IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Study On The Capital Structure On Profitability Of Diamond Engineering (Chennai) Private Limited

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Abstract: This study analyses the financial performance and capital structure of Diamond Engineering (Chennai) Private Limited over a five-year period, using key accounting ratios and statistical tools. The objective was to evaluate how the company's financing decisions have affected its profitability and financial stability. Ratios such as current ratio, quick ratio, debt-equity ratio, net profit margin, return on equity (ROE), and return on assets (ROA) were examined to assess liquidity, solvency, and profitability. Additionally, statistical methods like correlation and regression were used to study the relationship between EBIT (earnings before interest and taxes) and EPS (earnings per share). The findings reveal that while the company initially struggled with high debt and negative equity, it has shown significant improvement in recent years, especially in terms of profitability and capital structure. Correlation and regression used to identify the relationship between capital structure and profitability. The study concludes that sound financial planning and effective debt management are essential for the company's sustainable growth and value creation.

Keywords: capital structure, profitability, ratios, short-term, debt & equity.

I. INTRODUCTION

Capital structure refers to the combination of funds from different sources of finance. Company can arrange funds through equity share capital, retained earnings, preference share capital and long-term debts. The most crucial component of starting a business is capital. It acts as the foundation of the company. Debt and Equity are the two primary types of capital sources for a business. Capital structure is defined as the combination of equity and debt that is put into use by a company to finance the overall operations of the company and for its growth. Capital structure can be described as the arrangement of capital by using different sources of long-term funds which consists of two broad types, equity, and debt. The different types of funds that are raised by a firm include preference shares, equity shares, retained earnings, long- term loans etc. These funds are raised for running the business.

Retained earnings: Retained earnings are part of the profit that has been kept separately by the Organization and which will help in strengthening the business. Debt capital is referred to as the borrowed money that is utilized in business. There are different forms of debt capital.

Capital structure refers to the mix of debt and equity that a firm uses to finance its operations. An optimal capital structure minimizes the cost of capital while maximizing firm value. In the context of heavy engineering and steel fabrication, where capital intensity is high, understanding the impact of financial leverage is crucial. This study explores the relationship between capital structure and financial performance, using Diamond Engineering (Chennai) Pvt. Ltd.

II. LITERATURE REVIEW

The literature on capital structure and its impact on firm performance has evolved with various theoretical frameworks and empirical studies. Konda Shiva Kumar Reddy and M. Nanda Kishore (2024) emphasized the explanatory power of modern theories of capital structure, analyzing different debt instruments and using factor analytic techniques to address proxy measurement issues. Taiwo Adewale Muritala (2023) explored the Nigerian context and found a negative relationship between capital structure and operational performance, highlighting underutilization of asset tangibility. Dr. Ramachandran and Madhumathy (2022) noted that even decades after Modigliani and Miller's theorem, firms still struggle to determine an optimal capital structure, particularly in the Indian textile industry. Chhavi Aggarwal and Kuldip Singh Chhikara (2021–2022) provided empirical evidence from the Indian green industry, identifying a positive and significant relationship between debt-equity ratio and profitability. Himani Gupta and Dr. Naresh Kumar Gupta (2020) demonstrated a positive correlation between capital structure and profitability in Indian construction companies.

Reema Monga (2018) analyzed the telecom sector in India and observed a largely negative association between capital structure and profitability. Similarly, HERCIU Mihaela (2017) stressed the importance of balancing liabilities and equity for maximizing profitability using the DuPont framework. Sorana Vatavu (2015) found that Romanian manufacturing firms perform better when relying more on equity than debt. Julius Adesina and colleagues (2015) provided evidence from Nigerian banks post-consolidation, asserting that capital structure significantly enhances profitability.

Further studies such as those by Harvinder Singh Mand (2015), Dr. M. Sekara (2014), and Laura Serghiescu (2014) investigated specific sectors like Indian corporates, Tata Motors, and Romanian construction firms, respectively, and reinforced the notion that profitability is influenced by firm-specific characteristics and capital structure. Researchers like Anshu Handoo (2014) and Shrabanti Pal (2014) identified various determinants like size, growth, tangibility, and business risk impacting capital structure choices. Lastly, earlier contributions like those by Joshua Abor (2005) and Dimitris Margaritis (2010) confirmed that a firm's choice between debt and equity has material consequences on its financial outcomes, and efficient firms often align their leverage to enhance profitability.

III. OBJECTIVES OF THE STUDY

Primary objective

To study the capital structure on the profitability of Diamond Engineering (Chennai) private limited.

Secondary objectives

1. To study the capital structure of the firm during the study period.
2. To study the EBIT & EPS analysis.
3. To study the debt/equity ratio of selected period.
4. To study the relationship between capital structure and profitability.

IV. RESEARCH METHODOLOGY

Analytical research was used for this study with the help of secondary data from the audited annual reports of Diamond Engineering (Chennai) Pvt. Ltd. for the years 2019–2020 to 2023-2024. Financial ratio analysis is applied to assess liquidity, solvency, and profitability. Correlation and regression analyses are used to examine the relationship between capital structure variables (e.g., debt- equity ratio) and profitability indicators (e.g., ROA, ROE).

3.1 Data and Sources of Data Secondary data

Secondary data refers to information that has been collected by someone other than the user, typically for a purpose different from the user's current research question. It is pre-existing data that can be sourced from various publications, databases, and other studies. The study is based on secondary sources for the purpose of data collection. Financial data are gathered from the

- company's balance sheet
- annual reports
- publications and
- other relevant manuals.

3.2 RATIO USED FOR STUDY

Ratio analysis is a method of examining a company's balance sheet and income statement to learn about its liquidity, operational efficiency, and profitability. It does not involve one single metric; instead, it is a way of analyzing a variety of financial data about a company. Ratio analysis is a cornerstone of fundamental equity analysis.

i. LIQUIDITY RATIO

1. current ratio = current asset / current liabilities
2. Quick ratio = (current assets – inventories) / current liabilities

ii. SOLVENCY RATIO

1. Debt-to-equity ratio = total debt / equity
2. Debt-to-asset ratio = total debt / total assets
3. Interest coverage ratio = EBIT / interest expenses

iii. PROFITABILITY RATIO

1. Net profit ratio = net profit / revenue *100
2. Gross profit ratio = gross profit / revenue *100
3. Return on assets = net income / average total assets
4. Return on equity = net income / shareholder’s equity
5. Operating expenses = operating profit / revenue
6. Earnings per share = net profit after tax / number of shares

3.3 Statistical tools

In this study the statistical tools used for the analysis are correlation and regression to find a relationship between capital structure and profitability.

3.3.1 Correlation

In statistics, correlation describes the strength and direction of a relationship between two variables. It is measured by the correlation coefficient, a value between -1 and +1, where 0 indicates no correlation, positive values indicate a positive relationship, and negative values indicate a negative relationship. Formula (Pearson's Correlation Coefficient):

The most common type of correlation, Pearson's, is calculated using the following formula:

$$\mathbf{r = (n * \Sigma xy - \Sigma x * \Sigma y) / \sqrt{[(n * \Sigma x^2 - (\Sigma x)^2) * (n * \Sigma y^2 - (\Sigma y)^2)]}}$$

Where:

r = correlation coefficient

n = number of observations (pairs of data)

Σxy = sum of the products of each pair of x and y values Σx = sum of all x values

Σy = sum of all y values

Σx^2 = sum of the squares of each x value Σy^2 = sum of the squares of each y value.

3.3.1 Regression

Regression analysis is a statistical method used to estimate the relationship between a dependent variable and one or more independent variables.

- Dependent variable: This is the main factor that you’re trying to understand or predict.
- Independent variables: These are the factors that you hypothesize have a impact on your dependent variable.

$$\mathbf{Y=a + bX + \in}$$

$$\mathbf{a= (\Sigma y)(\Sigma x2) - (\Sigma x)(\Sigma xy)/ n(\Sigma x2) - (\Sigma x)2 \quad b= n (\Sigma xy) - (\Sigma x)(\Sigma y) /n(\Sigma x2) - (\Sigma x)2}$$

IV. RESULTS AND DISCUSSION

4.1 Results of correlation

Table 4.1: correlation

Correlations

		ROE	ROA	INTEREST_COVERAGE	GROSS_PROFIT
ROE	Pearson Correlation	1	.921*	.951*	.976**
	Sig. (2-tailed)		.026	.013	.004
	N	5	5	5	5
ROA	Pearson Correlation	.921*	1	.993**	.835
	Sig. (2-tailed)	.026		.001	.078
	N	5	5	5	5
INTEREST_COVERAGE	Pearson Correlation	.951*	.993**	1	.887*
	Sig. (2-tailed)	.013	.001		.045
	N	5	5	5	5
GROSS_PROFIT	Pearson Correlation	.976**	.835	.887*	1
	Sig. (2-tailed)	.004	.078	.045	
	N	5	5	5	5

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

H_0: There is no significant relationship between capital structure indicators (such as interest coverage) and profitability measures (ROE, ROA, Gross Profit).

H_1: There is a significant relationship between capital structure indicators and profitability measures**.** Table 4.1 From this correlation

- Interest Coverage vs ROE → r = 0.951, p = 0.013 → significant at 0.05 level
- Interest Coverage vs ROA → r = 0.993, p = 0.001 → highly significant at 0.01 level
- Interest Coverage vs Gross Profit → r = 0.887, p = 0.045 → significant at 0.05 level

These results reject the null hypothesis and accepted the alternative hypothesis, showing that the capital structure is significantly related to profitability.

4.1 Results of regression

Table 4.2

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EBIT[b]	.	Enter

a. Dependent Variable: EPS

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1.000	.999	.14696

a. Predictors: (Constant), EBIT

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	164.055	1	164.055	7596.125	.000[b]
	Residual	.065	3	.022		
	Total	164.119	4			

a. Dependent Variable: EPS

b. Predictors: (Constant), EBIT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.660	.084		-19.713	.000
	EBIT	1.564E-8	.000	1.000	87.156	.000

a. Dependent Variable: EPS

Table 4.1 From this regression

From the regression the p = 0.000 (which is < 0.05), so it rejects, and H_0 accept the alternative hypothesis.

H_0: There is no significant effect on EBIT (Earnings Before Interest and Taxes) and EPS (Earnings Per Share).

H_1: There is a significant effect on EBIT (Earnings Before Interest and Taxes) has no significant effect on Eps (earnings per share).

V. FINDINGS

1. Liquidity Ratios: The current ratio improved from 0.56 in 2019-20 to 0.70 in 2023-24, indicating better short-term financial risk.
2. Solvency Ratios: Debt-to-Equity ratio showed a dramatic shift from negative to positive values, reflecting a turnaround in equity base.
3. Profitability Ratios: Return on Equity and Return on Assets were positively correlated with a more balanced capital structure.
4. Statistical Findings: Pearson correlation showed a moderate positive relationship between debt-to-equity and ROE. Regression analysis confirmed a statistically significant impact of capital structure on profitability metrics.

VI. Suggestion

1. The company can maintain more cash or liquid assets for short-term needs.
2. To avoid high borrowing to maintain a healthy debt-to-equity balance of the company and build positive equity.
3. To stabilize profit margin the company should control cost and ensure consistent income to avoid ups and downs of the profit.
4. To avoid loss, adopt financial strategies for the company substantial growth and profit.
5. The debt-to-assets is a major factor influencing capital structure so company may increase the sales by utilizing the assets efficiently foe high productivity and it increase overall profit of the company.
6. The management can take necessary action to reduce day-to-day expenses and borrowed capital. It may lead company to get profit in the future.

VII. Conclusion

From the study we conclude that over the five years periods, the company faced both struggles and recovery. In the early stag es, the company had a negative equity and high debt, that leads to risky financial position. Liquidity ratios are below 1, shows that the sometimes company trouble to pay its short-term bills. Profitability ratios such as net profit margin and return on equity were unstable, indicating losses in early stage and strong profit margin during the year 2022-2023 the company earnings improved sharply. Statistical tools like correlation and regression showed a strong positive relationship between EBIT (earnings before interest and taxes) and EPS (earnings per share), shows that better performance leads to better return for the shareholders. The correlation and regression analysis in this study shows that the way Diamond Engineering uses debt and equity (its capital structure) influences its profits. By improving the capital structure and profitability the company can leads a positive future and if it continues to managing the debt and improving operation efficiently.

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