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Correlation Analysis of Financial and Accounting Indicators in Forecasting Automotive Companies' Performance

Summary

This study investigates the linear relationships between key financial performance indicators Return on Assets (ROA), Earnings per Share (EPS), Return on Equity (ROE), and Profit Margin (PM) and market prices of automotive companies. A robust dataset from the ORBIS database covering the period from 2019 to 2023 served as the foundation for conducting a Pearson correlation analysis. Findings indicated statistically significant yet moderate correlations between the examined financial indicators and market prices. EPS demonstrated the strongest positive relationship with market valuations, reflecting its significance in investor assessments. ROA and PM revealed weaker but still meaningful correlations, highlighting their moderate relevance. ROE showed the weakest correlation with market prices. Additionally, significant intercorrelations among financial indicators themselves were observed. These insights establish a foundational empirical framework beneficial for future advanced predictive analyses within the automotive industry.

Keywords: financial indicators; automotive industry; stock prices; pearson correlation; fundamental analysis
JEL codes: G17; G12

Introduction

In the contemporary global economy, the automotive industry occupies a critical position due to its profound impact on technological innovation, employment generation, and overall economic stability. The performance and financial sustainability of automotive corporations are key indicators not only of industry health but also of broader economic cycles. Given the significant market capitalization and the high level of investor interest, understanding and accurately forecasting the stock price movements of companies within this sector are of paramount importance for both financial analysts and investment decision-makers. Financial markets, particularly stock markets, are characterized by inherent volatility and uncertainty. Investors continually seek reliable methods to assess future stock performance, reduce investment risks, and enhance portfolio returns. Traditionally, forecasting stock market movements involves utilizing financial ratios and corporate fundamental indicators, as these measures provide insights into a company's profitability, operational efficiency, asset management capabilities, and overall financial health. Among the most widely recognized indicators in financial analysis are ROA, ROE, EPS, and PM, each reflecting different yet complementary aspects of corporate financial performance. Previous research in financial forecasting has extensively examined the application of these fundamental indicators in predicting future stock prices. Multiple studies have confirmed that companies with higher values of profitability indicators, such as ROA and ROE, typically achieve superior stock market performance compared to their industry peers (Son & Duong, 2024; Tutcu et al., 2024). Similarly, EPS has been commonly employed as a direct measure of corporate profitability on a per-share basis, and it serves as a critical determinant in evaluating stock value from investors' perspectives (Li et al., 2021). Additionally, PM reflects a company's efficiency in converting revenue into actual profit, directly influencing investor perceptions of future growth prospects and consequently impacting stock price movements (Mohamed et al., 2021). Despite the extensive use of these financial metrics in previous predictive modeling efforts, systematic and rigorous empirical investigations specifically addressing the strength and significance of the correlation between these fundamental financial indicators and stock prices in the automotive industry remain limited. Most prior studies have either generalized their findings across industries or directly applied complex predictive models without first thoroughly assessing the underlying correlations between selected variables. Thus, a detailed correlation-based approach within the automotive sector represents a significant and largely unexplored research direction. This study aims to address this identified research gap by explicitly focusing on a comprehensive correlation analysis between fundamental financial indicators (ROA, ROE, EPS, PM) and the stock market prices of publicly traded automotive corporations. The research emphasizes the importance of evaluating and quantifying these relationships as a critical first step before developing any advanced forecasting models. The analysis includes a substantial dataset consisting of publicly listed automotive companies extracted from the ORBIS database, covering a five-year period from 2019 to 2023. This period provides sufficient temporal coverage to capture variations in corporate performance and stock market fluctuations, thus ensuring robust and reliable statistical insights.

Through systematically analyzing these correlations, this study intends to clarify how strongly each financial indicator is associated with automotive stock prices and identify

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which indicators exhibit the most substantial relationships. Understanding these connections can significantly enhance investors' decision-making capabilities, support more accurate stock price valuations, and reduce overall uncertainty in financial markets related to automotive corporations. Moreover, this correlation-focused approach serves as a foundational step toward subsequent modeling endeavors. Accurately identifying and quantifying these relationships is essential before deploying complex predictive methods, such as the Adaptive Neuro-Fuzzy Inference System (ANFIS), which have proven effective in capturing non-linear dynamics inherent in financial market data (Boyacioglu & Avci, 2010). The outcomes derived from the present correlation analysis will provide an essential methodological and conceptual basis for developing advanced forecasting tools in future research efforts. Ultimately, this study contributes not only to theoretical understanding but also to practical investment strategies, enabling stakeholders within the financial and automotive industries to make more informed, data-driven investment decisions.

Literature Review

Stock markets represent concentrated trading hubs facilitating transactions involving securities, commodities, and various financial instruments. Historically, stock exchanges emerged as pivotal institutions enabling efficient market transactions under predefined regulations, ultimately becoming significant informational centers influencing economic and investment decisions beyond their immediate operational scope (Rubóczky, 1999). The roots of stock trading date back to the 11th and 12th centuries, with significant institutional developments like the Amsterdam Stock Exchange in 1602, marking the inception of formalized equity markets (Gál, 2016). The evolution of stock exchanges, particularly notable developments such as the establishment of NASDAQ in 1971 as the first fully electronic exchange, underscores technological advancements shaping contemporary trading practices. These changes significantly affected market efficiency and investor behavior, as demonstrated by events such as the 2008 financial crisis, further highlighting the stock market's role in broader economic dynamics (Gjerstad & Smith, 2009).

Fundamental analysis is a prominent technique for evaluating securities, involving a comprehensive assessment of financial statements, industry conditions, and macroeconomic indicators to determine intrinsic stock value (Prohaska et al., 2011). Essential elements of fundamental analysis encompass profitability indicators like ROA and ROE, liquidity measures such as Current Ratio, valuation metrics including Price-to-Earnings (P/E) ratios, and growth indicators like revenue growth rate and cash flow expansion (Silpa et al., 2017). These indicators provide insights into the company's efficiency, profitability, financial stability, and market value, directly impacting investor decisions and stock prices (Hasaballah et al., 2019).

Fundamental analysis is particularly critical for long-term investments, enabling investors to gauge corporate health and potential future profitability based on historical and projected financial performance. It also allows for detailed comparisons between companies within the same industry, supporting more informed investment decisions. However, the inherent limitation of fundamental analysis lies in its relative insensitivity to short-term market volatility and psychological market dynamics, factors that can significantly affect short-term stock price movements (Spritzer & Freitas, 2006).

Technical analysis complements fundamental analysis by focusing primarily on past price patterns and trading volumes to predict future market behavior. Unlike fundamental analysis, technical analysis relies extensively on statistical methods, chart patterns, and various market indicators, such as Moving Averages (MA), Relative Strength Index (RSI), Bollinger Bands, and Moving Average Convergence Divergence (MACD) (Vasantha et al., 2012). Commonly employed techniques include identifying support and resistance levels, recognizing chart patterns like head-and-shoulders or double tops and bottoms, and utilizing momentum indicators to detect market trends and potential reversal points (Tripathi et al., 2023). However, technical analysis has notable limitations, including inherent subjectivity in interpreting chart patterns and potential inaccuracies arising from external factors influencing market conditions. Furthermore, technical indicators, when applied without sufficient context or transformation, may lead to misleading predictions, necessitating careful selection and integration with other analytical methods (Wiiava et al., 2022).

Correlation Analysis Methodology in Financial Research

The Pearson correlation coefficient is widely utilized in financial research to quantify linear relationships between variables, especially fundamental financial indicators and stock market prices (Lewellen, 2004). Mathematically, the Pearson correlation measures covariance normalized by the product of standard deviations, resulting in values ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation), with 0 indicating no linear relationship (Ratner, 2009). The magnitude reflects relationship strength, and its sign indicates directionality, yet correlation alone cannot imply causation (Cohen et al., 2013; Ratner, 2009). Moreover, the Pearson coefficient strictly captures linear associations, making it essential to test statistical significance usually via a t-test to ensure correlations are not random artifacts (Cohen et al., 2013). Empirical financial studies frequently use Pearson correlation to preliminarily assess associations between financial ratios, such as ROA, ROE, EPS, or profit margins, and stock performance. Significant correlations identified through Pearson analysis have informed investment decisions, portfolio management strategies, and further modeling in sectors including automotive, technology, and emerging markets (Omran, 2009).

The integration of artificial intelligence (AI) into financial forecasting represents a significant advancement, with techniques such as artificial neural networks (ANN), adaptive neuro-fuzzy inference systems (ANFIS), and deep learning algorithms being widely applied to improve prediction accuracy and reduce forecasting errors. AI models excel at handling complex, nonlinear relationships inherent in financial data, providing robust analytical tools beyond traditional statistical methods (Cappello et al., 2023).

Artificial neural networks are particularly effective in modeling complex market dynamics due to their ability to learn from vast datasets and recognize intricate patterns. The multilayered structure of neural networks allows them to approximate any continuous function, making them suitable for diverse forecasting applications, including stock prices (Galimberti & Repetto, 2023). However, the interpretability of neural net-

works often remains a significant challenge, limiting their practical applicability in decision-making contexts requiring transparency.

The automotive sector's financial indicators ROA, ROE, EPS, and PM are critical benchmarks widely utilized in financial analyses to evaluate corporate efficiency, profitability, and investment attractiveness. ROA measures a company's operational efficiency in utilizing its assets to generate profits, whereas ROE reflects the efficiency of leveraging shareholders' equity to yield returns. EPS directly indicates profitability per share, serving as a key metric for investor assessments, while PM indicates a company's overall efficiency in profit generation relative to revenue (Li et al., 2021; Son & Duong, 2024). Several studies emphasize these indicators' predictive power for stock prices, notably highlighting the strong correlation between ROE and stock market performance in various contexts, including emerging markets and technology-intensive sectors (Omran, 2009). Further research consistently affirms that portfolios constructed based on higher EPS and ROE generally outperform average market returns, demonstrating the practical utility of these indicators in portfolio management and investment strategy (Matkarimov et al., 2024; Mohamed et al., 2021)

Method

In order to explore and clarify the relationships between fundamental financial indicators and stock market prices in the automotive sector, I employed a structured and systematic methodology consisting of several consecutive phases. The selection of financial indicators for this research was based on two primary sources. Initially, I conducted an extensive review of relevant financial literature to identify the fundamental ratios frequently utilized and highlighted as important predictors of stock market performance. These indicators included ROE, ROA, EPS, and PM, as each of these ratios provides distinct yet complementary insights into corporate profitability, efficiency, and market valuation. The literature indicated that these indicators are broadly recognized and commonly analyzed within financial forecasting research, particularly in relation to stock market behavior.

Subsequently, semi-structured expert interviews were conducted to reinforce and validate these indicator choices. Interviews involved professional financial analysts, investment advisors, and portfolio managers who specialize in stock market investment strategies. The experts unanimously emphasized the relevance and reliability of these selected financial ratios in predicting stock prices, reinforcing the suitability of the selected indicators (ROE, ROA, EPS, PM) for further quantitative investigation. Following the selection of the indicators, comprehensive data collection was conducted using the ORBIS financial database, a reputable and widely utilized source for global corporate financial information. The data collection procedure involved applying a rigorous filtering process to select a representative and relevant sample of automotive industry companies. The initial filtering criterion was the NACE classification code: specifically, the code "2910 – Manufacture of motor vehicles" was applied to isolate companies strictly operating within the automotive manufacturing industry. Additionally, only publicly traded companies with consistently available financial statements and market data were included to ensure the completeness and reliability of the dataset.

The initial extraction yielded a large dataset comprising 321 automotive firms globally. To enhance the robustness of the correlation analysis, additional filtering criteria were applied to remove companies with significant gaps in their financial or market price data. Companies that lacked continuous financial reporting or exhibited notable inconsistencies or missing values for the selected indicators within the period of study (2019–2023) were excluded. After this rigorous screening process, the final dataset comprised 103 publicly listed automotive firms. These 103 companies provided comprehensive and continuous financial and market price data, ensuring a sufficiently large and robust sample size for a statistically reliable correlation analysis.

After completing the data collection phase, the next step involved systematically conducting a correlation analysis using the Pearson correlation coefficient. The Pearson correlation coefficient, often referred to as Pearson's r, is a statistical measure widely used in empirical research to assess the strength and direction of linear relationships between two continuous variables. Its primary function is to quantify how closely variations in one variable correspond to variations in another, providing a clear and interpretable measure of linear association.

The value of Pearson's correlation coefficient always ranges between -1 and +1. A coefficient of +1 indicates a perfect positive linear relationship, implying that the two variables move exactly together in the same direction. Conversely, a coefficient of -1 signifies a perfect negative linear relationship, meaning the variables move in precisely opposite directions. A correlation coefficient of zero indicates no linear relationship exists, suggesting that changes in one variable do not systematically correspond to changes in the other.

In practical terms, correlation values closer to ±1 indicate stronger linear relationships, whereas values closer to zero represent weaker or negligible linear associations. Financial researchers and analysts interpret these values qualitatively: for instance, coefficients between ±0.7 to ±1 generally indicate very strong linear associations, values between ±0.5 to ±0.7 are considered moderate, and values below ±0.5 typically suggest relatively weak correlations. These thresholds, however, can vary slightly depending on the context and specific characteristics of the data involved. In addition to interpreting the strength and direction of relationships, it is crucial in Pearson correlation analysis to evaluate statistical significance. The significance of a correlation coefficient is typically tested using hypothesis testing, wherein the null hypothesis states that no true linear correlation exists between the variables (the population correlation is zero). A low p-value (typically less than 0.05) rejects this null hypothesis, indicating that the observed correlation is statistically significant and not merely a product of random chance. Thus, alongside correlation coefficients, this study also reported significance levels to establish the reliability and statistical validity of the identified relationships.In this research, the Pearson correlation coefficient was specifically applied to evaluate the strength and statistical significance of the linear associations between each selected fundamental financial indicator (ROE, ROA, EPS, and PM) and the market prices of the 103 automotive corporations in the dataset. This systematic correlation analysis provides foundational empirical insights, highlighting which financial ratios exhibit the strongest relationships with stock market prices. This step was delib-

erately undertaken prior to the future development of complex predictive models (such as ANFIS), as identifying statistically significant correlations is essential to selecting variables for robust forecasting models.

Thus, the Pearson correlation analysis served as a critical exploratory step in the methodological framework of this research. By identifying and quantifying linear relationships among key financial indicators and market prices, this study not only helps clarify foundational relationships in automotive industry finance but also establishes a rigorous empirical groundwork for future model-based analyses aimed at predicting automotive stock price movements more accurately.

Result

Introduction to Pearson Correlation Analysis

The Pearson correlation coefficient is a statistical measure used to quantify the strength and direction of a linear relationship between two continuous variables. Mathematically, the Pearson correlation coefficient (rrr) is calculated as follows:

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}}}$$

where:

x_i, y_i: values of variables X and Y for the ith observation

$\bar{x}, \bar{y}$: means of variables X and Y

n: number of paired observations in the sample

The resulting correlation coefficient ranges between -1 and +1:

+1 indicates a perfect positive linear correlation: as one variable increases, the other variable increases proportionally.

-1 indicates a perfect negative linear correlation: as one variable increases, the other variable decreases proportionally.

0 indicates no linear relationship between the variables.

Correlation coefficients are often categorized in terms of strength as follows:

$|r| \geq 0.7$: strong correlation

$0.5 \leq |r| < 0.7$: moderate correlation

$0.3 \leq |r| < 0.5$: weak correlation

$|r| < 0.3$: negligible or very weak correlation

It is important to emphasize that correlation alone does not imply causation; rather, it simply quantifies how two variables move together in a linear manner. To establish the reliability of the Pearson correlation, statistical significance tests are applied. A statistically significant correlation (commonly indicated by a p-value less than 0.05) confirms that the observed relationship is unlikely to have occurred by random chance, thus providing stronger evidence of an actual linear relationship between the variables. In the following sections, I present the results of the Pearson correlation analysis conducted between selected financial indicators (ROE, ROA, EPS, PM) and the market prices of automotive companies, clearly highlighting the strength, direction, and statistical significance of these relationships.

Pearson Correlation Analysis Results

This section provides a detailed evaluation of the Pearson correlation analysis conducted to investigate the linear relationships between selected fundamental financial indicatorsROA, EPS, ROE, PM and the market prices of automotive companies. The analysis was performed on a dataset comprising 515 observations, ensuring robust statistical reliability for the interpretation of results.

Correlation between ROA and Market Price

The correlation analysis between ROA and Market Price resulted in a coefficient value of r = 0.150, indicating a statistically significant (p = 0.0007), yet relatively weak, positive linear relationship. This suggests that companies achieving higher efficiency in asset utilization tend to exhibit marginally higher stock prices. While the observed relationship is statistically reliable, its modest magnitude indicates that ROA alone captures only a limited proportion of the variability in market prices.

Correlation between EPS and Market Price

EPS demonstrated the strongest correlation among the examined indicators with the Market Price, yielding a correlation coefficient of r = 0.228. This statistically significant relationship (p = 0.0000) indicates that higher earnings per share are moderately associated with increased market valuation. The result aligns well with theoretical expectations, as EPS directly measures profitability from the perspective of shareholders and is a widely monitored financial metric by investors. Thus, companies exhibiting stronger EPS typically enjoy somewhat higher market prices, confirming EPS as a relevant indicator within automotive industry financial analyses.

Correlation between ROE and Market Price:

The correlation between ROE and Market Price yielded a coefficient of r = 0.107, indicating a very weak but still statistically significant positive relationship (p = 0.0151). Although the association is minimal, the statistical significance suggests the presence of a reliable linear relationship. ROE represents the profitability relative to shareholder equity, a key indicator that investors typically consider. However, within the automotive sector, ROE exhibits only limited explanatory power for variations in stock market prices based on the results observed.

Correlation between PM and Market Price:

The analysis of the relationship between PM and Market Price resulted in a correlation coefficient of r = 0.140. Despite being weak, this correlation is statistically significant (p = 0.0015), suggesting that companies capable of converting revenue into profit efficiently may also exhibit slightly higher market valuations. The moderate magnitude of this correlation indicates a meaningful, albeit limited, linear relationship in terms of predictive strength.

Intercorrelations between Financial Indicators:

It is notable that certain financial indicators demonstrated strong internal correlations among themselves. Specifically, ROA showed a notably high positive correlation with PM (r = 0.836) and with ROE (r = 0.762). These high correlations indicate that profitability and efficiency metrics within the automotive industry firms are closely interrelated. Firms demonstrating high asset efficiency ROA typically also exhibit higher

Table 1. Pearson Correlation Analysis Results

Correlations	ROA	EPS	ROE	PM	MarketPrice
ROA	1.000	0.273	0.762	0.836	0.150
Sig. (2-tailed)	–	0.0000	0.0000	0.0000	0.0007
N	515	515	515	515	515
EPS	0.273	1.000	0.152	0.260	0.228
Sig. (2-tailed)	0.0000	–	0.0005	0.0000	0.0000
N	515	515	515	515	515
ROE	0.762	0.152	1.000	0.644	0.107
Sig. (2-tailed)	0.0000	0.0005	–	0.0000	0.0151
N	515	515	515	515	515
PM	0.836	0.260	0.644	1.000	0.140
Sig. (2-tailed)	0.0000	0.0000	0.0000	–	0.0015
N	515	515	515	515	515
MarketPrice	0.150	0.228	0.107	0.140	1.000
Sig. (2-tailed)	0.0007	0.0000	0.0151	0.0015	–
N	515	515	515	515	515

Source: own editing

profit margins PM and better returns relative to shareholder equity ROE. Such strong internal relationships among these fundamental indicators suggest that these financial performance measures consistently reflect related aspects of corporate financial health in automotive companies.

Summary of Correlation Analysis

The Pearson correlation analysis presented in this section systematically evaluated the linear associations between key financial metrics (ROA, EPS, ROE, PM) and automotive industry stock prices. The analysis clearly identified significant correlations across all selected variables, though varying in strength and magnitude. Among the analyzed financial indicators, EPS displayed the highest correlation with market prices, indicating its particular relevance for investors in assessing automotive companies. ROA and PM also showed statistically significant positive relationships, reflecting their role as meaningful, albeit moderate, indicators of market valuation. Notably, ROE demonstrated the weakest correlation, yet remained statistically significant, highlighting that equity efficiency possesses some relationship, though relatively limited, with automotive companies' stock prices. Furthermore, the strong interrelationships among the examined financial metrics (particularly between ROA, ROE, and PM) underscore the interconnected nature of financial performance indicators within automotive firms. These internal correlations suggest that automotive companies maintaining high levels in one financial indicator typically reflect similar outcomes in other related measures. Overall, these findings contribute important empirical insights regarding the role and relative importance of fundamental financial metrics in influencing stock market valuations within the automotive sector.

Conclusion

This research conducted a detailed and rigorous correlation analysis to investigate the linear relationships between fundamental financial indicators ROA, EPS, ROE, and PM and the market prices of publicly listed automotive companies. Utilizing a comprehensive dataset encompassing 515 observations, this analysis provided robust statistical insights into these key relationships within the automotive sector.

The results clearly demonstrated that EPS exhibited the strongest correlation with stock prices, reinforcing the metric's importance and relevance as a valuation benchmark among investors and financial analysts. Given that EPS directly measures profitability on a per-share basis, it logically follows investor perceptions of corporate financial performance. Companies with higher EPS tend to attract increased investor interest, which, in turn, typically results in higher market valuations.

The correlation analysis also revealed statistically significant, albeit weaker, positive associations between ROA, PM, and Market Price. These relationships indicate that investors moderately consider these financial ratios when evaluating automotive industry companies, reflecting broader market sensitivity toward overall corporate efficiency and profitability. ROA, representing asset efficiency, and PM, indicating profitability efficiency, were confirmed as relevant, though relatively moderate, indicators influencing investor decisions and market behavior.

ROE, while statistically significant, demonstrated the weakest correlation among the analyzed indicators. This indicates that, within the automotive sector, the efficiency of equity utilization is considered to a lesser extent by investors when determining market valuation. The limited magnitude of ROE's correlation underscores the complexity of stock market valuation processes and suggests that market participants weigh additional qualitative and quantitative factors beyond equity profitability alone.

An important supplementary insight provided by this research was the identification of high intercorrelations among the financial indicators themselves, particularly between ROA and PM, as well as ROA and ROE. These interrelationships signify inherent structural connections in corporate financial metrics, reflecting consistent operational and financial management practices within the automotive sector. These strong internal correlations also highlight the necessity for

careful consideration of multicollinearity when constructing predictive models for future research.

Recommendations for Future Research

Based on the insights and empirical results obtained through this correlation analysis, several critical avenues for future research emerge. These recommendations aim to enhance the understanding of financial indicators and market valuation dynamics, specifically within the automotive sector:

- 1. Integration of Additional Financial Indicators:Future research could explore additional financial metrics and market indicators beyond those analyzed in this study. Ratios reflecting liquidity, leverage, operational efficiency, or growth potential could provide valuable supplemental insights into stock valuation processes and investor decision-making. Including these additional indicators could yield a more comprehensive understanding of the financial determinants that investors perceive as important, thereby enriching predictive accuracy and explanatory power.
- 2. Longitudinal Analysis:It is recommended to extend the analysis to a longer time frame to capture more extensive market cycles and macroeconomic fluctuations. Longitudinal studies spanning multiple economic periods, including different phases of economic growth, stagnation, or recession, could better inform researchers about how financial indicators' predictive power changes under varying economic conditions. Such analyses could enhance strategic financial planning and investment decisions, particularly within cyclical industries like automotive manufacturing.
- 3. Sectoral Comparative Analysis:Future studies could incorporate comparative analyses across different industry sectors. Examining correlations between fundamental indicators and market valuations in other sectors, such as technology, healthcare, or energy, could provide valuable comparative benchmarks. Such cross-sector comparisons may help identify industry-specific peculiarities or universal patterns in financial valuation processes, enriching the broader finance literature and aiding diversified investment strategy formulation.
- 4. Integration of Qualitative Factors:The moderate correlations observed in this research suggest that qualitative factors, such as management quality, brand strength, innovation capability, and market positioning, significantly influence stock valuation decisions. Future research could benefit from integrating qualitative analyses, such as management assessments, innovation indexes, or consumer brand recognition metrics, to complement quantitative financial indicators. This integrative approach could potentially reveal deeper insights into stock valuation and enhance overall predictive modeling accuracy.
- 5. Advanced Predictive Modeling (e.g., ANFIS):Building upon the empirical foundation established by this correlation analysis, the next logical step involves employing advanced predictive models, such as Adaptive Neuro-Fuzzy Inference Systems (ANFIS), Artificial Neural Networks (ANN), or other machine learning algorithms. These advanced models excel at capturing complex, nonlinear relationships within financial data, potentially overcoming limitations inherent in linear correlation analysis. Leveraging such sophisticated methodologies could substantially improve predictive precision regarding automotive stock prices, providing valuable analytical tools for investors and financial analysts.
- 6. Robustness Checks and Sensitivity Analysis:Future analyses should include robustness checks and sensitivity analyses to validate and refine empirical findings. For instance, researchers may explore alternative correlation measures (such as Spearman or Kendall coefficients), conduct sub-sample analyses, or perform outlier sensitivity tests to ensure the reliability and robustness of conclusions. Incorporating these methods will strengthen confidence in research findings, increasing their practical relevance and credibility.
- 7. Examination of Macroeconomic Factors:Considering the modest correlations found between fundamental indicators and market valuations, future studies could explore the influence of macroeconomic variables, such as interest rates, inflation, GDP growth, or consumer confidence indices. Understanding how these external economic conditions interact with corporate financial indicators in shaping stock prices could enhance strategic investment decisions, particularly in a globally interconnected economic landscape.

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