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Research Article

Automobile Industry Market Competition In USA: Stock Valuation Analysis of Ford Motor Company (NYSE: F) Amidst Consistent Growth of Electric Automobile Sales in 2020 – 2024

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Abstract: *This study discusses the analysis of financial performance of Ford Motor Company amidst consistent growth of electric automobile sales in 2020 – 2024. This study employs a business performance analysis based on SWOT analysis, ESG rating and performance, and the PESTLE analysis framework. Another analysis was conducted using financial performance analysis, such as growth on stock price, growth on market capitalisation, growth on revenue and net profit, growth on net-working capital, and growth on asset and equity. Additional analysis was conducted using financial ratio analysis, such as liquidity ratio, profitability ratio, solvency ratio, and market value ratio. This study is primarily aimed at assessing company stock valuation during the period of transition to a net-zero environment and identifying the business and financial risks faced by Ford Motor Company during the net-zero transition process. The results of this study indicate whether Ford Motor Company is exposed to the risk of ESG-related sanctions that could impact its stock and financial performance in the future. Although the Company has medium performance over ESG value, and the management has a commitment to progressing the ESG value implementation, the profitability and core performance should be prioritised during the process of stock screening. Although the Company's profitability and performance should be the primary focus of the stock curation process, it should also be considered during decision-making, considering the risks associated with investing in companies with poor performance. In conclusion, this study highlights the implementation of ESG and the potential risks to business operations.*

Keywords: *Stocks Valuation, Net-Zero Transition, ESG Implementation.*

I. INTRODUCTION

According to comprehensive information, the market share of piston-engine automobiles in the U.S. has consistently been surpassed by electric automobiles, which now account for 19 per cent, resulting in a significant reduction in the piston-engine automobile market share in the U.S. alone, leaving them at 81 per cent (U.S. Energy Information Administration, 2024). Officially published reports have stated that there was a significant increase in electric automobile sales in the U.S. in 2021, as shown in charts that display consistent year-over-year growth International Energy Agency, 2024). A concrete illustration of the turbulent changes in the powertrain market was the constant decline in piston-engine automobile market share from 2020 onwards, as reported by the International Energy Agency(2021). The extreme decline in the market share of piston-engine automobiles in 2024 aligns with the U.S. long-term strategy to achieve net-zero greenhouse emissions by 2050, as published by The White House in 2021 (The United States Department of State & The United States Executive Office of th President, 2021).

The emergence of electric automobile manufacturers is aligned with the United States' plan to achieve a net-zero target by 2050, which is currently being implemented by the nation and enforced on every locally registered corporation entity in U.S. territory. The net-zero plan designed by the U.S. government was based on the ratified Paris Agreement in 2015, which aimed to reduce greenhouse gas emissions in the country forthwith(Jeudy-Hugo et al., 2021). Action that was undertaken on carbon emission gas reduction was enforced by the President of the United States of America in December 2021, and this executive order is directed to the federal government to utilise its scale and procurement authority (Office of the Federal Chief Sustainability Officer, 2021). Addressed order aimed to achieve five goals required to be fulfilled by the nation in 2050 in its struggle to achieve a net-zero carbon plan.

The ambitious goal of carbon reduction initiated by the U.S. federal government has dramatically impacted piston-engine automobile manufacturers in the country, such as Ford Motor Company (NYSE: F), potentially affecting their future business sustainability. The current challenge faced by piston-engine automobile manufacturers, such as Ford Motor Company (Ford Motor Company, 2024), is that most of the Company's portfolio products are dominated by piston-engine automobiles.

Diversification of the product portfolio is necessary to manage the deliverability of responsibility to the U.S. federal government for gradually reducing the carbon emissions emitted by their products to 2050 levels (International Energy Agency, 2021), while maintaining their position in the S. market share at its best throughout the years (GoodCarBadCar.net & Statista, 2024). The reduction of carbon emissions requires several approaches to be implemented. It should be undertaken by U.S. industrialists (The United States Department of State & The United States Executive Office of the President, 2021). Initiation of reducing emission buildings could be taken as an action that they can take to support their efforts in reducing net-zero emissions by 2050 (Office of the Federal Chief Sustainability Officer, 2021).

The implementation of ESG (Environmental, Social, and Governance) policies in a company's business process has successfully attracted investors due to its outstanding financial performance, which has increased the Company's stock value. According to the report provided by Standard & Poor's (S&P) Global, their index shows that the S&P 500 ESG Index (S&P Global, 2024b) outperformed their own S&P 500 Index (S&P Global, 2024a) over a 5-year period. An additional report by Morningstar's institution, related to their investment return on both the basic index and ESG index, indicates that 44 per cent of the sustainability market indexes provided by Morningstar have achieved unbeatable market index performance and successfully outperformed most non-ESG equivalent indexes over the past few years (Edwards, 2024). The financial health and condition of a company can be assessed through the process of financial ratio calculation, which measures the current performance of the Company (J. Itman & J. Zutter, 2015). The financial health of a company can be analysed by calculating its financial ratios(Ross et al., 2021). Each calculation will provide an extensive perspective related to financial ratios(Penman, 2009). These financial ratios can be determined by creating a comparison between variables of financial information that can be identified in their financial statement components, such as balance sheets and income statements (F. Brigham & C. Ehrhardt, 2010). In this research, the author will utilise the process of financial ratio calculation, including profitability ratios, liquidity ratios, solvency ratios, efficiency ratios, and market ratios, to create a measurement of the current financial ratios of Ford Motor Company.

The process of measuring valuation through financial analysis is crucial for assessing the fair value and present value of a company's issued equity. The process of valuation analysis is important as a metric for financial analysts and investors to make decisions based on the information of expected returns and risk offsets (Koller et al., 2020). The extended process of examining financial statements and relevant data, along with the process of standardised valuation analysis methods, is crucial for estimating the current intrinsic value of the company (Mensah et al., 2022). In this research, the author will utilise valuation models, such as absolute valuation and relative valuation models, to create a measurement of the current intrinsic value of Ford Motor Company. The absolute valuation model projects future company cash flows by discounting the value using a present value method with a risk-adjusted discount rate. This method heavily utilises the time value of money, along with the company's current risk profile, to measure valuation (Damodaran, 2011). The relative valuation model compares the Company's ratio based on its stock price to measure its valuation (Damodaran, 2011). Net-zero plan designed by the U.S. government was based on ratified Paris Agreement in 2015 that aimed to reduce greenhouse gas emission in the country, and the coverage of ESG plan is covered within the first scope, second scope, and third scope of business process (Jeudy-Hugo et al., 2021). Action that was undertaken on carbon emission gas reduction was enforced by the President of the United States of America in December 2021, and the executive order is directed to the federal government to utilise its scale and procurement authority (Office of the Federal Chief Sustainability Officer, 2021). The primary objective of the previously mentioned order is to achieve five goals required by the nation to be fulfilled by 2050 in its effort to achieve net-zero carbon emissions.

Regarding the continuity of global sustainability efforts, the implementation of environmental, social, and governance (ESG) principles serves as a vital criterion for measuring sustainability in these areas. Specifically, from an investment manager's perspective, ESG is used as a metric during the decision-making process for making an equity investment in a company (U.S. Securities and Exchange Commission, 2022). A trend has emerged, indicating that investors tend to consider ESG-related news publications as factors in their investment decision-making process (Q. Li et al., 2024). The improvement of ESG performance benefits a company's operating capacity, although it does not have a significant impact on profitability and growth capacity (Zhou et al., 2022). Therefore, the Company's profitability and growth are correlated with the condition of the business environment and affect each other. The correlation between company profitability and ESG values is linked to their systematic risk profile and their idiosyncratic risk profile, which are aligned with one another (Giese et al., 2019).

The increase in issues related to environmental concerns, such as climate change, environmentally feasible supply chains, preservation of natural resources, and global welfare, has raised concerns about environmental sustainability among regulators, interested parties, and investors. Their concern for environmental sustainability is to ensure that their business operations have a positive impact and contribute to solving ESG-related problems (Morgan, 2021). As a result, ESG has become a primary concern for companies in focusing on their operational and strategic agendas. This issue has led an investment management company to consider ESG as a factor in making investment decisions. Investors are more favourable towards companies that consider publicly disclosing their ESG concerns, as reflected in the high scores on ESG assessments conducted by external institutions related to ESG matters(Leite & Uysal, 2023). The increasing concern about the environmental impact of business operations has prompted

the U.S. Securities and Exchange Commission, as a regulator, to require companies to disclose their ESG performance (U.S. Securities and Exchange Commission, 2022). Besides the order given by the U.S. Securities and Exchange Commission, there is evidence that shows investors mostly desire to invest in companies with a positive environmental impact (Y. Li et al., 2018). Despite the growth of ESG investing, there has been a rapid increase in Asset Under Management (AUM) across the global market, valued at over USD 18.4 trillion (Olwyn Alexander, 2022).

Although the regulation is mandatory for every Company heavily affected by ESG issues, there is no direct evidence of either a positive, negative, or even an irrelevant impact between ESG and financial performance Brooks & Oikonomou, 2018). Despite showing a correlation (Kumar & Firoz, 2022) between ESG and financial performance, another suggestion is that there is a negative correlation. Despite there being no direct proof of a link between ESG and financial performance, there is evidence related to stock prices that is synchronised with the disclosures of ESG commitments in a company and reduces its stock price volatility in the market (Ruan et al., 2024). Disclosure of an ESG commitment in a company also reduces the risk of a crash in the Company's stock price. It increases the transparency of information delivered by the Company to its public shareholders (Huang et al., 2024).

This evidence, based on scientific research, illustrates how ESG has a significant impact on the price movement of shares, albeit with a negative correlation between ESG disclosure and financial performance. Companies that publicly disclose their ESG concerns have a higher chance of reducing the fragility of their stock prices, which will attract more investors to include the stocks in their portfolios(H. Wang et al., 2023). Upon there is an unfortunate event in the future, a company that is publicly disclose their concern in ESG-matter is likely to experience a lower crash risks compared to the one who is not publicly disclose their concern in ESG-matter (L. Wang et al., 2023). Therefore, stocks that are less likely to lose their value in the future have more chances to experience surges in the future (Jin et al., 2024). Stocks with less likelihood to lose their values over time are most favourable by investors, both retail and institutional investors, compared to the stocks that are more more-likely to lose their value.

Refers to a detailed explanation by Damodaran (2021), which states that ESG factors have an impact on financial performance, followed by their company reputation, and a company's risk profile, which in turn impacts its enterprise value. While a company implements an ESG policy, it will face risks related to changes in its business model as a consequence of implementing the policy. However, opportunities will also arise as part of the ESG-related policy implementation process. There will be a process involving ESG ratings and company sustainability reports, along with assessments from analysts, as well as references from external institutions. Additionally, information will be sourced internally from published company reports. The impact on business operations, including its impact on financial performance, should be assessed and quantified on a case-by-case basis. Here is the diagram that illustrates the impact of ESG factors on company valuation (Damodaran, 2021).

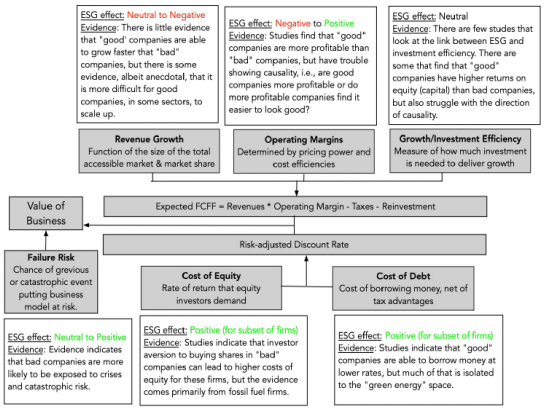

Figure 1: Illustration of the Impact of ESG Factors on Company Valuation, Damodaran (2021)

The issuance of bonds related to ESG issues is part of a methodology to comply with sustainability regulations and attract bond investors to subscribe to newly issued bonds. New forms of bonds should be created as a platform to issue bonds that accommodate particular needs based on relevant issues and as a platform for bond investors to invest their money in specific environmental-related issues. Green bonds are a new form of bond that was created as a platform to accommodate Ford Motor Company in issuing its bonds and for investors to subscribe to particular bonds related to ESG issues(International Capital Market Association, 2021). This type of bond is also accommodating for the bond issuer to reach multiple varieties of potential bond subscribers. It can be used as a platform to promote the Company's concerns regarding environmental issues World Bank Group, 2015). According to the 2023 annual report, it was found that Ford Motor Company has issued two green bonds to support its sustainable financing framework for business operations.

Several studies have shown a positive correlation between ESG scores and debt risk. Debt risks may lead to a higher cost of debt for both bond issuers and bond subscribers in companies with a lower ESG score. Companies with higher ESG scores have relatively lower debt costs, even when measured using traditional metrics. The relationship between ESG scores and financial risk depends on the methodology to benchmark the risk (Alves & Meneses, 2024). Based on a finding, there is concrete evidence that a firm with a lower ESG score is relatively riskier compared to one with a higher ESG score, which could increase its probability of default (Apergis et al., 2022). Following prior studies on the correlation between ESG scores and debt risks and costs, this presents an opportunity to contribute to environmental preservation efforts and access alternative financing options. There is a statement emphasising ESG-related issues, as concerns about ESG-related issues are expected to drive positive impacts on the economy and financial performance (Gillan et al., 2021). Related studies show if there is a positive correlation between company misconduct on ESG issues and the cost of equity capital (Becchetti et al., 2023). This research finding suggests that a company may be prone to losing trust among investors if it does not demonstrate a commitment to addressing ESG issues. The actions taken by corporations in addressing ESG-related issues have successfully reduced the perception of investors about the risks when the Company has successfully obtained a high rating on ESG scores(Mio et al., 2023). The previously mentioned statement could be highlighted if there is a positive impact between overall ESG scores and the cost of equity, followed by the performance of governance scores, which will positively affect the perceived risk of a firm and its consequence, leading to a reduction in its cost of equity capital.

II. LITERATURE REVIEW

The calculation of profitability ratios can be used to identify a company's current capacity to generate profit based on its revenue, assets, and equity (Sholaeman et al., 2021). The process of calculating profitability ratios is mandatory to identify a company's current financial health. Methods for calculating profitability ratios(Penman, 2009) can be done by utilising these formulas.

$$\textbf{Net Profit Margin} = \frac{Net\ Profit}{Revenue}$$

$$\textbf{Return on Asset} = \frac{Net\ Profit}{Total\ Asset}$$

$$\textbf{Return on Equity} = \frac{Net\ Income}{Shareholders\ Equity}$$

$$\textbf{Earning per Shares} = \frac{Net\ Profit}{Number\ of\ Outstanding\ Stocks}$$

The primary function of the liquidity ratio is to assess a company's ability to settle its current short-term liabilities. The liquidity ratio can be used to evaluate a company's liquidity in relation to its short-term liabilities in comparison to its financial condition (Bodie et al., 2008). Here is the methodology for calculating a company's liquidity ratio.

$$\textbf{Current Ratio} = \frac{Current\ Asset}{Current\ Liability}$$

The utilisation of solvency ratio is primarily used to measure a company's ability to maximise its resources to generate revenue and profit (Damodaran, 2011). The ability of a company to generate revenue and profit is primarily a measure of its ability to pay off long-term liabilities. Methods for calculating the solvency ratio can be performed using the following formulas.

$$\textbf{Debt Ratio} = \frac{Total\ Liabilities}{Total\ Assets}$$

$$\textbf{Interest Coverage Ratio} = \frac{Current - year\ EBIT}{Interest\ Expenses}$$

$$\textbf{Defensive Interval Ratio} = \frac{Current\ Assets}{Daily\ Expenditure}$$

The calculation of the market value ratio is part of the process for identifying the current value of a company on the stock market, along with other financial measurement indicators Cho & Pucik, 2005). This financial ratio can help identify the market's desire for financial performance (C. Higgins, 2019). The current market value ratio can be calculated using the price-to-book value and earnings yield formulas as follows.

$$\textbf{Price Book Value} = \frac{Market\ Price\ per\ Shares}{Book\ Value\ per\ Shares}$$

$$\textbf{Earning Yield} = \frac{Earning\ per\ Shares}{Market\ Price\ per\ Shares}$$

The valuation component of the cost of equity is utilised as a metric to measure the return on investment that investors achieve with particular equities, such as stocks and bonds (Damodaran, 2011). The methodology used to calculate the cost of equity can be applied using the following formula.

$$\textbf{COE} = Risk\ Free\ Rate + Beta\ Market\ \times\ Equity\ Risk\ Premium$$

A component of valuation, such as the cost of debt, is utilised to measure current long-term debt and relevant components of financing costs accounted for by a company as part of the valuation process (Damodaran, 2011). The methodology for measuring the cost of debt can be applied using the following formula.

$$\textbf{COD} = Cost\ of\ Debt\ Before\ Tax \times (1 - Tax\ Rate)$$

Metrics of valuation components, such as the weighted average cost of capital, can be used to measure the minimum rate of return required by a particular company to settle current liabilities, including debt and equity to shareholders (Damodaran, 2011). The process of measuring the weighted average cost of capital can be utilised using the following formula.

$$\textbf{WACC} = (Weight\ of\ Equity \times Cost\ of\ Equity) + (Weight\ of\ Debt \times Cost\ of\ Debt\ After\ Tax)$$

A component of valuation, such as the discounted cash flow, is utilised to create an estimate of the current intrinsic value of an equity, such as the stocks of a company (Biondi & Marzo, 2011). The projection of expected cash flow can be achieved by applying a suitable discount rate to determine its present value (Beranek & Howe, 1990). Received benefits are expected to be in the form of cash that is distributed to shareholders through dividends under the process of Dividend Discounted Model (DDM) calculation. It can be in the form of free cash flow available to a company through the process of Three Cash Flow to the Firm Model (FCFF) calculation (Damodaran, 2012).

Financial ratios, such as the price-to-earnings ratio, are heavily relied upon for comparison between companies based on their market price per share to their earnings per share (Lam, 2002). This method is commonly used by investors as a measure of the worthiness and potential growth of a particular company. Here are the methods used to calculate the P/E ratio of the Company.

$$\textbf{P/E Ratio} = \frac{Market\ Price\ per\ Shares}{Earning\ per\ Shares}$$

Methods that can be used to create financial metrics for a company include comparing each of its financial components, such as Enterprise Value (EV) and current Earnings Before Interest, Taxes, Depreciation, and Amortisation (EBITDA). This comparison will yield information related to the valuation of a particular company, which can be broadly used as a metric for equity analysts (Mauboussin & Rappaport, 2021). Extensive studies have assessed the impact of the time value of money on financial decision-making, as well as its influence on how investors evaluate their investment instruments to inform investment decisions (R. Kratter, 2019). This concept also influences the decision-making process of investors regarding the concept of investment returns over time (Berk & DeMarzo, 2019). Hereafter, the process of decision-making for investors is heavily influenced by the relative value of time and the time value of money, which is correlated with the return on invested money in a particular equity. Process of determining the time value of money commonly utilising the DCF method in creating a projection of future cash flow based on a discount rate applied to cash flows to present value (P Singh & Anshu, 2017). The current projected future cash flow of a company will be applied a discount rate to obtain the current present value of the Company (Sack Elmaleh, 2021). The application of a discount rate is used to create a projection of the future value of money, illustrating the opportunity cost of particular equity growth in the future (Damodaran, 2011).

III. RESULTS AND DISCUSSION

After analysing the final report of Ford Motor Company from its annual reports from 2019 to 2023, and examining the current sales growth trend in the U.S. automobile industry, the author has gained several insights related to the current business environment, financial performance, and financial ratio performance. In this section of the chapter, the author will present the results of the analysis based on the current business environment, financial performance, and financial ratio performance within the industry landscape. Based on the perspective of a SWOT analysis, Ford Motor Company has robust brand power and market presence that can be leveraged as a resource to compete in the electric vehicle automobile market. Ford Motor Company also has a diversified business model that generates company income beyond automobile sales, indicating that the Company has prepared for future uncertainties. Along with the strength currently embedded in Ford Motor Company, some issues serve as weaknesses in entering the electric vehicle competition.

Issues such as supply chain and production risks have become a noticeable threat to the production process, resulting in a significant increase in final product prices. In terms of labour and cost structure, there is a burden that hinders Ford Motor Company from advancing its process in preparing for the electric vehicle automobile market competition. The current risks observed in the labour and cost structure essential for the manufacturing process include losses in the Company's competitive cost structure and financial performance. An additional challenge arises from the U.S. federal government, which is currently enforcing several regulations related to environmental issues, such as the U.S. net-zero target in 2050 – a follow-up regulation after the U.S. federal government ratified the 2015 Paris Agreement. These regulations are part of the implementation of Environmental, Social, and Governance (ESG) as a business process. Reducing the carbon footprint has become a challenge for Ford Motor Company in its business processes, as this action requires additional steps, such as transforming the current manufacturing process and shifting to a new supply chain provider.

On the other hand, there is an opportunity for Ford Motor Company to expand its product portfolio lineup to include electric vehicle automobiles, although the process of product research and development presents a challenge that may be time-consuming; however, it can be considered a necessary investment. Actions in product research and development of electric vehicle automobiles are necessary and important to penetrate new market targets under a net-zero business environment in the future. Running a business under a net-zero environment transition is indeed full of challenges that come from 360 directions. Electric vehicle automobiles are considered a relatively new product in the market; thus, they face competitors that operate worldwide. Dynamic competition in the industry has become a threat to the Ford Motor Company. Pricing strategy has played a key role in exerting pressure on the Company, as well as current government regulations related to ESG implementation, such as the 2015 Paris Agreement and the 2050 Net-zero Plan, which Ford Motor Company must comply with in the near future.

Based on the recent ESG report released by Sustainalytics, Ford Motor Company has demonstrated a positive response to implementing Environmental, Social, and Governance (ESG) as part of its business process. Ford Motor Company's current good response has been demonstrated in its ESG rating, which was rated at 22.8, indicating medium risk, and ranked 30th out of 88 companies in the automobile industry. The current level of management willingness in implementing Environmental, Social, and Governance (ESG) as part of Ford Motor Company's business process is ranked at a strong level, based on the Sustainalytics report. Supported by the report released by Ford Motor Company on their annual report, which stated that Ford Motor Company is showing progress in implementation of net-zero transition on scope 1 to scope 3 emissions. Based on a PESTLE analysis, Ford Motor Company has been challenged by several levels of factors in the political, economic, social, technological, legal, and environmental aspects. On the political front, Ford Motor Company has encountered a problem with regulations, such as the U.S. net-zero plan by 2050, which the U.S. federal government is currently implementing. For the factors of economy, Ford Motor Company is currently challenged by regulations that have been implemented, such as the U.S. net-zero plan by 2050, which requires additional capital expenditure during the implementation of government regulations on business processes. Indeed, there might be a potential loss during the implementation of government regulations on their business processes.

There are challenges on the social side, as statistics released regarding the sales growth of electric automobiles in 2020 have demonstrated public enthusiasm for electric vehicles. Suppose Ford Motor Company, as a piston-engine automobile manufacturer, does not initiate any product innovation to create new product diversification. In that case, there will be a chance for the piston-engine automobile manufacturer to be unable to compete with electric automobile manufacturers as new entrants in the automobile industry market. In the technological sector, Ford Motor Company is facing a challenge that arises in response to consumer demand for automotive products. The primary trigger of rapid technology development in the electric automobile industry is the action taken by governments in response to their commitment to implementing environmental, social, and governance regulations, such as the U.S. net-zero plan by 2050.

The current rapid pace of growth in electric automobile technology has created several business challenges for traditional automobile manufacturers, such as Ford Motor Company, which has a primary product powered by a piston engine and is required to follow similar trends currently happening in the industry to maintain its position and market share in the near future. Ford Motor Company is facing challenges in the legal sector, such as the U.S. net-zero plan by 2050, as implemented by the U.S. federal government, which is currently enforced on companies operating in U.S. territory. Environmental issues are a part of the Ford Motor Company, and these challenges are related to U.S. federal government concerns regarding environmental issues. Latest government initiatives, such as the U.S. net-zero plan by 2050, have hindered Ford Motor Company's growth, and this issue needs to be addressed by creating a product lineup portfolio diversification, including electric automobiles, that is necessary to fulfil the government's requirements for its 2050 net-zero plan regulation.

Analysis based on the Five Forces Analysis yielded several findings related to the threats of new entrants, the bargaining power of suppliers, the bargaining power of buyers, the threat of substitute products, and rivalry among competing firms. During the period of net-zero transition, it is clear from reported data that there has been an increase in the sales of electric vehicle automobiles. This demonstrates that visible threats are emerging from new entrants in the market, such as electric automobile

manufacturers that offer more advanced technologies and features to consumers. Aside from the challenges that come from new entrants, Ford Motor Company is being challenged to transform its supplier base to be compatible with a net-zero business environment as per U.S. federal government issued regulation related to net-zero target in 2050 that requires every Company operates in the U.S. to creates a strong supply chain that is positively contributes in carbon emission reduction. Statistically, the data on electric automobile sales show strong evidence that buyers have a strong position in the current market competition in the automobile industry, and these issues could be translated if most consumers' preferences in automobile products have shifted to newly developed technologies, such as electric automobiles. In this market competition scenario, there is a mandate for every automobile manufacturer, such as Ford Motor Company, to pivot their piston-engine automobile product and immediately adopt electric automobile technology in the near future. The acquisition technology of electric automobile manufacturers should be emphasised in their long-term business plans to maintain their relevance to consumers.

If we inspect company performance based on Year-on-Year growth performance there is a finding if the growth of Ford Motor Company stocks price based on CAGR are within negative number for the periodic of year 2019 to last monitored price on Q2-2025 have demonstrated if the performance stocks price of Motor Company are underperformed within the time period 2019 to Q2-2025. Accumulated at final CAGR growth based on YoY growth on stock price at the level of -4.28 percent, shows if Ford Motor Company stocks are unable to provide a return to their shareholders within the time period of 2019 until the last monitored price in Q2-2025. Stocks that perform less well in providing returns to their shareholders are less attractive from an investor's perspective. The current growth performance of the market capitalisation of Ford Motor Company, viewed from a Year-on-Year perspective, within the time period 2019 to Q2 2025, is disappointing. Over the time period 2019 to Q2-2025, the CAGR growth of Ford Motor Company's market capitalisation only accumulated at -6.69 percent. Market capitalisation of a stock represents the worthiness of a company among investors on the stock market. The significant reduction in market capitalisation growth on the stock market has reduced the attractiveness of Ford Motor Company stocks among potential investors.

Based on the author's analysis of revenue and net profit growth from 2019 to 2023, the author has concluded whether the growth of both revenue and net profit is positive, as indicated by the annual reports for the timeframe from 2019 to 2023. Over the portion of revenue growth, Ford Motor Company has successfully accounted for the growth of revenue, which is USD 20,291, or a percentage increase of 13.02 per cent. The CAGR growth on a year-on-year basis is -10.89 per cent. This revenue growth was followed by net profit growth, which numbered in positive numbers as well and successfully accounted for the growth numbered at USD 4,300 or 9,148.94 percent while the CAGR growth on a Year-on-Year basis is levelled at 47.80 percent. The current position of Year-on-Year CAGR growth in revenue is insufficient to support investor confidence in the Company's future profitability, despite growth in net profit. Based on the author's analysis of current net-working capital growth, the author has concluded that the growth of its net-working capital is recorded at a positive number. Thereafter, the over-released annual report for 2019 to 2023 by Ford Motor Company has successfully accounted for the growth of net working capital, which is numbered at USD 3,505, or in percentage terms, at 110.74 per cent. Although the growth in bare numbers is demonstrated as positive, in perspective of CAGR growth on a Year-on-Year basis, it is recorded as a negative accumulation of around -38.06 per cent over the past 4 years. Overall, the condition of net working capital indicates whether Ford Motor Company needs to initiate immediate action to increase its net working capital, which could provide sufficient liquidity for business operations.

The author has concluded that the growth of both assets and equity is positive, based on the timeframe from the 2019 annual report to 2023. On the side of revenue growth, Ford Motor Company has successfully accounted for the growth of assets, which is valued at USD 14,773, representing a 5.71 per cent increase, while the CAGR growth on a Year-over-Year basis is 18.88 per cent. Current revenue growth was followed by equity growth, which numbered in positive numbers and accounted for the increase of USD 9,568 or 28.79 percent. Although the growth was scored at a positive number, the CAGR growth on a Year-on-Year basis is levelled at -37.04 percent. The negative level of equity, as indicated by the CAGR growth on a Year-on-Year basis, compared to the growth of assets, suggests that the Company has less liquidity for its business operations. A company with poor liquidity for business operations is less attractive from an investor's perspective. Therefore, it is necessary to increase the Company's liquidity immediately by boosting equity growth and increasing company assets. Thereafter, the analysis of the current ratio growth of Ford Motor Company has concluded that its current ratio growth is positive. Therefore, in their annual report for 2019 to 2023, Ford Motor Company has successfully accounted for the growth of the current ratio, which increased by 3.43 per cent, or in percentage terms, by 2.95 per cent. Although the number of growth based on final year against base year is positive, CAGR growth on a Year-on-Year basis is accounted at a negative level around -37.63 percent for the past 4 years. One further action that Ford Motor Company can take is to increase its current ratio to provide sufficient liquidity, which is essential for maintaining business operations. The importance of increasing liquidity is that it improves investor confidence in taking a long position on Ford Motor Company, which is reflected in the increase in the stock price.

Through the analysis of the growth of net profit margin, return on assets, return on equity, and earnings per share of Ford Motor Company, the author has concluded that the growth in these profitability ratios is mostly positive. Henceforth, in their

annual report 2019 to 2023, Ford Motor Company has successfully accounted for the CAGR growth on a year-over-year basis for net profit margin, accounting at 37.86 percent for the past 4 years. Following the growth of the net profit margin, the return on assets is accounted for, with growth at a CAGR levelled at 47.40 per cent on a year-on-year basis. However, the growth of return on equity is only recorded at the CAGR level, which is 10.86 per cent over a Year-on-Year basis. Although the growth of return on equity only recorded 10.86 percent on a year-over-year basis, the growth in earnings per share of Ford Motor Company is successfully accounted for by the growth on a CAGR levelled at 47.69 percent on a year-over-year basis. With full confidence in the growth of the net profit margin and return on assets on a CAGR basis, there will be an opportunity for Ford Motor Company to increase its return on equity. The growth of return on equity will accompany the positive growth of return on assets upon the Company settling its liability balance account. The growth of assets will drive the growth of return on equity; thus, Ford Motor Company is under pressure to immediately improve its performance in key areas, such as net profit margin, return on assets, and return on equity, to regain investor confidence and attract investment in the company. Growth in earnings per share will follow as the optimisation and improvement in net profit margin, return on assets, and return on equity performance are completed.

The author's analysis of the debt ratio and interest coverage ratio concludes that the growth of both ratios is negative over the timeframe of the annual reports from 2019 to 2023. On the side of debt ratio growth, Ford Motor Company has successfully reduced the growth of debt ratio, which is numbered at -3 percent or in percentage, is numbered at -3.45 percent, while the CAGR growth on a year-on-year basis is levelled around -3.42 percent. Thereafter, there is an increase in its interest coverage ratio, accounted at 0.08 or in percentage ratio is levelled at 12.70 percent while the CAGR over Year-on-Year basis are levelled at 146.63 percent. The optimisation and improvement of the debt ratio and interest coverage ratio are crucial in enhancing Ford Motor Company's financial capacity and reducing the Company's debt in the future. Under current conditions, the debt ratio CAGR growth has demonstrated a good performance in reducing debt, although it should be improved and optimised. The current condition of the interest coverage ratio should be highlighted, as this section is very critical for immediate action on improvement and optimisation of the Company's ability to settle debt interest payments. Improvement in the debt ratio and interest coverage ratio is critical to increasing the Company's ability to run its business based on the judgment of the defensive interval ratio, which is set at a negative number. Without any improvement in the debt ratio and interest coverage ratio, companies are about to lose potential investors in investing in Ford Motor Company, as investors are not attracted to the Company's valuation.

Through an author's analysis of price book value and earnings yield growth from 2019 to Q2 2025, the author has concluded that the growth of both price book value and earnings yield is variable. Although the growth on a year-on-year basis is variable, the trendline has shown a positive trend. On the side of price book value growth, Ford Motor Company has successfully scored the growth of price book value, numbered at 0.05 or in percentage, is numbered at 30.58 percent, while the CAGR growth on a Year-on-Year basis is scored at a level of 28.67 percent. Thereafter, the growth of price book value, Ford Motor Company's earnings yield – the amount of generated earnings by the Company against invested capital per share – and growth are all positive, accounting for growth of 8.64 per cent or 4,802.58 per cent. Meanwhile, the CAGR growth over a Year-on-Year basis has successfully achieved a growth of around 50.48 per cent. Overall, the condition of the price book value is dependent on the financial condition of Ford Motor Company as a whole, as the price book value reflects the current financial health of Ford Motor Company. There is no other way to improve the price-to-book value of the company except by increasing its overall financial performance through enhanced income streams and reduced debt. The earning yield, on the other hand, is reflected in the Company's income against the capital expended on the stocks. Although earning yields are reflected in the Company's income, the nominal rates are dynamic based on the current price of stocks. If the stock prices on the market are trading at a bearish level, that is the moment when the yield will become negative, so that the decline in company income will affect the yield. Considering the importance of stock prices and company income to improving earnings yield, it is crucial to enhance company income performance. In contrast, the increase in company stock prices will follow the improvement in income performance.

Based on calculation, Ford Motor Company has a current cost of equity levelled at 13.68 percent as per the 2024 annual report, while Damodaran has benchmarked the cost of equity in the Auto & Truck industry around 11.57 percent. Their cost of debt is levelled at 12.84 percent based on the author's calculation on their 2024 final report, while Damodaran has benchmarked the cost of debt in the Auto & Truck industry around 4.81 percent. Ford Motor Company has a current weighted average cost of capital levelled at 13.49 percent while Damodaran has benchmarked the weighted average cost of capital in the Auto & Truck industry around 10.34 percent. Since Ford Motor Company's cost of equity is only slightly higher than Damodaran's benchmarked cost of equity, it is more likely to be preferred by investors. While the cost of equity is heavily exceeded by the Damodaran benchmarked cost of debt, Ford Motor Company is more likely to be exposed to debt risk that will affect business operations. Reflecting on the level of weighted average cost of capital, which is slightly above the Damodaran benchmarked weighted average cost of capital, Ford Motor Company is more likely to have a level of investment worthiness. Under this condition, Ford Motor Company's net operating profit after tax is negative, although the actual number is close to zero. Although there is positive growth in net operating profit after tax, this number does not include current debt carried over on the Ford Motor Company

balance sheet within the time period.

Growth over free cash flow to the firm is projected to be positive from 2023 to 2033. This number was calculated by subtracting net capital spending and the change in net working capital from net operating profit after tax. Based on the results, Ford Motor Company's free cash flow to the firm is projected to have a positive growth until 2031, although the number remains steadily around a negative level. Despite experiencing positive growth in free cash flow to the firm until 2031, a negative growth is projected for the years 2032 onwards, which needs to be highlighted by corresponding stakeholders. Current level of Ford Motor Company shares price compared to its book value indicates if current level of price of Ford Motor Company – on which levelled at USD 9.21 – are positioned less than current book value – on which amounted at USD -103.36 – and based on the number the stocks of Ford Motor Company are levelled around -0.09 on market value against its book value.

In contrast, the indicator of good stocks is typically around 1.0 or a maximum of around 3.0. Considering the negative level of Ford Motor Company's Book value, the author could argue that the current market-traded price of Ford Motor stocks is undervalued, with significant risks underlying their financial performance. Supported by the current beta rate of Ford Motor Company, which is at 1.64. The Company's stock volatility is 1.64 times that of the broader stock market, indicating that these stocks are prone to move significantly in either a bullish or bearish direction, depending on the situation.

The overall performance of Ford Motor Company's P/E value against the current P/E value of the industry classification in the consumer discretionary sector throughout the year is levelled at a positive number, recorded at 7.04 as of the second quarter of 2025, according to the report. It was below the P/E value of the industry classification of consumer discretionary, recorded at 28.10 as of the second quarter of 2025. Inspecting over the Ford Motor Company EV/EBITDA, there is evidence that Ford Motor Company has a good EV/EBITDA levelled at 11.48 when compared to the current EV/EBITDA benchmark for consumer discretionary industry classification, which was levelled at 19.06 as per a report released in the second quarter of 2025. Global agreements on ESG planning, such as the 2015 Paris Agreement, have been recognised as a component of the investment planning process. Hence, each of the first, second, and third scopes of a company's business process is being analysed accordingly to the level of sensitivity of the industry towards ESG issues. Current business process components, such as net-zero targets, initiatives, and achievements, are analysed accordingly during the investment plan creation process to ensure that the engaged Company has met its ESG target.

IV. CONCLUSION

Under the process of the net-zero transition, it is very clear that Ford Motor Company is exposed to the risk of sanctions that could affect its future performance. Although the Company's current capability in adapting to a net-zero environment is a consideration, the Company's profitability and core performance are prioritised during the process of screening for potential names. Although the Company's profitability and performance are primarily focused on the process of stock curation, ESG factors will be considered secondary in this process, given the visible risks associated with selecting a company with a poor ESG record. Multidimensional factors held the account of the process of selection for the investment. Based on the previous statement, it is insufficient to explore a stock based solely on current trends, as reflected in the increase in electric vehicle sales among consumers. Thus, we cannot ignore the progress of technology development in electric vehicle automobiles for the future, considering the regulations that urge manufacturers to initiate the transition to net-zero emissions, so the Company can continue its operations in the future.

Adapting to business situations in a net-zero transition era is essential for the continuation of business operations. In this case, Ford Motor Company is the most experienced Company in the automobile industry, having navigated a massive, turbulent business situation for over a century. We can take an optimistic view of their adaptation to an electric vehicle product lineup. However, if they resist using current technology, they will face government regulations, such as the net-zero transition progress, which will force a setback in their business operations in the future. This is a situation that Ford Motor Company would like to avoid. This research examines the impact of the net-zero transition on Ford Motor Company's valuation, focusing on the early years of the transition in the U.S. federal territory. Further research is needed to monitor the progress of Ford Motor Company's implementation of ESG values in its business operations. Company valuation needs to be researched further, along with the implementation of ESG value, to track the effect of ESG value implementation on company valuation. Further research is necessary to explore the progress of ESG implementation and the valuation of Ford Motor Company, ensuring that each component is correlated in the long-term context of the automobile industry.

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