.43B) | (3.23B) | (6.51B) |  | | Capital Expenditures (Other Assets)  Capital Expenditures (Other Assets) | - | - | (5M) | (10M) | (1.5B) |  | | Net Assets from Acquisitions  Net Assets from Acquisitions | (114.52M) | (17.91M) | (45M) | (13M) | - |  | | Sale of Fixed Assets & Businesses  Sale of Fixed Assets & Businesses | 789.7M | 437.13M | 279M | 24M | 2M |  | | Purchase/Sale of Investments  Purchase/Sale of Investments | (223.09M) | - | - | - | (132M) |  | | Purchase of Investments  Purchase of Investments | (223.09M) | - | - | - | (132M) |  | | Sale/Maturity of Investments  Sale/Maturity of Investments | - | - | - | - | - |  | | Other Uses  Other Uses | - | - | - | - | - |  | | Other Sources  Other Sources | 287.21M | - | - | - | - |  | | Net Investing Cash Flow  Net Investing Cash Flow | (3.63B) | (1.9B) | (1.16B) | (3.11B) | (7.87B) |  | | Net Investing Cash Flow Growth  Net Investing Cash Flow Growth | - | 47.64% | 39.11% | -168.63% | -153.09% |  | | Net Investing Cash Flow / Sales  Net Investing Cash Flow / Sales | -30.86% | -8.85% | -4.71% | -9.86% | -14.61% |  |  Balance Sheet Expand All  All numbers in thousands  **Breakdown**  **12/31/2021**  **12/31/2020**  **12/31/2019**  **12/31/2018**  Total Assets  62,131,000  52,148,000  34,309,000  29,739,614  Total Liabilities Net Minority Interest  30,548,000  28,469,000  26,199,000  23,426,010  Total Equity Gross Minority Interest  31,583,000  23,679,000  8,110,000  6,313,604  Total Capitalization  34,443,000  30,738,000  17,020,000  13,333,733  Common Stock Equity  30,189,000  22,225,000  6,618,000  4,923,243  Capital Lease Obligations  3,531,000  3,008,000  2,896,000  3,194,796  Net Tangible Assets  28,472,000  21,705,000  6,081,000  4,572,592  Working Capital  7,395,000  12,469,000  1,436,000  -1,685,828  Invested Capital  35,531,000  32,496,000  18,419,000  15,555,718  Tangible Book Value  28,472,000  21,705,000  6,081,000  4,572,592  Total Debt  8,873,000  13,279,000  14,697,000  13,827,271  Net Debt  -  -  5,533,000  6,946,857  Share Issued  1,033,000  960,000  905,310  863,013  Ordinary Shares Number  1,033,000  960,000  905,310  863,013 |  |