A STUDY OF IDEAL FINANCIAL RATIOS FOR FINANCIAL PERFORMANCE OF SELECTED PUBLIC LISTED ENGINEERING MICRO, SMALL AND MEDIUM ENTERPRISES IN INDIA

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ABSTRACT

Micro, Small and Medium Enterprises (MSMEs) serve as the backbone of any developing country contributing significantly to generate employment and exports. Among these MSMEs, manufacturing enterprises particularly in engineering sector plays an important role. This study focuses on financial performance analysis to bridge the gap between theoretical financial standards and their application in real-world scenarios which provide information for policymakers, investors and government. For the present paper financial data from 23 manufacturing engineering MSMEs over a period of ten years was used for 18 different financial ratios to understand their financial health. By systematically analyzing financial ratios the study identifies ideal financial ratio range and compares the same with the industry standards. For this purpose, KMO Bartlet's test was used to find the financial ratios which best represents the financial health. Further the researcher used paired sample t-test to analyze the calculated ideal ratios with the industry standard which explained that they are 88% correlated and showed a significant positive correlation. Also, most of the engineering enterprises follow the industry standards with some outliers.

KEYWORDS: Financial Performance, Financial Ratios, MSMEs, India.

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play an important role in Indian economy contributing significantly to employment generation, GDP growth and exports. Understanding the financial performance of any industry is an important factor for any investor or government seeking

to grow. Financial ratios derived from financial statements, is a key indicator which explains the profitability, liquidity, solvency and operating performance. These ratios provide insights into a firm's ability to meet its financial obligations, generate profits and growth in the market. The present paper try to calculate the ideal financial ratios for manufacturing engineering MSMEs in India. By focusing on financial performance, it aims to bridge the gap between theoretical benchmarks and real-world data, offering practical insights for policymakers, investors, and industry professionals.

This study not only explains the importance of financial ratios in understanding business performance but also highlights financial performance through financial ratios for manufacturing engineering MSMEs in India.

2. LITERATURE REVIEW

Financial ratios are important tool for financial performance analysis of an enterprise. Financial ratios provide a quantitative base for determining financial health of an enterprise. (Ak et al., 2013) explained the use of financial ratios to the board, managers and investors to make important decisions related to investment and operations in the company. According to (Beaver, 1966; Houghton & Woodliff, 1987) explains success or failure and financial health in terms of liquidity, profitability, operating efficiency and solvency performance. (Altman, 1968), in his scholarly work on "Financial Ratios as Predictors of Financial Distress" and "The Use of Financial Ratios in Bankruptcy Prediction," emphasized the potential of financial ratios in determining the likelihood of financial failure or bankruptcy. Financial ratios like the Altman Z-score model are widely used to predict bankruptcy, using combination of different financial ratios. (Awalakki & H.N., n.d.) highlighted the relationship between financial ratios and stock market performance, indicating how ratios can influence investment decisions and stock returns.

Ideal financial ratios vary depending on the industry and specific circumstances of a company. (Prawirodipoero et al., 2019) and (Pagaddut, 2021) explained the use of financial ratios for financial performance analysis in Indonesia and Philippines. For small and medium enterprises (Lia & Natswa, 2021) suggests key ratios to consider include liquidity ratios (e.g., current ratio quick ratio and cash ratio), profitability ratios (gross profit margin, net profit margin, return on assets and return on equity) and activity ratios (inventory turnover, fixed assets turnover, total assets turnover, accounts receivables and average billing period). Ratios like the current ratio as discussed by Altman is essential for determining a firm's ability to meet its short-term obligations, while profitability ratios are important for evaluating overall performance and efficiency. Now a days many different techniques are available for financial analysis like 360 analysis, ABC Analysis and Balance scorecard yet, financial ratio analyses can provide a comprehensive view of an company's financial health and help in decision-making.

3. RESEARCH METHODOLOGY

3.1 Objective:

To study the ideal financial ratios for the selected public listed engineering micro, small and medium enterprises in India.

3.2 Hypothesis:

H_0 : There is no significant difference between the ideal financial ratios of the selected engineering MSMEs in India.

H_1 : There is significant difference between the ideal financial ratios of the selected engineering MSMEs in India.

3.3 Data Collection

For the present research paper secondary data is collected for BSE NSE listed engineering micro, small and medium enterprises especially related to manufacturing engineering units. From the total population size of 23 listed engineering units are selected as samples based on highest market capital and the financial data for ten years is collected starting from the year 2013-14 upto the year 2022-23 from published annual reports, balance sheets, internet and database like Center for Monitoring Indian Economy Pvt. Ltd. Alias Prowess IQ.

4. DATA ANALYSIS

This research paper uses secondary data from published annual reports, financial statements, internet and the Center for Monitoring Indian Economy Pvt. Ltd. (CMIE) database. The study focuses on 23 listed engineering MSMEs, selected based on their highest market capitalization from which 18 financial ratios were calculated for a period of ten-years from the year 2013-14 up to year 2022-23. The data was found to be normal for the selected period. To determine which financial ratios, have the most significant impact on the financial performance of engineering MSMEs in India, factor analysis was conducted. The suitability of the variables for factor analysis was checked by using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test. Cronbach's alpha test was applied for reliability testing and financial ratios with factor loadings greater than or closer to 0.9 as per the Cronbach's alpha value were selected for final analysis and model testing.

List of observed Factors:

Table 1 : List of observed Financial Ratios for Factor Analysis

Dependent Variable	Independent Variable
Liquidity Performance	1. Current Ratio 2. Quick Ratio 3. Absolute Quick Ratio
Solvency Performance	4. Debt to Equity Ratio 5. Proprietary Ratio 6. Capital Gearing Ratio
Profitability Performance	7. Net Profit Margin 8. Gross Profit Margin 9. Operating Profit Ratio 10. Return on Assets 11. Return on Capital Employed 12. Earnings Per Share 13. Price Earnings Ratio 14. Yield Ratio
Operating Performance	15. Inventory Turnover Ratio 16. Asset Turnover Ratio 17. Debtors Turnover Ratio 18. Creditors Ratio

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.191
Bartlett's Test of Sphericity	Approx. Chi-Square	418.186
	df	153
	Sig.	.000

The KMO value is 0.191, and all the given factors exceed this value, indicating their suitability for factor analysis, except for the yield ratio.

Using principal component analysis, six principal components were identified and subsequently tested for reliability. Cronbach's alpha test was employed for this purpose, with an ideal value being close to or exceeding 0.9, signifying high reliability. These principal components represent six distinct combinations that best capture the correlation between financial performance and financial ratios of

the selected listed engineering MSMEs in India. The combinations were formulated based on the principal components and Cronbach's alpha values.

Table 3 showing Chronbach Alpha value for principal component

Factor No.	Factor Name	Components	Cronbach's Alpha
1	Liquidity Performance	Current Ratio Quick Ratio	0.888
2	Profitability Performance	Net Profit Ratio Gross Profit Ratio Operating Profit Ratio	0.889
3	Return on Investment	Return on Assets Return on Capital Employed	0.928

From the above table we can identify seven financial ratios which shows the relation with financial performance of the selected public listed engineering micro, small and medium enterprises in India and the structural equation model tested based on this matrix shows the goodness of fit of 80.2% for the given period of time.

Further, the research would like to add the ideal ratio for the selected financial ratios showing financial performance of the selected public listed manufacturing engineering enterprises in India, for the given time period as below:

Table 4 showing calculated ideal financial ratios for Engineering MSMEs

Category	Ratio	Mean	Median	Std. Dev.	Range	Calculated Ideal Range
Liquidity	Current Ratio	1.88	1.55	1.41	0 to 11.45	1.5 to 3.0
	Quick Ratio	1.09	0.86	0.99	0.21 to 7.79	0.8 to 2.0
	Absolute Quick Ratio	0.12	0.04	0.26	-0.02 to 1.85	0.05 to 0.5
Solvency	Debt to Equity Ratio	1.17	0.5	1.79	0 to 12.6	0.5 to 2.0
	Proprietary Ratio	0.46	0.45	0.24	0.02 to	0.4 to 0.7

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					0.94	
	Capital Gearing Ratio	52.94	7.58	152.31	0.22 to 1248.14	5 to 20
Profitability	Net Profit Margin (%)	0.32	2.87	31.78	-411.36 to 34.44	2 to 10
	Gross Profit Margin (%)	9.97	9.31	22.16	-256.82 to 67.32	8 to 15
	Operating Profit Margin (%)	8.28	8.6	24.22	-282.93 to 66.48	8 to 12
	Return on Assets (ROA, %)	5.09	3.57	6.51	-16.28 to 37.81	3 to 10
	Return on Capital Employed (ROCE, %)	8.02	5.65	9.76	-20.37 to 54.59	5 to 15
Efficiency	Inventory Turnover Ratio	7.57	1.95	48.03	0 to 724	2 to 10
	Debtors Turnover Ratio	5.82	4.36	5.95	0.03 to 48.87	4 to 8
	Creditors Turnover Ratio	7.2191	4.81	9.08279	0 to 71.46	5 to 10
	Asset Turnover Ratio	21.7157	6.685	31.06178	0 to 146.59	6 to 25

Hypothesis Testing:

A paired sample t-test is used to compare the calculated ideal ratios with the current industry averages to understand whether there is significant difference between them for selected public listed manufacturing engineering enterprises in India.

Table 5 Paired Samples Correlations

	N	Correlation	Sig.
CALCULATED & INDUSTRY	11	.881	.000

Table 6 Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
CALCULATED - INDUSTRY	-6.0154	10.5282	3.1743	-13.0884	1.0575	-1.895	10	.087

The p-value for the paired sample t-test is 0.087 which is greater than 0.05 hence we accept the null hypothesis (H0) indicating that there is no significant difference between the calculated ideal financial ratios and average industry standards of the selected engineering MSMEs in India. The calculated ideal financial ratios for the selected Manufacturing Engineering MSMEs have a significant positive correlation of 88.1% with the industry standards which explain that these companies follow acceptable financial norms with few variations which are not statistically different.

5. MAJOR FINDINGS

1. The calculated ideal current ratio was 1.5 to 3.0 which indicates that most companies have a safe liquidity performance explaining they can manage short term liabilities with current assets.
2. The computed ideal quick ratio was 0.8 to 2.0 for most companies explaining a very tight liquidity position and those companies with ratios below 1.0 needs improvement.
3. Absolute Quick Ratio was calculated as 0.05 to 0.5 reflects that companies hold limited liquid assets, which could pose challenges in times of financial stress.
4. The calculated ideal debt to equity ratio was 0.5 to 2.0 which suggests that most of companies are have a balanced mix of debt and equity capital.
5. The calculated ideal debt to proprietary ratio of 0.4 to 0.7 which indicates that most companies rely equally on external funds for financial stability.
6. The calculated ideal capital gearing ratio was 5 to 20 highlighting most companies maintain with industry average.
7. The calculated ideal net profit margin was range between 2% to 10% which explains that most companies have moderate profitability, also some companies performed very poorly in the group.
8. The ideal gross profit margin was range between 8% to 15% which shows stable profit margins across the selected companies.

9. The calculated ideal operating profit margin was range between 8% to 12% which shows that most companies have a strong operational efficiency.

10. The Return on assets was calculated at 3% to 10% explaining that companies are not very efficient to utilize their assets.

11. The return on capital employed was calculated between 5% to 15% explaining that most companies effectively manage their capital to generate returns.

12. Inventory turnover ratio varies industry wise although the calculated ideal range was between 2 to 10 times.

13. The calculated ideal debtor's turnover ratio was 4 to 8 for manufacturing engineering enterprises.

14. The calculated ideal creditors turnover ratio was 5 to 10 times for manufacturing engineering enterprises.

15. The asset turnover ratio was 6 to 25 times for manufacturing engineering enterprises indicating few companies performing significantly better than other enterprises.

6. CONCLUSION

The financial analysis of selected micro, small and medium engineering enterprises explained a stable overall performance, with satisfactory solvency and profitability performance. Most companies showed a satisfactory liquidity position using current ratio and liquid ratio. Also most of the companies follow a balanced capital structure mix and equally rely on external funds for financial needs. The Profitability ratios highlight an average performance, with few effectively producing and pricing strategies, whereas few having financial losses. The calculated ideal financial ratios for the selected engineering micro, small and medium enterprises shows that they closely related to the present industry average for most of the financial ratios and have a significant relation between them. In future other sector apart from manufacturing engineering enterprises can be included for research purpose. The present study presents that the engineering sector in India is performing better in liquidity, efficiency and operational performance.

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