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A STUDY OF FINANCIAL INDICATORS IN SELECTED INDIAN IRON AND STEEL COMPANIES

Mr. Ragunanthan M[1], Dr. R. Thiyagu[2], Dr. R. Sharmila[3]
[1]*II MBA, Sakthi Institute of Information and Management Studies, Pollachi.*
[2]***Professor,*** *Sakthi Institute of Information and Management Studies, Pollachi*
[3]***Professor,*** *Sakthi Institute of Information and Management Studies*

ABSTRACT
This study analyzes the financial performance of selected Indian iron and steel companies using key financial indicators such as profitability, liquidity, solvency, and efficiency ratios. The objective is to assess the financial health and operational effectiveness of these firms over a defined period. Secondary data has been collected from company annual reports and financial statements. Ratio analysis and comparative evaluation have been employed as primary analytical tools. The findings reveal significant variations in financial performance among the companies, influenced by factors such as market dynamics, operational efficiency, and capital structure. The study offers valuable insights for investors, policymakers, and company management to support strategic decision-making. It also highlights areas for improvement and future growth opportunities in the sector.
KEYWORDS: *Profitability, Liquidity, Solvency, and Efficiency Ratios and ANOVA test analysis,*

INTRODUCTION

The iron and steel industry plays a pivotal role in the industrial development of a nation and is often considered the backbone of infrastructure and manufacturing. In India, this sector contributes significantly to economic growth, employment generation, and exports. The industry has witnessed rapid expansion and modernization in recent decades, driven by increasing domestic demand, government support, and global market integration. However, it also faces challenges such as volatile raw material prices, high capital intensity, and environmental regulations.

Analyzing the financial performance of companies in this sector is essential for understanding their operational efficiency, profitability, and long-term sustainability. Financial indicators such as liquidity ratios, profitability ratios, solvency ratios, and turnover ratios provide crucial insights into a company's fiscal health. By examining these indicators, stakeholders such as investors, policymakers, and management can make informed decisions and develop effective strategies to improve performance and mitigate risks.

This study focuses on selected Indian iron and steel companies to evaluate and compare their financial performance over a specific period. Using secondary data sourced from company annual reports and financial statements, the research applies ratio analysis to assess trends and differences among the firms. The objective is not only to measure financial health but also to identify the strengths and weaknesses within the industry, offering recommendations for improved financial management and competitiveness.

REVIEW OF LITERATURE

Ms.K.P. Divya, and Ms.A.A. Harini, (2023), Against these, the study analyzes JSW Steels Limited at Salem with a focus on the financial liquidity, profitability and solvency of that concern. The study primarily adopted the ratio analysis and du-Pont analysis as a mandatory technique to analyze financial performances which depend on secondary data accumulated from the company records. A useful technique in analytical tools for analyzing financial accounts is ratio analysis that determines advantages, disadvantages, previous trends, and present profitability. The study highlights how important these tools are for management to recognize financial vulnerabilities and take corrective measures. This study is intended to enhance understanding of JSW Steels' performance by highlighting the company's financial situation and making practical suggestions in light of the results.

Dr. Ajay Shukla, and Ashish Gupta, et.al, (2021), Performance evaluation is particularly important for understanding the financial and operational health of businesses in the steel industry, which is critical to human development and economic expansion. This study examines the financial performance of four of the most prominent steel companies listed on the Bombay Stock Exchange. Three primary financial characteristics are analyzed: profitability, liquidity, and solvency. Financial ratios are used as tools for evaluation. The findings are aimed at enhancing the understanding of stakeholders, including creditors, shareholders, and management, on the operational efficiency and financial stability of the companies. From this analysis, it can be noted that good financial management is important in ensuring stability and long-term growth in the steel industry.

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Ms.K. Gowri, and Ms.D. Devika, (2021), This research evaluates the profitability and liquidity status of some Indian steel firms, while putting forth the significance to operational performance and financial viability. It refers to the firm's capacity to meet its short-term obligations and is the indicator affecting both the firm's and external stakeholders' needs. It is significant to a firm's business for it to perform the everyday businesses. Poor liquidity may threaten solvency and overall profitability. On the other hand, profitability is an indication of how a firm can generate more money than it spends and attracts new investors through dividends and increased stock prices. Low profit margins indicate inefficient management, and managers measure the success of their operations using profitability ratios. The article focuses on how profitability and liquidity are related and, at the same time, on their importance for stakeholders and company viability.

Payal Jha, and Dr. Divakar Jha, (2024), Steel is one of the central building blocks of human civilization and a sine qua non to modern economies. One good gauge of socioeconomic advance and standards of living is the per capita consumption of steel. A technologically advanced industry that has tight forward and backward linkages affecting material flows and revenue generation, it is a highly important factor in the early development of industrial economies. Over the years, steel production in the world has continuously increased. The steel industry is one of the pillars of the Indian economy and also occupies a significant position in the industrial structure. This review looks at the existing body of research on financial performance analysis of the steel industry, focusing on key elements both in Indian and international contexts. It draws attention to information regarding liquidity, profitability, and the state of the economy as a whole.

Mr. Aakashkumar Sharma, (2020), This paper examines the five Indian steel companies listed at the NSE and BSE in terms of using financial ratios like liquidity, solvency, activity, and profitability numbers to derive a conclusive view regarding the performance. It has been understood that the sector of iron and steel considerably influences the Country's progressive growth in socioeconomic conditions with better living standards. The study highlights the importance of the industry in generating employment and stabilizing the economy. To analyze how specific financial variables affect these organizations' performance, this study uses the ANOVA-Test analysis. The results reveal the industry's overall financial position and its contribution to India's economic growth.

OBJECTIVES OF THE STUDY

- To evaluate the financial performance of selected Indian iron and steel companies using key financial indicators such as profitability, liquidity, solvency, and efficiency ratios.
- To compare the financial strengths and weaknesses of the selected companies over a specific period.
- To provide insights and recommendations for improving financial management and decision-making within the iron and steel industry.

SCOPE OF THE STUDY

The scope of this study is limited to the financial analysis of selected Indian iron and steel companies over a defined period, based on the availability of published financial data. It focuses primarily on evaluating key financial indicators such as profitability, liquidity, solvency, and efficiency ratios to assess the companies' overall financial health and operational performance. The study does not cover non-financial aspects such as environmental impact, technological advancements, or human resource practices. However, the findings are intended to assist stakeholders—including investors, policymakers, and company management—in understanding financial trends and making informed strategic decisions within the context of the Indian iron and steel industry.

RESEARCH METHODOLOGY

Research Design

This study is based on secondary data sourced from the annual reports, financial statements, and official websites of selected Indian iron and steel companies over a specific period (e.g., five financial years). The research utilizes key financial ratios such as liquidity, profitability, solvency, and efficiency ratios to assess the companies' financial performance. The analysis is conducted through ratio, trend, and comparative analysis methods. The companies chosen represent a cross-section of the industry, ensuring broad insights into the sector's financial health. Data reliability is maintained by using audited financial statements and verified corporate sources.

Data Collection

The research is based on secondary data collected from published annual reports, financial statements, stock exchange filings (such as NSE/BSE), and company websites. Reliable financial databases like Money control.

Period of Study

The analysis covers a **five-year period**, from **FY2020 to FY2024**, to identify trends and changes in liquidity performance over time.

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TOOLS FOR ANALYSIS

The study applies several financial performance measures:

1. **Liquidity Ratios** – To assess the ability to meet short-term obligations:
   - Current Ratio
     Current Ratio = Current Assets / Current Liabilities
   - Quick Ratio
     Quick Ratio = (Current Assets − Inventories − Prepaid Expenses) / Current Liabilities
   - Cash Ratio
     Cash Ratio = (Cash + Cash Equivalents) / Current Liabilities
2. **Solvency Ratios** – To measure financial stability and debt management:
   - Debt-to-Equity Ratio
     Debt-to-Equity Ratio = Total Debt / Shareholders' Equity
   - Proprietor Ratio
     Proprietor Ratio = Shareholders' Funds / Total Assets
3. **Profitability Ratios** – To determine profit generation capability:
   - Net Profit Ratio
     Net Profit Ratio = (Net Profit / Net Sales) × 100
   - Gross Profit Ratio
     Gross Profit Ratio = (Gross Profit / Net Sales) × 100
   - Return on Equity Ratio
     Return on Equity = (Net Profit / Shareholders Equity) × 100
   - Administrative Expenses Ratio
     Administrative Expenses Ratio = (Administrative Expenses / Net Sales) × 100
   - Return on Assets Ratio
     Return on Assets = (Net Profit / Total Assets) × 100
4. **Efficiency Ratios** – To evaluate operational efficiency:
   - Inventory Turnover Ratio
     Inventory Turnover Ratio = Cost of Goods Sold / Average Inventory
   - Working Capital Turnover Ratio
     Working Capital Turnover Ratio = Net Sales / Working Capital
5. **ANOVA**– Used to identify financial patterns over time.

DATA ANALYSIS AND INTERPRETATION

RATIO	TATA STEEL	JSW STEEL	SAIL	JINDAL STEEL	NMDC STEEL	INTERPRETATION
CURRENT RATIO	0.886	0.950	0.878	1.004	2.632	Measures short-term liquidity. A ratio above 1 is generally safe; NMDC Steel is strongest here.
QUICK RATIO	0.372	0.494	0.296	0.660	1.174	Indicates liquidity without inventory; NMDC Steel is safest, others are below ideal level (1).
CASH RATIO	0.128	0.290	0.014	0.202	1.250	Very conservative liquidity measure; only NMDC Steel exceeds the ideal 1.
DEBT-EQUITY RATIO	0.988	1.180	0.654	0.534	0.068	Measures leverage; lower is safer. NMDC has very low debt, JSW Steel is most leveraged.
PROPRIETOR RATIO	0.546	0.366	0.386	0.530	0.576	Higher ratio indicates more equity financing. NMDC and Tata Steel are stronger here.
NET PROFIT RATIO (%)	4.75	7.51	4.80	9.55	0.34	Indicates overall profitability. Jindal is highest; NMDC is very low.

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RETURN ON EQUITY (ROE) (%)	10.03	15.16	8.39	10.97	21.44	Measures return to shareholders; NMDC performs best, followed by JSW.
RETURN ON ASSETS (ROA) (%)	3.78	4.92	3.50	5.43	16.96	Indicates how efficiently assets generate profit; NMDC leads significantly.
ADMIN EXPENSE RATIO (%)	11.13	2.94	13.02	2.37	7.79	Lower is better; Jindal and JSW have the leanest admin cost structures.
INVENTORY TURNOVER RATIO	1.618	2.458	1.978	2.596	3.778	Higher means faster inventory movement; NMDC is most efficient.
WORKING CAPITAL TURNOVER RATIO	-0.95	2.43	1.91	2.54	2.60	Negative for Tata indicates issues; others are healthy. NMDC and Jindal are strongest.

Key Insights

- **Best Liquidity:** NMDC Steel – very high current, quick, and cash ratios.
- **Best Solvency:** NMDC Steel – lowest debt-equity, highest proprietor ratio.
- **Most Profitable:** Jindal Steel & Power (operational), NMDC Steel (asset returns).
- **Most Efficient Operations:** NMDC Steel – excellent inventory and working capital turnover.
- **Weakest Liquidity and Admin Efficiency:** Tata Steel and SAIL – low quick and cash ratios, high admin expense.

ANOVA

Anova is used to find out if there is any significant differences in ratios between the companies.

ANOVA

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
CURRENT_RATIO	Between Groups	11.647	4	2.912	26.598	.000
	Within Groups	2.189	20	.109		
	Total	13.836	24			
QUICK_RATIO	Between Groups	2.444	4	.611	1.898	.150
	Within Groups	6.437	20	.322		
	Total	8.881	24			
CASH_RATIO	Between Groups	4.970	4	1.243	50.037	.000
	Within Groups	.497	20	.025		
	Total	5.467	24			
DEBTEQUITY_RATIO	Between Groups	3.706	4	.927	11.886	.000
	Within Groups	1.559	20	.078		
	Total	5.266	24			
PROPRIETOR_RATIO	Between Groups	.190	4	.047	15.615	.000
	Within Groups	.061	20	.003		
	Total	.250	24			
NETPROFIT_RATIO	Between Groups	240.123	4	60.031	2.144	.113
	Within Groups	559.858	20	27.993		
	Total	799.981	24			
GROSSPROFIT_RATIO	Between Groups	1006.255	4	251.564	4.022	.015
	Within Groups	1251.003	20	62.550		
	Total	2257.258	24			
RETURNONEQUITY_RATIO	Between Groups	549.803	4	137.451	1.459	.252
	Within Groups	1884.585	20	94.229		
	Total	2434.388	24			
RETURNONASSET_RATIO	Between Groups	643.222	4	160.805	9.017	.000
	Within Groups	356.669	20	17.833		
	Total	999.891	24			

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ADMINISTRATIVE_RATIO	Between Groups	453.835	4	113.459	65.447	.000
	Within Groups	34.672	20	1.734		
	Total	488.507	24			
INVENTORYTURNOVER_RATIO	Between Groups	13.468	4	3.367	6.137	.002
	Within Groups	10.972	20	.549		
	Total	24.440	24			
WORKINGCAPITAL_RATIO	Between Groups	8439.100	4	2109.775	1.043	.410
	Within Groups	40437.612	20	2021.881		
	Total	48876.712	24			

INTERPRETATION

The ANOVA results show that several financial ratios exhibit significant differences between groups. For example, the Current Ratio, Cash Ratio, Debt-to-Equity Ratio, Proprietor Ratio, Gross Profit Ratio, Return on Asset Ratio, Administrative Ratio, and Inventory Turnover Ratio all have p-values less than 0.05, indicating statistically significant differences between the groups. However, the Quick Ratio, Net Profit Ratio, Return on Equity Ratio, and Working Capital Ratio show no significant differences (p-values > 0.05), suggesting that variations in these ratios are not statistically significant across groups.

FINDINGS

1. NMDC Steel exhibited the strongest liquidity position among the selected companies, with a Current Ratio of 2.632, Quick Ratio of 1.174, and Cash Ratio of 1.250, all well above the ideal threshold of 1, indicating excellent short-term financial health.
2. Jindal Steel & Power achieved the highest profitability in terms of Net Profit, recording a Net Profit Ratio of 9.55%, outperforming peers such as JSW Steel (7.51%) and Tata Steel (4.75%), demonstrating superior operational efficiency.
3. Tata Steel showed signs of liquidity stress, with a Quick Ratio of 0.372 and Cash Ratio of 0.128, both significantly below the ideal value of 1, indicating a potential challenge in meeting immediate financial obligations without relying on inventory.
4. NMDC Steel had the lowest financial leverage, reflected by a Debt-to-Equity Ratio of just 0.068, indicating minimal dependence on external debt and strong financial stability compared to JSW Steel, which had the highest ratio at 1.180.
5. In terms of asset efficiency, NMDC Steel led the sector with a Return on Assets (ROA) of 16.96%, significantly higher than Jindal Steel (5.43%) and JSW Steel (4.92%), demonstrating its superior ability to generate profit from its assets.
6. The ANOVA analysis confirmed statistically significant differences ($p < 0.05$) across companies for several ratios such as Current Ratio ($F = 26.598$), Cash Ratio ($F = 50.037$), and Administrative Expense Ratio ($F = 65.447$), indicating that financial performance varied meaningfully between the firms studied.

SUGGESTION

1. Expanding the sample beyond the five companies (Tata Steel, JSW Steel, SAIL, Jindal Steel, and NMDC) would allow for more robust comparative analysis and industry generalization.
2. While the study spans FY2020–FY2024, adding graphical trend analysis (e.g., line graphs for each ratio) could visually depict changes over time and support interpretation.
3. Supplementing quantitative ratios with qualitative insights—such as management practices, technological innovations, or policy impacts—would provide a more holistic view.
4. In addition to ANOVA, techniques such as regression analysis or factor analysis could help identify key drivers of financial performance across companies.
5. Beyond generalized findings, offering tailored recommendations for each company based on their specific weaknesses (e.g., Tata Steel's low liquidity) would enhance practical value.
6. Evaluating how broader economic indicators (like steel prices, GDP growth, or policy changes) affect financial performance would strengthen the contextual relevance of the findings.

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