AN EMPIRICAL STUDY ON THE FINANCIAL PERFORMANCE OF BSE LISTED INDIAN COMPANIES

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Abstract: This study aims to thoroughly examine the financial performance of chosen companies. The research focuses on a set of eleven companies operating across diverse industries within the capital goods sector. Data has been meticulously gathered from the Capitaline database, covering a span of ten years from 2011-12 to 2020-21. The primary financial performance metric considered in the study is Return on Capital Employed (ROCE) and Net Profit Ratio (NPR). To gauge the impact of liquidity, Solvency and Efficiency on Profitability, the study employs metrics including Current Ratio (CR), Inventory Turnover Ratio (ITR), Debt Equity Ratio (DER), Fixed Assets Turnover Ratio (FATR), and Total Assets Turnover Ratio (TATR). Moreover, the analysis takes into account firm size as a control parameter. The research employs a variety of statistical methods, including descriptive analysis, correlation analysis and regression analysis using Panel data to fulfill its objectives. The findings of the study indicates that current ratio emerges as significant factor in in the NPR model but not in the ROCE model. However, solvency ratio and efficiency ratio influence the Return on Capital Employed.

Keywords: **Liquidity, Solvency, Efficiency, Performance, Panel Data**

I. INTRODUCTION

The capital goods sector constitutes a vital component of the economy, playing a crucial role in fostering economic growth through increased productivity and efficiency. Its significance lies in its contribution to augmenting output and efficacy. The development of the capital goods industry holds a pivotal role in sustaining the upward line of manufacturing firms. The burgeoning demand within the Indian market has propelled the advancement of the capital goods sector. This sector's contribution accounts for approximately 12% of the total manufacturing landscape, equating to around 2% of the nation's GDP. The performance of the manufacturing sector shares a symbiotic relationship with the capital goods industry, where the latter furnishes the former with critical assets such as plants, machinery and equipment. This partnership is underpinned by a significant correlation between the two sectors, with manufacturing playing a prominent role in the country's economic advancement. The domains of infrastructure, construction, engineering and related segments rely heavily on the machinery and equipment produced by the capital goods sector. Equipped with state-of-the-art technology and machinery, businesses can innovate, leading to job creation and increased income opportunities. Over the past few decades, the demand for capital goods in India has surged, with imports accounting for a substantial one-third of this demand. This sector has embraced enhanced economic restructuring, fostering a more opportunistic landscape.

Liquidity denotes the swiftness with which assets can be converted into cash. At its core, liquidity ratios are designed to evaluate a company's capacity to settle its existing short-term obligations using available current assets. A lower liquidity ratio suggests an elevated likelihood of the company encountering or potentially facing financial challenges. Conversely, a high liquidity ratio is not entirely favorable, as it entails an opportunity cost-the accumulation on non-profit generating idle funds. Striking a balance in liquidity is paramount, while also exploring into the intricate relationship between liquidity and profitability. Solvency is a key financial metric that assesses a business's reliance on borrowed capital in comparison to the owner's equity capital invested in the business. In simpler terms, t gauges a business's ability to settle all its debts if it were to liquidate all its

assets. Solvency metrics also offer insights into a business's capacity to endure financial setbacks by revealing its ability to continue operations after facing significant financial challenges. Unlike, liquidity, which focuses mainly on short-term financial health, solvency considerations encompasses both long-term and short-term assets and liabilities.

This study is undertaken to examine this very subject. Moreover, this study extends its scope to encompass the influence of solvency and managerial efficiency on the profitability of the selected sample.

Thus, the capital goods sector's performance serves as a barometer of the manufacturing sector's success. Liquidity, solvency and managerial efficiency wield a substantial influence over the financial performance of businesses, evident through various financial ratios, including turnover ratios. Efficient management of inventory usage mirrors industry performance. Furthermore, adept handling of fixed and total assets underscores a firm's capacity to generate sales relative to its assets. Return on Capital Employed emerges as a pivotal metric, gauging profitability performance for the selected companies. The measures offer insights into financial efficiency from an operational standpoint. The long-term sustainability of managers necessitates proactive adoption of innovative methods to navigate challenges. The efficiency of management significantly influences business performance. The ability of management to deliver productivity gains despite constraints in technical, financial and infrastructural resources is a crucial determinant. Understanding the impact of managerial efficiency on the performance of Indian capital goods companies is paramount in this context.

II.   LITERATURE REVIEW

Almumani (2013) examined the impact of managerial factors on the profitability of commercial banks in Jordan. The study found that operational efficiency had a positive effect on the profitability of Jordanian commercial banks, while other factors such as liquidity, credit composition, credit risk, capital adequacy and bank size did not have a statistically significant effect on profitability.

Barus et al. (2017) used a multilinear regression model to analyse the impact of managerial efficiency on the performance of savings and credit societies in Kenya. Their findings indicated that there was no significant impact of managerial efficiency on performance.

Kanagavalli and Devi (2018) aimed to evaluate and compare the financial performance of three selected automobile companies over a 5-year period from 2013-2017 using ratio analysis. The research's goal was to assess and compare the strengths and weaknesses of these companies and manage the associated risks. The findings showed a positive and strong relationship with liquidity ratios and Hero MotoCorp outperformed other automobile companies in terms of profitability.

Budiharjo (2019) examined the effect of activity ratio, leverage, market ratio, profitability and environmental performance on share prices. The results showed that return on equity, price-earnings ratio and environmental performance had a significant positive impact on stock prices, while the debt-to-equity ratio had a significant negative impact.

Amachree and Iheanyi (2020) investigated management efficiency and financial performance in Nigerian banks. Their results revealed that loan-deposit ratio and loan-assets had no effect on the performance of Nigerian banks, suggesting that management had not fully utilized these resources.

Arifiana and Khalifaturofi (2020) studied the effect of financial ratios in predicting financial performance among Indonesian manufacturing companies. They found that liquidity and profitability had a significant negative impact on predicting financial distress. Additionally, activity ratios had a significant negative impact on measuring a firm's resource utilization effectiveness.

Chandrasekaran (2021) focused on evaluating the financial performance of XI Dynamics India Private Limited, a company providing housing and mortgage loans to affordable segments. The research employed secondary data and various financial analysis tools, including ratio analysis and comparative balance sheets. The conclusion indicated that the company's financial performance was robust, and it aimed to secure additional funding for expansion.

Das and Mahapatra (2021) assessed the financial performance of the Micro, Small and Medium Enterprises (MSME) sector in India. The research used statistical tools like correlation, regression and ANOVA to analyse and interpret financial trends. The findings highlighted the sector's significant contribution to employment, manufacturing and exports with policies and innovative plans driving positive results and incremental improvements in performance.

Bama et al. (2021) examined the effect of profitability and total assets turnover on the firm value of food and beverage manufacturing companies. They found that profitability had a positive and significant impact on firm value, while total assets turnover had a positive but insignificant influence.

Binsaddig et al. (2022) explored the relationship between activity ratios and gross profit margin in Bahrain's communication sector. They discovered a positive relationship between total assets turnover and profitability. However, inventory turnover and accounts receivable turnover had no significant relationship with profitability.

Adesola et al. (2022) examined the impact of management practices on the performance of Nigerian manufacturing companies. Their findings revealed a positive impact of effective financial management on earnings after tax and retained earnings. However, financial management had a negative impact on the debt-to-equity ratio.

III. OBJECTIVE AND METHODOLOGY

The present study represents a sincere effort to investigate the relationship between liquidity, solvency, efficiency and performance of selected companies operating in the capital goods sector, which are listed on the Bombay Stock Exchange (BSE). The sample of companies included in this study consists of eleven manufacturing companies that are part of the capital goods sector and are listed on the BSE 200 index. Out of the total twelve listed companies in this sector, one was excluded from the study due to unavailability of data. The study encompasses a comprehensive period of ten years, spanning from the financial year 2011-12 to 2020-2021. To conduct this research, the necessary data was collected from the 'CAPITALINE' database, which serves as a reliable source for financial information. The primary financial performance measure considered in this study is Return on Capital Employed (ROCE), Net Profit Ratio (NPR). In addition, liquidity ratio, solvency ratio and efficiency ratios were chosen to assess and analyze their impact on the performance of these capital goods sector companies. In addition to these key variables, the study also considers the size of the companies as a control variable. This control variable helps account for any potential influence of the companies' sizes on their managerial efficiency and financial performance.

By analyzing the data over this ten-year period and assessing the relationships between these liquidity, solvency, managerial efficiency variables and profitability variables, this study aims to provide valuable insights into how managerial practices and efficiency impact the financial performance of companies within the capital goods sector on the BSE. This research contributes to our understandings of the dynamics within this sector and can offer useful guidance for investors, policymakers and industry stakeholders.

	Variables	Types
Performance	Return on Capital Employed (ROCE)	Dependent
	Net Profit Ratio (NPR)	Dependent
Liquidity	Current Ratio (CR)	Independent
	Inventory Turnover Ratio (ITR)	Independent
Solvency	Debt Equity Ratio (DER)	Independent
Efficiency	Fixed Assets Turnover Ratio (FATR)	Independent
	Total Assets Turnover Ratio (TATR)	Independent
	Size Log (TA)	Control

3.1 Hypothesis:

H_0: There is negative impact of Liquidity, Solvency and Efficiency on Firm Performance.

H_1: There is positive impact of Liquidity, Solvency and Efficiency on Firm Performance.

This study is committed to searching the involved relationship between liquidity, solvency, managerial efficiency and firm performance. To attain this goal, a healthy diagnostic approach has been utilized in the form of a Panel Regression Model, including both fixed and random effects. The choice between fixed and random effects was verified through the application of the Hausman test, confirming the suitability of the chosen model. Two models were employed to analyze impact of liquidity, solvency and efficiency on performance in the capital goods sector listed on BSE. The models are:

Net Profit Ratio (NPR)

$NPR_{it} = \alpha_0 + \alpha_1(CR)_{it} + \alpha_2(ITR)_{it} + \alpha_3(DER)_{it} + \alpha_4(FATR)_{it} + \alpha_5(TATR)_{it} + \alpha_6(TA)_{it} + \varepsilon_{it}$

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6 > 0$

Return on Capital Employed (ROCE)

$ROCE_{it} = \beta_0 + \beta_1(CR)_{it} + \beta_2(ITR)_{it} + \beta_3(DER)_{it} + \beta_4(FATR)_{it} + \beta_5(TATR)_{it} + \beta_6(TA)_{it} + \varepsilon_{it}$

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 > 0$

Where,

NPR　　　　　= Net Profit Ratio

ROCE   = Return on Capital Employed Ratio
ITR   = Inventory Turnover Ratio
DER   = Debt – to- Equity Ratio
FATR   = Fixed Assets Turnover Ratio
TATR   = Total Assets Turnover Ratio
TA   = Size of the firm (Log TA)
ε_{it} = Error
α_0, β_0 = intercept
α_i, β_i = regression coefficient

IV.   ANALYSIS AND INTERPRETATION

Table 4.1: Descriptive Statistics

	NPR	ROCE	CR	ITR	DER	FATR	TATR	SIZE
Mean	0.347	18.383	1.51	8.227	0.177	5.469	1.964	8.467
Median	0.087	17.29	7.71	7.71	0.04	4.635	1.61	8.382
Std. Dev.	1.196	8.945	0.45	6.225	0.325	4.492	1.658	1.374
Minimum	-1.989	0	0.42	0.66	0	0.46	0.23	4.999
Maximum	7.509	40.64	2.69	34.35	1.9	23.86	7.92	10.817
Obs.	110	110	110	110	110	110	110	110

Source: Eviews 9 software output

Table 4.1 above represents that the average net profit ratio for the companies in the dataset is approximately 34.7% and median net profit ratio is much lower at 8.7% indicating that there may be some companies with very high net profit ratios skewing the mean. The result of NPR also illustrates a relatively high standard deviation (1.20) with wide variation in net profit ratios among the companies. The lowest net profit ratio is -1.99% indicating that some companies have incurred losses. The average ROCE is 18.4% indicating that companies on average generating 18.4% return on their capital employed. As per the minimum and maximum ROCE, some companies are not utilizing their capital effectively and some companies have strong performance (46.64%). From the point of view of liquidity, current ratio with an average of 1.51 shows a slightly more current assets comparing to current liabilities. Average ITR (8.227) indicates that companies under study efficiently manages its inventory by selling and restocking it quickly. The solvency position represented by DER having an average of 0.1777 indicates that companies have relatively low debt compared to equity. The average FATR (5.47) denoting that companies generate 5.47 times their revenue with their fixed assets and average TATR (1.694) suggesting that companies generate 1.964 times their revenue with their total assets.

The above statistics provide insights into the financial performance, liquidity, solvency and asset utilization of the companies in the dataset.

Table 4.2: Correlation Analysis

	NPR	ROCE	CR	ITR	DER	FATR	TATR	SIZE
NPR	1							
ROCE	-0.1222	1						
CR	-0.018	0.189	1					
ITR	0.129	0.296	0.155	1				
DER	-0.139	-0.301	-0.504	0.079	1			
FATR	-0.047	0.383	0.371	0.721	0.022	1		
TATR	0.032	0.34	-0.153	0.289	0.369	0.526	1	
SIZE	0.031	-0.376	0.107	-0.488	-0.436	-0.59	-0.816	1

Source: Eviews 9 software output

Result of correlation analysis indicates that NPR has a negative correlation with ROCE (-0.1222) that means when net profit ratio decreases there is slight decrease in ROCE. there is a weak positive relationship between net profit ratio and the current ratio. It has positive correlation with ITR (.129) implying that companies under study with higher NPR tend to have higher Inventory Turnover Ratio. NPR is negatively correlated with DER (-0.139) which indicates that as NPR decreases DER tends to increase slightly. It has negative relation with

FATR (-0.047) suggesting a weak negative relationship. NPR has very weak positive relationship with TATR (0.032) and SIZE (0.031).

ROCE has a positive correlation with CR (0.189) and ITR (0.296) indicates with higher ROCE tend to have higher CR and ITR. It has a negative correlation with DER (-0.301) which indicates that as ROCE increases, the Debt-to-Equity Ratio tends to decrease. ROCE is positively correlated with FATR (0.383) and TATR (0.34) and negatively related with SIZE (-0.376).

Current Ratio is positively related with NPR (0.018); ROCE (0.189), ITR (0.155); FATR (0.371) and SIZE (0.107). It has a negative correlation with DER (-0.504) and TATR (-0.153). Inventory Turnover Ratio has a negative correlation with SIZE (-0.488) suggesting that smaller companies tend to have higher Inventory Turnover Ratios. DER has a negative correlation with NPR (-0.139); ROCE (-0.301); CR (-0.504); and SIZE (-0.436) and positive correlation with ITR (0.079); FATR (0.022) and TATR (0.369).

4.1 Diagnostic Tests

In this research study a critical evaluation was conducted to determine the most suitable regression model between Pooled Ordinary Least Square (POLS) and Fixed Effect Model (FEM). The Redundant Fixed Effects-Likelihood Ratio test was employed for making the decision. The test results indicated that both the p-values associated with the cross-section F-statistics and the cross-section chi-square statistic is less than 0.05 for both the regression model. Consequently, the null hypothesis was conclusively rejected for both the regression analysis. As a result, the Fixed Effect Model emerged as the selected model, with the dependent variables being Net Profit Ratio (NPR) and Return on Capital Employed (ROCE).

Table 4.3: Diagnostic Test Analysis

Redundant Fixed Effects-Likelihood Ratio test (F-Test)						
	NPR			**ROCE**		
Effect Test	Statistics	d.f.	Prob.	Statistics	d.f.	Prob.
Cross-section F	13.0854	(10,93)	0.0000	12.584	(10,93)	0.0000
Cross-section Chi-Square	96.623	10	0.0000	94.132	10	0.0000
Hausman Test						
	NPR			**ROCE**		
Test Summary	Chi.Sq. Statistics	Chi. Sq. d.f.	Prob.	Chi.Sq. Statistics	Chi. Sq. d.f.	Prob.
Cross-section random	11.137	6	0.0842	23.421	6	0.054

Source: Eviews 9 software output

Subsequently, the study employed the Hausman test to choose between the Fixed Effect Model (FEM) and Random Effect Model (FEM). The result of the Hausman test indicates a p-value of 0.842 for the model with NPR as dependent variable and a p-value of 0.054 for the model with ROCE as dependent variable. As the p-value exceeds the conventional significance threshold of 0.05 in both the cases, there is no evidence to reject the null hypothesis in favor of the alternative. Hence, in this study Random Effect Model (FEM) may be selected for the analysis.

Table 4.4: Regression Analysis

Variable	NPR			ROCE		
Model Selected	REM			REM		
	Coefficient	t-statistics	Prob.	Coefficient	t-statistics	Prob.
C	4.126	1.686*	0.0949	-14.974	-1.099	0.2739
CR	-1.232	-3.461***	0.0008	-0.222	-0.107	0.9149
ITR	0.089	2.942**	0.0040	0.288	1.618	0.1086
DER	-0.753	-1.611	0.1102	-8.158	-3.040**	0.0030
FATR	-0.146	-3.067**	0.0028	0.546	1.919	0.0577
TATR	0.131	0.764	0.4468	3.510	3.653***	0.0004
SIZE	-0.234	-0.941	0.3488	2.703	2.005**	0.0475

R^2	0.223	0.416
Adjusted R^2	0.177	0.383

Note: *=significant at 10% level; **=significant at 5% level; ***=significant at 1% level
Source: Eviews 9 software output

The result of the regression analysis for Model 1 states that the intercept is 4.126 and the associated t-statistics is 1.686 which indicates when all independent variables are zero, the expected value of NPR is 4.126. Current Ratio coefficient (-1.232) and t-stat (-3.461) with p-value of 0.0008 is highly significant. The CR is associated with a decrease in NPR, whereas Inventory Turnover states that an increase in ITR is associated with an increase in NPR. The coefficient of Debt-to-Equity Ratio and Fixed Assets Turnover Ratio imply that an increase in DER and FATR are associated with a decrease in NPR. There is no strong evidence of relationship between Total Assets Turnover Ratio, Size and Net Profit Ratio. The value of R^2 (0.223) indicates that approximately 22.3% of the variation in NPR is explained by the independent variables in the model.

The result of regression analysis for Model 2 indicates that Current Ratio is not statistically significant with ROCE. However, there is marginal significant level was found between ITR and NPR at 10% level. At 1% level of significance DER and FATR are strongly related with ROCE. The result indicates there is high significant relationship between TATR and ROCE. Firm size is also positively related to ROCE significantly at 5% level. Result of R^2 (0.416) indicates that approximately 41.6 % of the variation in ROCE is explained by the independent variables in the model.

V. CONCLUSION AND SUGGESTION

The study focuses on assessing how liquidity, solvency and managerial efficiency variables impact the performance of selected companies in the capital goods sector listed on the Bombay Stock Exchange. Based on our analysis, it's evident that the current ratio emerges as significant factor in in the NPR model but not in the ROCE model. This means an increase or decrease in the current ratio can substantially impact a company's net profit ratio. However, in the ROCE model, the current ratio may not be as pertinent as other factors. Company's debt-to-equity ratio influences ROCE. The managerial efficiency in terms of utilizing of its fixed assets significantly affects its Return on Capital Employed. In summary while the current ratio plays a significant role in explaining variations in net profit ratio, several other variables, including debt-to-equity ratio, fixed assets turnover ratio, total assets turnover ratio and size are crucial factors in understanding and predicting variations in return on capital employed. These findings provide valuable insights for assessing financial performance in different contexts within the study.

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