

# The Impact of COVID-19 on The Automotive Industry

## -- A Case Study of Ford Motor

Jiarui Liang<sup>1, †</sup>, Xingchen Pan<sup>2, †</sup>, Binger Wang<sup>3, \*, †</sup>, Siyuan Yang<sup>4, †</sup>

<sup>1</sup>School of Management, Mingchuan University, Taipei 111, Taiwan

<sup>2</sup>School of Economics and Management, Tianjin University of Science and Technology, Tianjin 300457, China

<sup>3</sup>International Business School Suzhou (IBSS), Xi'an Jiaotong-Liverpool University, Suzhou 215028, China

<sup>4</sup>Sun Wah International Business School (SWIBS), Liaoning University, Shenyang 110000, China

\*Corresponding author. Email: Binger.wang20@student.xjtlu.edu.cn

†These authors contributed equally

### ABSTRACT

Starting from the COVID-19 epidemic in recent years and combining the characteristics of the automobile industry, this paper will take Ford as a prominent case. Through the analysis of Ford's financial situation and strategic analysis. Discuss how the COVID-19 epidemic has affected the automotive industry in recent years, and what measures should the automotive industry take to get rid of these negative impacts, or what opportunities should be seized from the epidemic to promote new industry development

**Keywords:** Epidemic, Auto industry, Ford, Financial analysis, Strategic analysis

### 1. INTRODUCTION

Ford has been established for more than 100 years and is a world-famous automobile brand loved and trusted by consumers. Ford was the first car manufacturing company to have a complete car production line and is one of the world's top 500 brands. It has many brands, the most representative ones are: Ford, Lincoln. In the 2008 economic crisis Ford was the only company that came out of the economic crisis without state relief, relying only on its own operational improvements [1].

In 2020, the outbreak and spread of the Novel Coronavirus pneumonia pandemic had a dramatic impact on the global economy. As a result of the new coronavirus pneumonia (COVID-19) epidemic, the global economy has experienced the most severe downturn since SARS in 2002 and the economic outlook is full of uncertainty. The epidemic has had a huge impact on aggregate demand, aggregate supply, employment, and market expectations in the short term, and economic uncertainty has increased dramatically. The quarantine measures not only plunge consumption into a low-demand state, but also delay the return to work and limit the flow of goods, but the biggest impact on the economy is the shutdown. First, the outbreak will paralyze production and sales. Second, over time, businesses' cash flow will dry up. Last but not least

when the epidemic ends, companies will lack the staff and capital to resume production. Therefore, it is worthy of considering different objective functions such as maximizing profit and minimizing conditional value-at-risk of cost or multiple objectives addressing the tradeoff between cost and reliability [2]. It is particularly important to analyze the economic impact of the epidemic.

This research area is sometimes referred to as the economic transportation code. Areas such as "the economic impact of the epidemic on automobile manufacturing" have gradually broadened. However, much of the theory on how to increase economic growth has focused on explaining consumption boosts or improving epidemic conditions and adjusting prices. A well-known problem with increasing revenues to cover losses is that it does not take into account that consumption takes time to recover and that improved cash flow requires capital transfers. In addition, methods to improve profitability by optimizing costs, increasing purchasing power, reducing supplier bargaining power, and reducing costs are less well studied. Supply chain delivery and compression is a challenging issue in this area. This makes it particularly important that the company has excellent risk resistance as well. The company needs a highly focused corporate strategy and

the support of big data adapted to the times. The impact is relieved by this strategy of cost saving, firstly, by further enhancing automation and intelligence, and secondly, by informatization and virtualization of operation management [3]. Thus, the purpose of reducing operation and management costs and strengthening supply chain risk resistance to increase revenue.

The purpose of this chapter is threefold: First, to analyze the economic impact of the epidemic on Ford through the financial situation, and secondly, how to take economic protection measures and self-protection mechanisms under the long-term impact of the epidemic on Ford's economy. The third is to recover losses from previous years and increase profits through cost savings and supply chain optimization compression and transfer, etc. The most important means of transferring the supply chain is production instead of purchase, which reduces the price difference and logistics and transportation costs provided to suppliers.

For the production and management components, Ford Motor Company successfully implement TQM. Total quality management (TQM) requires a total commitment to a model based on customer satisfaction rather than profit maximization [4]. Secondly, a full analysis of the impact of production, sales, other ancillary products and businesses, employee value, and Ford itself, were analyzed in separate sections. Thirdly, to elaborate and suggest measures that Ford can take in response to the impact caused by the outbreak.

COVID-19 outbreak in 2020 has had a major impact on the world economy, security and global development. The COVID-19 has further strengthened the market's pessimistic expectations of the global economy [5]. The automobile industry is a traditional manufacturing industry dominated by physical production and sales. Under the influence of COVID-19, the real economy is the first to bear the brunt.

### **2.1. From a Business Perspective**

COVID-19 has an impact on the company from production, sale to after sales service. In terms of production, the illness of the company's employees and the reduction of customer demand have affected the company's production efficiency. In terms of sales, the decline of residents' income will have a derivative impact on the normal cycle of economy and society [6], COVID-19 led to the reduction of customer trips, seriously affecting the real economy sales. In terms of after-sales service, due to the reduced travel of consumers, the use of cars will also be reduced, resulting in the reduction of car repair and maintenance services.

### **2.2. From a Financial Perspective (Unit: thousand dollars)**

The total sales volume of COVID-19 was \$155900 in 2019, and COVID-19's total sales fell to \$127144 in 2020 due to the impact of COVID-19. The production of cars has also been adjusted with the downturn of the market. In 2019, the COGS of the company was \$143405, while in 2020, it decreased to \$121336. Due to the fixed operating costs of the real economy, the company's net income fell sharply and lost \$1279 in 2020. Adjustments in 2021, With the Ford Motor Co's response to COVID-19, the company's financial position improved in 2021. The first is the total sales of the company, which intuitively shows the company's finance, which has increased to US \$136341, the COGS has been reduced to US \$119903, and the net income of the company has changed from loss to profit of \$17937.

**Table 1.** Income statement of Ford

Income statement			
Unit: thousand dollars	2021	2020	2019
Total revenue	136341	127144	155900
Sales	136341	127144	155900
Other revenue			
Cost of goods sold	119903	121336	143405
Gross profit	16438	5808	12495
Total operating expenses			
Selling/general/administrative expenses	11915	10193	11161
R&D			7400
Discount/amortization			
Interest expense(income)-net operations			(44)
Additional expenditure(income)	1702	24	859
Total other operating expenses			
Operating profit	2821	(4409)	519
Interest income(expenses)-net non-operating income	8305	2616	8
Income(loss) from sale of assets			
Other net expenditure	6654	667	(1167)
Net profit before tax	17780	(1116)	(640)
Negative income tax	(130)	160	(819)
Net profit after tax	17910	(1276)	179

### ***3.1. The COVID-19 Pandemic Is Taking a Toll on Ford's Production***

#### ***3.1.1. The Epidemic Has Led to a Reduction in the Production of the Factory***

In early 2020, novel Coronavirus affected several countries around the world. For a time, the United States had the highest number of novel Coronavirus deaths in the world. The spread of the epidemic has led to factory closures, reduced working hours and number of workers, and reduced effective production time, leading to a decline in factory output.

#### ***3.1.2. The Epidemic Has Led to a Decline in Demand***

The global spread of the epidemic led to a decline in purchasing power in the global market and consumers' willingness to consume, as well as a decline in market demand for Ford products. In order to reduce corporate losses, Ford was forced to cut production plans and reduce product production.

### ***3.2. The COVID-19 Pandemic Is Taking a Toll on Ford's Sales***

#### ***3.2.1. The Epidemic Has Led to a Decline in Market Demand and Sales of Ford Products***

The global COVID-19 pandemic has led to a shift in the way many people consume, and it will be an increasing proportion of that shift for some time to come. In addition, the epidemic also has a great impact on the economy, and people's income has been reduced, especially for low and middle income groups. Due to the decrease of economic income, they have to reduce consumption to ensure the normal operation of family finances, and their consumption concept has also changed [7]. As a result, the consumption power in the global market declined, and both the demand and sales of Ford's products declined.

#### ***3.2.2. The Epidemic Has Led to the Loss of Product Sales Networks***

Affected by the epidemic, part of the country or region's Ford dealers by reason of capital chain rupture closure or bankruptcy, j.d. power according to the report, the United States has 24 states (44%) of 2019 retail sales allow dealers to sell cars, other 26 states (56%) of 2019 sales or completely restrict selling cars, to only online or remote sales are allowed [8]. This situation has a negative impact on the sales lines and network of Ford products, which reduces the number of sales nodes and leads to a decline in sales

#### ***3.2.3. The Epidemic Has Hampered the Shipment of Products***

Novel coronavirus, due to its strong infections, high speed and wide range of transmission, has exerted a great negative impact on railway transport, road transport and civil aviation transport in a short period of time, put great pressure on the transport links of logistics, and also greatly affected the development of the whole logistics industry [9]. Many countries restrict the import and transport of foreign goods, including some Ford products. As a result, Ford's products were blocked from reaching the market in time.

### ***3.3. The Coronavirus Pandemic Has also Affected Ford's Other Products and Businesses***

#### ***3.3.1. COVID-19 Has Affected Auto Credit Business***

Affected by the epidemic, many consumers choose to stay at home rather than travel, and consumers' willingness to travel has significantly decreased. That has led to a sharp decline in car rental and car credit,

#### ***3.3.2. COVID-19 Has Affected Vehicle Maintenance Business***

Due to the impact of the epidemic, consumers' desire to travel is reduced, the number of people out and the number of vehicles driving is reduced, thus reducing the number of vehicle breakdown or damage, and thus affecting the vehicle maintenance business.

### ***3.4. The Impact of COVID-19 on Ford Itself***

The company's production and sales have declined as a result of the pandemic. As a result, in 2020, Ford's revenue fell significantly and the company's debt increased significantly. This situation has brought tremendous pressure to the capital chain of enterprises.

Affected by the epidemic, the entire auto market has been impacted, with Ford's product sales declining and its market share shrinking.

In addition to these effects, the prolonged outbreak will also lead to a shortage of funds for Ford, which may have to lay off employees. This will further reduce the actual labor force within the company, creating a vicious circle.

### ***3.5. How Should Ford Face the Coronavirus***

#### ***3.5.1. Timely Adjust Corporate Strategy According to Market Changes***

After carefully studying the market characteristics during the epidemic, Ford should make some adjustments

to its corporate strategy, shift from expansion strategy to contraction strategy, and focus on maintaining market share, minimizing losses and liabilities, so as to build strength by retreating. At the same time, we should have a certain vision to predict new sales pain points in the market after the epidemic recedes.

### *3.5.2. Identify New Market Hot Spots Brought by the Epidemic and Develop Products Adapted to New Hot Spots*

Ford should seize the opportunity from the epidemic, make use of its own advantages, research and develop unmanned delivery vehicles, unmanned disinfection vehicles, unmanned sweeper vehicles and other products with huge demand during the epidemic, and try to open new markets.

## **4. CONCLUSION**

The epidemic appears to influence Ford's economy negatively in several aspects. The research found that Ford's production and sales declined sharply as a consequence of the market's recession. It was also discovered that Ford's market share shrank and its market position weaken.

Also reasonably thorough, the current study still has limitations. The very first constraint on this research was the lack of comparison with other firms within the same industry. This results in an information deficiency of industrial overall performance, which supposes to provide assistance in identifying Ford's potential defects bench marking versus equivalent firms. Additionally, the study does not consider factors other than the epidemic which might also affect Ford's performance. Finally, since only three year's data is referred to in this study, the analysis does not necessarily represent Ford's holistic dynamics.

In the future research, Ford's significant competitors' financial data is expected to be included in the analyzing process. In such a manner that more detailed analysis can be made. Further on, future studies shall strive to take more inducement of Ford's performances in to consideration by reflecting on reliable news regarding Ford's economic indication. Simultaneously, it is of necessity to refer to Ford's previous five years' fiscal data so as to capture a broader view of the firm's general performance.

Despite the aforementioned limitations, the study contributes to suturing the gap of exploring the primary approaches of crisis recovery. In light of this study, prompt adjustments of corporate strategies in accordance with market fluctuation are urgently needed. Furthermore, it is essential to research and develop new products based on the up-to-date market demands.

## **REFERENCES**

- [1] Edmunds H E. The Ford Motor Company Archives[J]. *The American Archivist*, 1952, 15(2), pp.99-104.
- [2] Sancı E, Daskin M S, Hong Y C, et al. Mitigation strategies against supply disruption risk: a case study at the Ford Motor Company[J]. *International Journal of Production Research*, 2021, pp.1-21.
- [3] Chelst K, Sidelko J, Przebienda A, et al. Rightsizing and management of prototype vehicle testing at Ford Motor Company[J]. *Interfaces*, 2001, 31(1), pp. 91-107.
- [4] Zeller T L, Gillis D M. Achieving market excellence through quality: the case of Ford Motor Company[J]. *Business Horizons*, 1995, 38(3), pp. 23-32.
- [5] Yun Li, Jiehua Xie, Chengqing Li, Comparison and Prospect between the current round of epidemic impact crisis and the 2008 financial crisis[J]. *International finance*, 2021, (02), pp.55-61
- [6] Jixiang Fan, Impact of covid-19 pneumonia on Residents' income[J]. *Qinghai Finance*,2020, (08), pp.41-44
- [7] Fu LIFang. Impact of epidemic on household consumption and countermeasures [J]. *Cooperative Economics and Science and Technology*,2022(05), pp.90-91.
- [8] Shi Caiyun. American Automobile Dealers under epidemic situation [J]. *Operator (Automotive Business Review)*,2020(05), pp.84-85.
- [9] REN Q. Opportunities and challenges of logistics industry development under COVID-19 [J]. *China Storage and Transportation*,2021(06), pp.174-175.
- [10] Robert L. Rankin, (2017) "The importance of Comparative Study", Retrieved April 22, 2022, from [https://www.academia.edu/31742794/The\\_Importance\\_of\\_Comparative\\_Study](https://www.academia.edu/31742794/The_Importance_of_Comparative_Study)