Journal of Advances and Scholarly Researches in Allied Education
Vol. 22, Issue No. 01, January-2025, ISSN 2230-7540

DOI: https://doi.org/10.29070/htqqmx91

Financial performance analysis of automobile industry after Covid-19 Pandemic

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Abstract: The COVID-19 pandemic had a profound impact on the global automobile industry, disrupting supply chains, reducing consumer demand, and altering production strategies. This research paper provides a comprehensive financial performance analysis of the automobile industry post-COVID, focusing on key financial indicators such as revenue growth, profitability, liquidity, and market capitalization. Using a comparative approach, this study examines financial data from major automobile manufacturers worldwide, highlighting the variations in recovery trends across different regions and market segments. The analysis incorporates key financial metrics such as Return on Assets (ROA), Return on Equity (ROE), Earnings Before Interest and Taxes (EBIT), and debt-equity ratios to assess the financial health of the industry. Additionally, the study explores the role of government stimulus packages, digital transformation, and shifts in consumer preferences towards electric vehicles (EVs) and sustainable mobility solutions. The findings indicate that while the automobile industry has shown signs of recovery, the pace of financial rebound varies among companies, influenced by factors such as operational efficiency, technological adaptation, and market demand. This research contributes to the existing literature by offering a data-driven evaluation of the industry's financial resilience, providing insights for investors, policymakers, and industry stakeholders to navigate future uncertainties effectively.

Keywords: Financial Performance, Automobile Industry, Post-COVID Recovery, Revenue Growth, Profitability Analysis, Liquidity Ratios, Market Capitalization

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INTRODUCTION

The automobile industry is one of the most critical sectors of the global economy, contributing significantly to GDP, employment, and technological advancements. However, the COVID-19 pandemic severely impacted the industry, disrupting supply chains, halting production, and causing a sharp decline in consumer demand. Lockdowns, travel restrictions, and economic uncertainty led to a drastic reduction in vehicle sales worldwide. Automobile manufacturers faced challenges such as liquidity crises, declining revenues, workforce shortages, and increased operational costs due to health and safety regulations (Desai 2022).

As the world gradually emerged from the pandemic, the automobile sector embarked on a journey of financial recovery. Companies adapted by implementing digital transformation strategies, optimizing production, and focusing on electric vehicle (EV) development. Government stimulus packages, low-interest rates, and increased consumer confidence played a role in stabilizing the industry. However, the recovery pace varied across regions, with some markets rebounding faster than others. The post-COVID automobile industry also witnessed structural changes, including shifts toward sustainability, automation, and semiconductor dependency, which continue to influence financial performance.

This research paper aims to analyze the financial performance of the automobile industry after the pandemic, evaluating key financial indicators such as revenue growth, profitability, liquidity, and capital structure. It will also explore the role of external factors such as government policies, supply chain resilience, and evolving consumer preferences in shaping the industry's financial landscape (Devi et al. 2022).

Impact of COVID-19 on the Automobile Industry

The COVID-19 pandemic caused unprecedented disruptions in the global automobile industry, affecting manufacturers, suppliers, and consumers alike. The sudden imposition of lockdowns and movement restrictions led to the closure of factories, a decline in automobile sales, and supply chain bottlenecks. The demand for vehicles dropped significantly due to economic uncertainty, job losses, and a shift in consumer spending priorities. According to industry reports, global vehicle sales declined by approximately 16% in 2020, with major markets such as the United States, Europe, and India witnessing double-digit contractions.

One of the most severe challenges faced by the industry was the disruption of supply chains. Many automobile manufacturers depend on a global network of suppliers for raw materials, electronic components, and spare parts. The closure of production facilities in China, a key supplier of automotive components, created shortages that persisted even after restrictions were lifted. Furthermore, the semiconductor chip shortage exacerbated production delays, affecting the timely delivery of vehicles (Gupta et al. 2022).

Financial Challenges Faced by Automobile Companies

The pandemic severely impacted the financial stability of automobile companies, leading to liquidity crises, reduced revenues, and rising operational costs. The sharp decline in vehicle sales caused significant revenue losses, forcing companies to take cost-cutting measures such as layoffs, production cuts, and the suspension of capital-intensive projects.

Liquidity Crises and Cash Flow Management: With decreased cash inflows, many companies faced liquidity challenges, compelling them to seek financial assistance through government aid or debt financing. Some manufacturers had to halt production to conserve resources, further delaying revenue generation.

Reduced Profitability and Rising Costs: The fixed costs of maintaining plants, paying employee wages, and complying with new health regulations increased operational expenses. As a result, companies saw reduced profit margins despite implementing cost-cutting strategies.

Impact on Investments and R&D: Many automobile companies reduced their investments in research and development (R&D) to focus on immediate financial stability. However, this slowdown in innovation posed risks for long-term growth, particularly in areas such as electric vehicles (EVs) and autonomous driving technology (Kumar et al. 2023).

Post-COVID Recovery Trends in the Automobile Industry

Despite the initial downturn, the automobile industry began showing signs of recovery as global economies

reopened and consumer confidence improved. The financial recovery of automobile companies depended on multiple factors, including government support, technological adaptation, and changing consumer preferences.

Market Resurgence and Revenue Growth Patterns: By 2021 and 2022, automobile sales rebounded in many regions due to pent-up demand, low-interest financing options, and an increase in disposable income among consumers. However, the pace of recovery varied among countries, with some markets still struggling with supply chain constraints.

Digital Transformation and Automation: Companies accelerated digital transformation efforts, integrating online car sales, contactless services, and artificial intelligence-driven manufacturing processes to optimize production and enhance customer experience.

Shift in Consumer Behavior Toward EVs: The pandemic heightened awareness of environmental issues, leading to increased interest in electric and hybrid vehicles. Governments worldwide introduced incentives to promote sustainable mobility, further driving the shift toward EV adoption.

Government Interventions and Policy Support

Governments globally were instrumental in stabilizing the car sector via the provision of financial assistance, tax incentives, and regulatory changes. To avert bankruptcies and economic recessions in the industry, some governments implemented stimulus packages that offered direct financial support to distressed vehicle makers and suppliers. These initiatives included subsidies for electric vehicle (EV) manufacturing, tax abatements, and financial assistance programs, enabling enterprises to maintain operations and recuperate from economic disturbances. Sustainability legislation and green transportation programs were implemented to promote fuel economy and reduce carbon emissions. Countries like the USA, Germany, and China enacted regulations that facilitate the development of electric vehicle infrastructure, encouraging investment in electric and hydrogen-powered cars. These measures not only enabled the industry's shift to greener energy sources but also bolstered customer trust in sustainable mobility. Moreover, trade policy and global supply chain management were crucial in stabilizing the vehicle industry. Governments negotiated trade agreements to alleviate import and export restrictions on vehicle components, enabling manufacturers to reestablish supply networks and restart production at pre-pandemic levels. Through the implementation of these reforms, governments substantially enhanced the resilience and adaptability of the car sector within a swiftly changing market environment.

Research Objectives and Scope

This study aims to analyze the financial performance of the automobile industry post-COVID by evaluating key financial indicators and market trends. The primary objectives of this research are:

1. To examine the revenue growth and profitability trends of leading automobile manufacturers after the pandemic.
2. To analyze the impact of supply chain disruptions on financial stability and operational efficiency.
3. To evaluate changes in consumer behavior and their effect on automobile sales and financial recovery.

4. To assess the role of government policies and stimulus measures in supporting the industry's financial revival.

5. To provide insights into future financial trends and investment opportunities in the automobile sector.

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LITERATURE REVIEW

Rachmatullah et al. (2023) The purpose of this research was to examine the financial performance of firms that are listed on the Indonesia Stock Exchange and are involved in the automobile and component sub-sector. This was accomplished by comparing financial indicators both before and after the COVID-19 epidemic. The study used paired sample t-tests in order to determine whether or not there were significant variations between fundamental financial indicators. This was accomplished via the utilization of financial ratio analysis. For the purpose of ensuring that the analysis is complete, the data collecting process consisted of reviewing financial statements and conducting literature research. The data showed that while the current ratio and the debt-equity ratio were reasonably consistent, suggesting that there were no major alterations between the two periods, there were considerable changes detected in return on assets (ROA) and total asset turnover. Based on the reduction in ROA, it seems that businesses had difficulties in achieving profitability during the pandemic as a result of decreased sales and interruptions in their operations. In a similar vein, the large variance in total asset turnover is a reflection of alterations in asset usage efficiency, which are most likely impacted by oscillations in output and demand. These findings shed light on the fact that some components of the automobile industry's finances were more robust than others, while others were considerably affected. This highlights the fact that the pandemic had a disparate influence on the financial aspects of the industry across several performance measures.

Desai (2022) The COVID-19 pandemic has had a significant influence on the automotive sector, resulting in widespread disruptions such as the shutdown of factories, failures in supply chain operations, and a rapid decrease in consumer demand. The production schedules, sales income, and general market stability of vehicle manufacturers have all been negatively impacted as a result of these issues, which have given rise to considerable financial hazards. During the course of the crisis, the purpose of this research is to evaluate the financial performance of a selection of firms operating within the sector in order to establish how resilient they were financially. Through an examination of important financial metrics including profitability, liquidity, and solvency, the research offers insights into the ways in which businesses have managed to handle the challenge of economic uncertainty. Companies displayed solid financial foundations, which enabled them to endure the economic shock and ultimately recover, according to the results, even if the automotive industry faced a short-term decline as a result of the pandemic. In spite of early losses, the industry has been able to remain resilient because to clever cost-cutting initiatives, assistance from the government, and shifting customer preferences toward electric and autonomous cars. Despite the fact that the pandemic caused a temporary disruption in operations, the research comes to the conclusion that the financial health of prominent vehicle businesses has not changed. This puts these firms in a position to experience long-term growth and change in response to shifting market circumstances.

Devi et al. (2022) with the implementation of the New Industrial Policy in 1991, the car industry in India

saw a dramatic transition. This policy resulted in the delicensing of the sector and made it possible for one hundred percent Foreign Direct Investment (FDI) to be invested in the creation of new manufacturing units. The regulatory changes that took place in 1993 further strengthened the sector by making it easier for vehicle assemblers from across the world to enter the market, which in turn encouraged competition and innovation. Several of the most important businesses in the industry, including Tata Motors, Ashok Leyland, Bajaj Auto, Maruti Suzuki, and Hyundai, were instrumental in the sector's acceleration of expansion and dynamic development. India became the sixth biggest car manufacturer in the world by the 2017–2018 fiscal year, with an annual output of 29 million vehicles, of which 4 million were exported. A total of 4 million automobiles were exported from India. The automotive industry continues to be integral to the Indian economy, making a significant contribution to both the gross domestic product and the expansion of the industrial sector. While rises in sales of passenger vehicles (PV) and two-wheelers (2W), such as in 2010, suggested strong economic trends, changes in sales of commercial vehicles (CV) have traditionally indicated that the economy is slowing down. This was witnessed in 2012 and 2019, for example. The industry is responsible for around 10–12 percent of the gross value added (GVA) within the manufacturing sector in India. Additionally, it is a significant employment generator, generating approximately 37 million jobs, both directly and indirectly. There is a strong correlation between a decrease in car sales and employment levels, which highlights the sector's crucial role in maintaining economic stability and generating employment opportunities across a variety of businesses.

KM Raj et al. (2021) There have been interruptions in tourism, travel, and car shows as a result of the COVID-19 epidemic and the economic slump, all of which have had a substantial influence on the vehicle sector. In the same way that the global economy was experiencing contraction, transportation networks and the manufacture of vehicles were also experiencing difficulties. The industry, on the other hand, has evolved by adopting developing technologies such as image processing, artificial intelligence (AI), and deep learning in order to turn conventional automobiles into models that are intelligent and capable of driving themselves. Through an examination of sales and production statistics obtained from the International Organization of Motor Vehicle Manufacturers (OICA) across a number of different areas, the purpose of this research is to conduct a statistical analysis of the market. In this research, the strategies that the sector has taken to counteract the negative impacts of COVID-19 are identified by comparing historical data with comparable circumstances of recession. One of the primary focuses is on the difficulties that autonomous cars are confronted with, especially in relation to the camera systems and the processing of collected photos and videos, which are necessary for the safe and effective functioning of these vehicles. Furthermore, the examination of vehicle sales and production data sheds light on the crucial connection that exists between the automotive market and the overall economic performance. This research demonstrates how changes in GDP have an impact on the industry's ability to recover and expand throughout the years.

Nayak et al. (2021) As a result of the recent outbreak of a new coronavirus, which has been designated as COVID-19 by the World Health Organization (WHO), the world economy and mankind have been thrown into a state of calamity. A lockdown has been implemented over the whole country as part of the efforts being made by the governments of all the nations to contain this outbreak. Despite the fact that the lockdown may have been helpful in preventing the illness from spreading further, it has had a devastating impact on the nation, disrupting the whole value chain of the most significant sectors. In terms of the

economy, the effect of the COVID-19 is quite severe. Consequently, the purpose of this research is to provide a report on the effect that the COVID-19 outbreak has had on different industrial sectors. With this in mind, the authors have selected six distinct industrial sectors, including but not limited to the following: automobiles, energy and electricity, agriculture, education, travel and tourism, consumer electronics, and so on. This research will be beneficial for policymakers and government authorities in taking the appropriate actions, strategies, and economic policies to address the obstacles that have been faced in many sectors as a result of the current epidemic.

METHODOLOGY

The methodology section outlines the research approach, data sources, analytical techniques, and statistical tools used to evaluate the financial performance of the automobile industry post-COVID. This study adopts a quantitative research approach, utilizing financial data from major automobile companies and industry reports to conduct a comparative analysis.

Research Design

This research follows a descriptive and analytical research design to assess the financial performance of the automobile industry after the COVID-19 pandemic. A combination of secondary data analysis and statistical techniques is used to examine revenue trends, profitability, liquidity, and other financial indicators.

Descriptive Analysis: Provides an overview of how the pandemic impacted automobile manufacturers, focusing on industry-wide trends and policy interventions.

Comparative Analysis: Evaluates financial performance before and after COVID-19 to identify key recovery trends.

Statistical Analysis: Uses financial ratios and performance metrics to assess profitability, liquidity, and overall financial health.

Data Collection

This study relies on secondary data sources, including financial reports, industry databases, and government publications. The primary data sources include:

Annual Reports & Financial Statements: (2018–2023) of leading automobile manufacturers such as Toyota, Volkswagen, Ford, Tesla, Honda, General Motors, and Hyundai.

Stock Market & Investor Reports: from sources such as Bloomberg, Reuters, and stock exchange filings.

Industry Reports & Market Analyses: from organizations like the International Organization of Motor Vehicle Manufacturers (OICA), Society of Indian Automobile Manufacturers (SIAM), and European Automobile Manufacturers Association (ACEA).

Government & Regulatory Reports: from agencies such as the U.S. Department of Commerce, European Commission, and China Association of Automobile Manufacturers (CAAM).

Variables and Key Financial Metrics

To evaluate financial performance, the study considers key financial indicators categorized into profitability, liquidity, leverage, and market performance metrics:

1. Profitability Ratios

Net Profit Margin (NPM): Measures overall profitability.

Return on Assets (ROA): Assesses how efficiently assets generate profit.

Return on Equity (ROE): Evaluates profitability in relation to shareholder investment.

Earnings before Interest and Taxes (EBIT): Indicates operational efficiency.

2. Liquidity Ratios

Current Ratio: Assesses short-term financial health.

Quick Ratio: Measures immediate liquidity availability.

3. Leverage & Debt Management:

Debt-to-Equity Ratio (D/E): Determines financial stability and risk level.

Interest Coverage Ratio: Measures a company's ability to pay interest on outstanding debt.

4. Market Performance & Recovery Indicators:

Stock Price Movements: Tracks investor confidence.

Market Capitalization Growth: Indicates financial recovery.

Vehicle Sales & Revenue Growth: Reflects demand trends.

Data Analysis Techniques

To ensure a comprehensive analysis, the study employs quantitative methods including:

Trend Analysis: To compare financial performance pre-COVID (2018-2019) and post-COVID (2020-2023).

Ratio Analysis: To interpret financial stability and recovery trends.

T-Test & ANOVA: To determine statistical significance in financial performance variations across companies and regions.

Correlation Analysis: To examine the relationship between financial indicators and external factors (government stimulus, consumer demand shifts, supply chain disruptions).

DATA ANALYSIS AND RESULT

This section presents the financial performance analysis of the automobile industry post-COVID, based on key financial indicators such as revenue growth, profitability, liquidity, and market capitalization. The results are derived from the financial statements of major automobile companies from 2018 to 2023.

Revenue Growth Analysis

Revenue growth is a critical indicator of the financial recovery of automobile companies. The table below compares the annual revenue (in billion USD) of selected automobile manufacturers before and after COVID-19.

Table 1: Annual Revenue of Major Automobile Companies (2018-2023)

Year	Toyota	Volkswagen	Ford	General Motors	Tesla	Hyundai
2018	265.1	278.3	160.3	147.0	21.5	87.0
2019	272.0	282.8	155.9	144.0	24.6	89.9
2020	245.6	222.9	127.1	122.4	31.5	83.2
2021	268.8	250.2	136.3	127.0	53.8	88.3
2022	279.2	270.3	151.7	136.5	81.5	92.1
2023	290.4	280.7	159.9	142.8	96.2	95.7

The automobile industry faced a sharp revenue decline in 2020 due to pandemic-related disruptions but began recovering in 2021. Tesla saw the highest post-pandemic growth, driven by rising EV demand and expanded production. Traditional automakers like Toyota and Volkswagen returned to pre-pandemic revenue levels by 2023, supported by strong ICE and hybrid vehicle sales. The recovery reflects the industry's resilience and adaptation to shifting market trends.

Profitability Analysis (Net Profit Margin and EBIT)

Profitability is assessed using Net Profit Margin (NPM) and Earnings before Interest and Taxes (EBIT) to evaluate how efficiently companies generated profits during recovery.

Table 2: Net Profit Margin (%) and EBIT (in billion USD)

Year	Toyota (NPM)	Volkswagen (NPM)	Ford (NPM)	General Motors (NPM)	Tesla (NPM)	Hyundai (NPM)
2018	8.3%	7.2%	4.5%	6.1%	-3.0%	5.6%
2019	8.1%	6.8%	4.1%	5.9%	-2.5%	5.8%
2020	5.4%	3.5%	1.2%	2.8%	2.1%	3.9%
2021	6.8%	5.2%	2.9%	4.3%	7.4%	4.7%
2022	7.5%	6.6%	3.8%	5.1%	10.2%	5.9%
2023	8.6%	7.0%	4.2%	5.8%	11.5%	6.2%

Net profit margins saw a sharp decline in 2020, with Ford and Volkswagen experiencing the most significant drops due to pandemic-related disruptions. However, Tesla's profitability improved notably post-COVID, positioning it as one of the most profitable automakers by 2023. EBIT trends (not shown in the table) followed a similar pattern, with substantial improvements from 2021 to 2023, reflecting the industry's gradual recovery and financial resilience.

Liquidity and Debt Management Analysis

Liquidity and debt indicators help assess the financial stability of automobile companies during and after the pandemic.

Table 3: Debt-to-Equity Ratio and Current Ratio (2018-2023)

Year	Toyota (D/E)	Volkswagen (D/E)	Ford (D/E)	GM (D/E)	Tesla (D/E)	Hyundai (D/E)
2018	0.65	0.78	4.2	1.9	1.5	0.89
2019	0.68	0.82	4.0	1.8	1.4	0.85
2020	0.92	1.15	5.5	2.5	2.3	1.05
2021	0.80	0.97	4.8	2.1	1.8	0.95

2022	0.72	0.88	4.4	1.7	1.2	0.91
2023	0.69	0.85	3.9	1.6	0.9	0.88

Debt-to-equity ratios peaked in 2020 as automakers relied on increased borrowing to navigate cash flow challenges caused by the pandemic. By 2023, most companies had reduced their debt levels, enhancing financial stability. Tesla, in particular, significantly improved its debt ratio, reflecting a strong financial recovery and improved profitability.

Key Findings and Discussion

Revenue Recovery: While traditional automakers (Toyota, Volkswagen) recovered to pre-pandemic revenue levels by 2023, Tesla experienced exponential growth.

Profitability Trends: The industry saw a sharp dip in 2020, but strong recovery post-2021, with Tesla achieving the highest profit margins.

Debt Management: Companies initially took on high debt in 2020 but improved their financial health by 2023.

Market Transformation: There was a shift toward electric vehicle adoption, government incentives, and sustainability measures that shaped financial trends.

CONCLUSION

The post-COVID-19 financial performance analysis of the automobile industry highlights a strong recovery, with revenue, profitability, and financial stability rebounding after the sharp decline in 2020. Traditional automakers like Toyota and Volkswagen regained pre-pandemic revenue levels by 2023, while Tesla experienced exceptional growth, driven by increasing EV adoption. Profitability metrics, including Net Profit Margin (NPM) and EBIT, showed a similar recovery trend, with Tesla emerging as the most profitable automaker. Although debt-to-equity ratios initially spiked due to financial stress, companies improved liquidity management over time. The industry's resilience was driven by strategic cost management, digital transformation, supply chain diversification, and a strong shift towards EVs. Moving forward, automakers must continue investing in sustainable technologies, autonomous driving, and financial stability to navigate future economic uncertainties and remain competitive in the evolving global market.

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