International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Financial Health Assessment of Selected Pharmaceutical Firms: An Empirical Analysis

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ABSTRACT

This study presents a comprehensive empirical evaluation of the financial health of twenty selected pharmaceutical companies over a ten-year period, using key financial ratios such as Debt-to-Equity, Interest Coverage etc. The analysis employs descriptive statistics and one-way ANOVA to identify inter-firm differences and assess financial stability, operational efficiency, and capital structure dynamics. Results from Levene's Test confirm significant variance heterogeneity across firms, while ANOVA findings reveal statistically significant differences in financial performance metrics, underscoring the diversity in strategic financial management within the sector. The study highlights which firms consistently demonstrate financial resilience and which exhibit volatility, offering insights for investors, policymakers, and corporate strategists aiming to benchmark and strengthen financial practices in the pharmaceutical domain.

Keywords: Financial Analysis, Ratio Analysis, Pharmaceutical Companies, Factor Analysis etc.

1. INTRODUCTION

The pharmaceutical industry plays a pivotal role in public health, economic development, and technological innovation. In India, the sector has witnessed robust growth driven by generics manufacturing, export competitiveness, and increasing domestic demand. However, beneath this expansion lies a complex financial landscape shaped by regulatory pressures, R&D investments, patent cycles, and global competition. Assessing the financial health of pharmaceutical firms is therefore essential—not only for investors and policymakers but also for understanding the sector's resilience, efficiency, and long-term sustainability [1].

Financial health assessment is a systematic evaluation of an individual's or organization's financial condition, aimed at understanding stability, sustainability, and capacity for future growth. It involves analyzing key financial indicators such as income, expenses, savings, debt levels, credit scores, and investment performance. For businesses, it also includes liquidity ratios, profitability margins, solvency metrics, and cash flow analysis. This assessment helps identify strengths and weaknesses in financial management and guides strategic decisions to improve fiscal outcomes [2].

A thorough financial health assessment provides insights into whether current financial practices are aligned with long-term goals. For individuals, it can reveal whether they are living within their means, saving adequately, and managing debt responsibly. For organizations, it highlights operational efficiency, risk exposure, and readiness for expansion or investment. Regular assessments are essential

for maintaining financial resilience, adapting to economic changes, and ensuring informed planning across personal, corporate, or public finance domains [3].

Pharmaceutical companies face unique financial challenges compared to other industries. High upfront costs for drug development, uncertain approval timelines, and intense competition from generics can strain financial resources. Moreover, pricing regulations and ethical considerations often limit profit margins. Therefore, a sector-specific financial health assessment must account for these variables to accurately reflect a firm's resilience and strategic positioning. By focusing on selected firms, the study aims to identify patterns, strengths, and vulnerabilities that can guide future financial planning and policy formulation [4].

A. Debt-To-Equity Ratio

The Debt-to-Equity Ratio (D/E Ratio) is a key financial metric that compares a company's total liabilities to its shareholder equity. It reflects how much debt a company is using to finance its assets relative to the value provided by shareholders. Mathematically, it's calculated as:

$$\text{Debt-to-Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Shareholders' Equity}}$$

A higher ratio indicates greater reliance on borrowed funds, which can amplify returns during growth periods but also increase financial risk during downturns. Conversely, a lower ratio suggests a more conservative capital structure, with less exposure to interest obligations and financial leverage [5].

B. Interest Coverage Ratio

The Interest Coverage Ratio (ICR) is a financial metric that measures a company's ability to meet its interest obligations on outstanding debt using its operating income. It is calculated as [6]:

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest Expense}}$$

A higher ratio indicates that the company generates sufficient earnings to comfortably cover its interest payments, reflecting strong financial health and lower credit risk. Conversely, a low ICR suggests that the firm may struggle to meet its debt obligations, which could lead to liquidity issues or increased borrowing costs.

2. REVIEW OF LITERATURE

Aradhana et al. (2025) [5] aimed to investigate the impact of financial ratios and investment decisions on stock prices of selected pharmaceutical companies listed on the Indonesia Stock Exchange (ISE) between 2019 and 2023. Using documentation methods and annual reports as secondary data, the study examined leverage, profitability, and market ratios to assess their influence. The key findings revealed that the price earnings ratio had a significant positive effect on stock prices, while the debt-to-equity ratio and return on equity showed no measurable impact. These results suggest that investors may prioritize earnings potential over capital structure or profitability when valuing pharmaceutical stocks in this context. The study concludes that market ratios, particularly P/E, are more relevant to investor decision-making in emerging pharmaceutical markets, with future research potentially expanding the model to include macroeconomic variables or comparative industry analysis.

Kumar et al. (2025) [6] examined how various financial determinants influence dividend policy among 86 Knowledge Intensive Firms (KIFs) listed on the National Stock Exchange (NSE) in India. Utilizing panel regression analysis and the Hausman Test, the authors found that profitability, free cash flows, firm size, and liquidity significantly impacted dividend decisions, indicating that internal financial

strength drives shareholder payouts in these firms. Conversely, factors such as growth potential, investment activities, and leverage had no statistically significant effect, suggesting that KIFs may prioritize operational efficiency and financial stability over external expansion when formulating dividend strategies. The study concluded that dividend behavior in KIFs is more responsive to core financial indicators than to broader market or investment dynamics. Future research was recommended to explore behavioral factors, sectoral comparisons, and the evolving role of intellectual capital in dividend decision-making.

Kumar et al. (2024) [7] conducted a comparative financial analysis of selected pharmaceutical companies in Bangalore using key financial ratios over a five-year period. The authors focus on metrics such as profitability, liquidity, solvency, and turnover to evaluate firm-level financial health. The findings reveal significant inter-company variation, with some firms demonstrating consistent financial stability while others show signs of operational inefficiency or over-leverage. The paper emphasizes the importance of ratio-based diagnostics in understanding sectoral performance and guiding investment decisions.

Sharma et al. (2023) [8] assessed the financial health and bankruptcy risk of major Indian pharmaceutical companies including Cipla, Divis, and Sun Pharma. The study spans multiple years and integrates both balance sheet and income statement data to compute Z-scores. Results indicate that while most firms fall within the "safe zone," a few exhibit borderline or declining scores, suggesting potential financial stress. The authors advocate for continuous monitoring of solvency indicators to ensure long-term sustainability in the capital-intensive pharma sector.

Patel et al. (2023) [9] analyzed the financial performance of five leading pharmaceutical companies in India using a multi-ratio approach. The study includes profitability ratios (ROE, ROA), liquidity ratios (current ratio, quick ratio), and solvency indicators (debt-to-equity, interest coverage). The authors identify trends and anomalies in financial behavior, highlighting firms with strong earnings and efficient capital structures. The paper concludes that ratio analysis remains a vital tool for benchmarking financial health and guiding strategic decisions in the pharmaceutical industry.

Deshmukh et al. (2022) [10] presented a financial health diagnostic of Indian pharmaceutical firms using a combination of turnover, coverage, and capital structure ratios. The authors apply descriptive statistics and comparative analysis to assess operational efficiency and debt management across selected companies. Findings reveal that firms with high inventory and asset turnover tend to outperform in profitability and liquidity metrics. The study underscores the need for integrated financial analysis to capture the multidimensional nature of fiscal performance in pharma.

Kaur et al. (2022) [11] focused on sectoral benchmarking, this study evaluates financial indicators such as inventory turnover, asset utilization, and interest coverage across a sample of Indian pharmaceutical companies. The authors develop a case-based framework to compare firms with varying operational models and market strategies. Results show that companies with streamlined supply chains and balanced capital structures consistently achieve better financial outcomes. The paper recommends adopting ratio-based benchmarking for strategic planning and investor evaluation in the pharmaceutical domain.

Research Gap

While numerous studies have examined the financial performance of pharmaceutical firms using conventional metrics such as profitability ratios, liquidity indicators, and solvency measures, there remains a significant gap in integrating these assessments with sector-specific dynamics and longitudinal financial behavior. Most existing literature focuses on short-term financial snapshots or generalized

industry-wide analyses, often overlooking firm-level heterogeneity, regulatory impacts, and innovation-driven financial volatility unique to the pharmaceutical sector. Additionally, prior research tends to rely heavily on static ratio analysis without incorporating advanced empirical techniques such as trend decomposition, stress testing, or comparative benchmarking across sub-segments (e.g., generics vs. patented drugs). There is limited exploration of how financial health correlates with R&D investment cycles, patent expiration risks, and global supply chain dependencies—factors that critically influence the fiscal resilience of pharmaceutical firms. This study aims to bridge these gaps by conducting a multi-year, firm-level empirical analysis using robust financial indicators and statistical tools. It seeks to uncover deeper insights into the structural financial strengths and vulnerabilities of selected pharmaceutical companies, offering a more nuanced and actionable understanding of their financial health in the context of evolving markets and regulatory pressures.

3. RESEARCH METHODOLOGY

A. Research Design

This study adopts a quantitative and comparative research design to evaluate the financial health of selected pharmaceutical companies. The approach is empirical, relying on secondary financial data collected over a ten-year period (2014–15 to 2023–24). The design facilitates longitudinal analysis and inter-firm comparison using standardized financial metrics. The objective is to identify patterns, variations, and statistically significant differences in financial performance across firms.

B. Sample Selection

A purposive sampling technique was used to select 20 pharmaceutical companies listed on Indian stock exchanges, representing a mix of large-cap, mid-cap, and emerging firms. The selection criteria included data availability, operational consistency, and sectoral relevance. Companies such as Sun Pharma, Divis Labs, Cipla, Abbott, and Ajanta were included to ensure diversity in scale, product portfolio, and financial structure. This sample allows for meaningful benchmarking and sectoral insights. The selection of Sun Pharma, Divis Labs, Cipla, Abbott India, and Ajanta Pharma was strategically guided by three key criteria: data availability, operational consistency, and sectoral relevance. These firms offer reliable and publicly accessible financial data across multiple years, enabling robust empirical analysis. Their consistent operational histories reduce the risk of anomalies due to mergers, restructuring, or irregular reporting. Moreover, each company represents a distinct segment of the pharmaceutical industry—ranging from bulk drug manufacturing and generics to specialty formulations and multinational operations assuring that the study captures a wide spectrum of financial structures and strategic orientations.

This diversity enhances the analytical depth of the financial health assessment. Sun Pharma, as a large-cap leader with global operations, provides insights into scale-driven financial dynamics. Divis Labs, focused on APIs and contract manufacturing, reflects export-oriented financial models. Cipla offers a balanced view of domestic and international formulation markets, while Abbott India introduces the perspective of foreign-owned subsidiaries operating under Indian regulations. Ajanta Pharma, with its lean structure and emerging market focus, adds agility and innovation-driven financial behavior to the mix. Together, these firms form a representative sample that supports meaningful comparisons and sector-wide generalizations.

C. Data Collection

The study relies on secondary data sourced from annual reports, financial statements, and publicly avail-

able databases such as Moneycontrol, Screener.in, and company websites. Key financial ratios were extracted and tabulated for each firm across the ten-year span. The ratios analyzed include:

- Interest Coverage Ratio – to assess debt-servicing capacity
- Inventory Turnover Ratio – to evaluate operational efficiency

D. Scope and Limitations

The study is limited to publicly listed Indian pharmaceutical companies with consistent financial disclosures. It does not include unlisted firms or global pharma giants. Moreover, the analysis is restricted to four financial ratios and does not incorporate profitability, market valuation, or ESG metrics. Despite these limitations, the methodology provides a robust framework for assessing financial health and identifying sectoral trends.

4. DATA ANALYSIS

In sectoral analysis, especially in capital-intensive industries like pharmaceuticals, manufacturing, or infrastructure, the D/E ratio helps assess a firm's long-term solvency and risk profile. Investors and analysts use it to evaluate whether a company is over-leveraged or maintaining a healthy balance between debt and equity. For example, a pharmaceutical company with a consistently low D/E ratio may be seen as financially stable and less vulnerable to interest rate fluctuations, while one with a rising ratio might be aggressively expanding or facing liquidity pressures. However, the ideal D/E ratio varies by industry, and it should always be interpreted alongside other metrics like interest coverage, cash flow, and return on equity.

Table 1: Debt-to-Equity Ratio of Pharmaceutical Companies

Year	Sun	Divis	Max	Cipla	Torrent	Apollo	Reddy	Man	Zydus	Lupin	Abbott	Auro	Alkem	Glaxo	Glen	Biocon	Laurus	Cohance	IPCA	Ajanta
2014–15	0.09	0.01	0.16	0.2	0.35	0.6	0.68	0.48	0.27	0.85	0.29	0	0	0.18	0.03	0	0.8	0	0	0.01
2015–16	0.08	0.01	0.15	0.18	0.33	0.34	0.31	0.32	0.24	0.8	0.28	0	0	0.11	0.01	0	0.75	0	0	0.01
2016–17	0.07	0.01	0.14	0.17	0.31	0.35	0.22	0.24	0.3	0.75	0.58	0	0	0.11	0.01	0	0.7	0	0	0.01
2017–18	0.06	0.01	0.13	0.16	0.29	0.32	0.06	0.1	0.15	0.7	0.58	0	0.22	0.06	0.01	0	0.65	0	0.09	0.01

2018–19	0.05	0.01	0.12	0.15	0.27	0.35	0.04	0.18	0.13	0.65	0.58	0.22	0.12	0.14	0.01	0	0.6	0	0.05	0.01
2019–20	0.05	0.01	0.11	0.14	0.25	0.34	0.01	0.24	0.12	0.6	0.58	0.12	0.06	0.05	0.01	0	0.55	0	0.14	0.01
2020–21	0.04	0.01	0.1	0.13	0.23	0.35	0.01	0.24	0.13	0.55	0.58	0.06	0.04	0.14	0.01	0.01	0.5	0.6	0.02	0.01
2021–22	0.04	0.01	0.1	0.12	0.21	0.35	0.01	0.2	0.15	0.5	0.99	0.04	0.03	0.25	0.01	0.01	0.45	0.55	0	0.01
2022–23	0.03	0.01	0.09	0.11	0.19	0.19	0.04	0.22	0.12	0.45	0.8	0.03	0.04	0.22	0.01	0.01	0.4	0.5	0.02	0.01
2023–24	0.03	0.01	0.09	0.1	0.18	0.3	0.01	0.25	0.09	0.4	0.82	0.02	0.02	0.22	0.01	0.01	0.35	0.45	0.58	0.01
Mean	0.1	0.0	0.1	0.1	0.3	0.3	0.1	0.2	0.2	0.6	0.6	0.0	0.1	0.1	0.0	0.0	0.6	0.2	0.1	0.0
SD	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.3	0.2	0.0
CV	38.3	0.0	21.1	21.9	22.6	28.9	155.6	40.2	42.6	24.2	36.4	144.8	130.1	46.2	52.7	129.1	26.3	130.3	198.2	0.0

Source: moneycontrol.com

This dataset presents a 10-year analysis of the Debt-to-Equity Ratio (D/E Ratio) for 20 pharmaceutical companies, offering insights into their capital structure and financial leverage as shown in table 1. Companies such as Sun, Divis, Cipla, and Ajanta consistently maintain low D/E ratios (mean values around 0.1 or below), indicating a conservative financing approach with minimal reliance on debt. This suggests strong internal cash generation and prudent financial management, which is particularly valuable in a sector sensitive to regulatory shifts and R&D costs. On the other hand, firms like Lupin, Abbott, and Laurus show higher average D/E ratios (around 0.6), reflecting greater dependence on

borrowed capital, which may be linked to aggressive expansion, acquisitions, or capital-intensive operations.

The standard deviation (SD) and coefficient of variation (CV) further highlight the volatility in leverage across companies. For example, Reddy (CV = 155.6%), Man (40.2%), and Biocon (129.1%) exhibit high variability, indicating inconsistent debt levels over the years—possibly due to fluctuating earnings, refinancing, or strategic shifts. In contrast, companies like Divis (CV = 0%) and Ajanta (CV = 0%) show remarkable stability, reinforcing their low-risk financial profiles. Moderate CVs in firms like Torrent (22.6%), Apollo (28.9%), and Zydus (42.6%) suggest a balanced approach to debt usage, with some year-to-year adjustments but no extreme swings.

Overall, the analysis reveals a clear divide between low-leverage, stable firms and those with more dynamic or aggressive capital structures. High D/E ratios may enhance returns during growth phases but also increase vulnerability during downturns due to interest obligations and refinancing risks. For investors and analysts, this data is crucial for assessing long-term solvency, risk exposure, and the strategic posture of pharmaceutical companies.

Table 2: Anova Analysis of Debt-to-Equity Ratio

Test of Homogeneity of Variances		**Levene Statistic**	**df1**	**df2**	**Sig.**	**Status**
DOE	Based on Mean	9.202	19	180	.000	Significant
	Based on Median	3.139	19	180	.000	Significant
	Based on Median and with adjusted df	3.139	19	43.355	.001	Significant
	Based on trimmed mean	8.123	19	180	.000	Significant

ANOVA						
DOE	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Overall Status**
Between Groups	7.558	19	.398	27.094	.000	Significant
Within Groups	2.643	180	.015			
Total	10.201	199				

Source: SPSS Tool

This ANOVA analysis evaluates the variation in Debt-to-Equity Ratio (D/E Ratio) across 20 pharmaceutical companies over a 10-year period as shown in table 2. The Test of Homogeneity of Variances, conducted using four statistical methods (mean, median, adjusted median, and trimmed mean), yields significant p-values (.000 to .001) in all cases. This confirms that the assumption of equal variances across companies is violated, indicating that the degree of financial leverage varies considerably among firms. Some companies maintain consistently low debt levels, while others show fluctuating or aggressive borrowing patterns, reflecting differences in capital structure strategies, risk tolerance, and growth models.

Despite the unequal variances, the One-Way ANOVA results reveal a statistically significant difference in D/E ratios across companies. The Between Groups Sum of Squares (7.558) and Mean Square (.398) produce a high F-value of 27.094 with a p-value of .000, confirming that the variation in debt usage is not random but driven by firm-specific financial policies. The Within Groups Sum of Squares (2.643)

represents residual variation within each company over time. Overall, the analysis highlights that pharmaceutical firms differ meaningfully in their approach to financing, and further post-hoc tests could identify which companies exhibit conservative versus high-leverage profiles—critical for assessing long-term solvency and investment risk.

In the pharmaceutical sector, where companies often invest heavily in R&D, manufacturing infrastructure, and regulatory compliance, maintaining a healthy interest coverage ratio is crucial. Firms with consistent and high ICRs are typically more resilient during economic downturns and better positioned to secure financing for expansion or innovation. On the other hand, companies with volatile or declining ICRs may face challenges in sustaining operations, especially if revenues fluctuate due to patent expirations, competitive pressures, or regulatory delays. Thus, ICR serves as a vital indicator for investors, lenders, and analysts when assessing a company's debt-servicing capacity and overall financial stability.

Table 3: Interest Coverage Ratio of Pharmaceutical Companies

Year	Sun	Divis	Max	Cipla	Torrent	Apollo	Reddy	Man	Zydus	Lupin	Abbott	Auro	Alkem	Glaxo	Glen	Biocon	Laurus	Cohance	IPCA	Ajanta
2014–15	18.2	45.1	12.5	10.8	6.2	5.65	13.31	12.35	0	5.45	11.02	0	0	13.69	0	311.6	0	0	0	92.6
2015–16	21.4	47.3	13.2	11.5	6.8	3.08	5.38	12.74	0	5.42	18.26	0	0	31.19	0	95.1	0	0	0	147.1
2016–17	22.6	49.6	14	12.2	7.4	12.9	16.11	99.4	0	4.29	18.73	2.9	0	47.93	0	51.65	0	0	0	350.1
2017–18	24.1	52	14.8	12.9	8	-8.61	23.35	71.23	0	6.38	17.67	5.2	0	161.3	0	57.53	0	0	0	413
2018–19	25.3	54.2	15.6	13.6	8.6	3.61	20.94	19.68	0	21.2	16.65	24.1	0	155.9	0	80.66	0	0	65.3	466.5
2019–20	26.5	56.5	16.4	14.3	9.2	8.77	60.22	16.18	0	-0.9	3.54	15.5	0	17.37	0	130.9	0	0	83.6	490.1

2020–21	27.8	58.9	17.2	15	9.8	14.6	37.33	12.15	22.7	3.57	2.65	10.5	0	7.09	0	166.1	0	0	34.4	0
2021–22	29.2	61.3	18	15.7	10.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022–23	30.1	63.7	18.8	16.4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	72.1	0
2023–24	31.5	66.1	19.6	17.1	11.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean	25.7	55.5	16.0	14.0	8.9	4.0	17.7	24.4	2.3	4.5	8.9	5.8	0.0	43.5	0.0	89.4	0.0	0.0	25.5	195.9
SD	4.2	7.1	2.4	2.1	1.8	6.9	19.3	33.5	7.2	6.5	8.4	8.4	0.0	62.6	0.0	96.3	0.0	0.0	35.1	210.1
CV	16.3	12.7	15.0	15.2	20.4	171.8	109.2	137.6	316.2	142.1	94.6	143.5	0.0	144.1	0.0	107.8	0.0	0.0	0.0	107.2

Source: moneycontrol.com

This dataset (table 3) provides a 10-year overview of the Interest Coverage Ratio (ICR) for 20 pharmaceutical companies, reflecting their ability to meet interest obligations from operating earnings as shown. Companies like Ajanta (mean ICR = 195.9), Laurus (89.4), and Divis (55.5) consistently demonstrate strong coverage, indicating robust profitability and minimal risk of default. These firms likely benefit from high-margin products, efficient cost structures, and low debt levels. In contrast, companies such as Apollo (4.0), Lupin (4.5), and Aurobindo (5.8) show relatively lower average ICRs, suggesting tighter liquidity and greater sensitivity to interest expenses. Notably, several firms—including Zydus, IPCA, and Biocon—report zero or missing values in multiple years, which may reflect either negligible interest obligations or data gaps.

The standard deviation (SD) and coefficient of variation (CV) highlight the volatility in interest coverage across companies. Firms like Ajanta (CV = 107.2%), Reddy (109.2%), and Man (137.6%) exhibit high variability, indicating inconsistent earnings or fluctuating debt servicing capacity. This could stem from changes in capital structure, operational disruptions, or strategic shifts. On the other hand, companies like Sun (CV = 16.3%), Divis (12.7%), and Max (15.0%) show relatively stable ICRs, suggesting consistent financial discipline and predictable earnings. Extremely high CVs in firms like

Apollo (171.8%) and Glenmark (144.1%) point to erratic performance, which may raise concerns for lenders and investors.

Overall, the analysis reveals a clear divide between financially resilient firms and those with volatile or constrained interest coverage. High and stable ICRs signal strong creditworthiness and operational efficiency, while low or fluctuating ratios may indicate vulnerability to rising interest rates or economic shocks. For stakeholders, this metric is crucial in assessing a company's debt-servicing capacity, investment risk, and long-term financial sustainability.

Table 4: Anova Analysis of Interest Coverage Ratio

Test of Homogeneity of Variances						
		Levene Statistic	**df1**	**df2**	**Sig.**	**Status**
ICR	Based on Mean	32.270	19	180	.000	Significant
	Based on Median	12.943	19	180	.000	Significant
	Based on Median and with adjusted df	12.943	19	21.597	.000	Significant
	Based on trimmed mean	28.972	19	180	.000	

ANOVA						
ICR	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Overall Status**
Between Groups	395655.984	19	20823.999	6.892	.000	Significant
Within Groups	543852.532	180	3021.403			
Total	939508.515	199				

Source: SPSS Tool

This ANOVA analysis evaluates the variation in Interest Coverage Ratio (ICR) across 20 pharmaceutical companies over a 10-year period as shown in table 4. The Test of Homogeneity of Variances using Levene's statistic was conducted to assess whether the variances of Interest Coverage Ratio (ICR) across the selected pharmaceutical firms were equal—a key assumption for conducting ANOVA. The test was performed using multiple approaches: based on mean, median, adjusted degrees of freedom, and trimmed mean. In all cases, the significance value (Sig.) was reported as .000, which is below the conventional threshold of 0.05. This indicates that the variances across groups are significantly different, and the assumption of homogeneity of variance is violated. Despite this, ANOVA can still be applied with caution, especially when sample sizes are relatively balanced across groups.

The ANOVA (Analysis of Variance) results reveal a statistically significant difference in the Interest Coverage Ratio among the 20 groups (likely representing different firms or time periods). The Between Groups Sum of Squares is 395,655.984 with 19 degrees of freedom, resulting in a Mean Square of 20,823.999. The Within Groups Sum of Squares is 543,852.532 with 180 degrees of freedom, yielding a Mean Square of 3,021.403. The calculated F-value is 6.892, and the associated p-value (Sig.) is .000, indicating that the differences in ICR across the groups are statistically significant. This significant F-value suggests that at least one group's mean ICR differs from the others. In the context of pharmaceutical firms, this implies that financial health—as measured by the ability to cover interest obligations—varies meaningfully across companies. Such variation may stem from differences in capital

structure, debt management policies, operational efficiency, or exposure to financial risk. Firms with higher ICRs are generally more financially stable, as they generate sufficient earnings to meet interest payments, while lower ICRs may signal financial vulnerability or aggressive leveraging. In conclusion, the ANOVA analysis confirms that the Interest Coverage Ratio is not uniform across the selected pharmaceutical firms, and the differences are statistically significant. This finding supports further investigation into firm-specific financial strategies and sectoral dynamics that influence interest coverage.

5. CONCLUSION

The empirical analysis confirms that financial health across pharmaceutical companies is far from uniform, with marked differences in leverage, liquidity, and operational efficiency. Firms such as Divis, Abbott, and Ajanta consistently outperform peers in metrics reflecting robust earnings and efficient asset utilization. Conversely, companies with high CVs and fluctuating ratios such as Apollo, Max, and Glenmark indicate financial instability or transitional phases in their capital strategies. The significant ANOVA results validate that these differences are not random but structurally embedded in firm-level financial behavior. This study reinforces the importance of multi-metric financial diagnostics and sectoral benchmarking for informed decision-making. Future research could integrate profitability ratios and market valuation indicators to deepen the understanding of financial sustainability in the pharmaceutical sector.

6. FUTURE IMPLICATIONS

The findings of this study offer valuable implications for future financial planning, strategic benchmarking, and policy formulation within the pharmaceutical sector. By identifying firms with consistent financial resilience and those exhibiting volatility across key ratios, stakeholders, including investors, regulators, and corporate managers—can better target interventions, optimize capital allocation, and strengthen fiscal governance. Moreover, the empirical framework used here can be extended to other sectors or integrated with profitability, ESG, and market valuation metrics to build a more holistic financial health model.

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