

## Impact of Capital Structure on Profitability of Food Processing Companies Listed in NSE

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### ABSTRACT

This paper tends to find the impact of capital structure on profitability of food processing companies listed in the national stock exchange and study covers for the period of 2017-2022. Debt ratio, equity ratio as the capital structure variables and operating profit margin, net profit margin, return on assets, return on capital employed as the profitability variables in the present study. Tools used here are descriptive statistics, correlation, and regression analysis. Also the study found that there is no significant negative relationship between profitability variables (operating profit margin, net profit margin, and return on assets, return on capital employed) and capital structure variables (debt ratio, equity ratio). There is no significant negative impact of capital structure (debt ratio, equity ratio) on profitability variables (operating profit margin, net profit margin, return on assets, return on capital employed) during the period of study. During the period of study, the food processing companies used equity financing higher than the debt financing.

**Keywords:** *capital structure, profitability, correlation, regression.*

### INTRODUCTION

The capital structure of a company is made up of debt and equity that is how companies finance its assets. Capital structure implies the composition of funds raised from various sources commonly known as debt and equity. The proportion of debt and equity in the company's capital will remain for a period of time. Each component of capital structure (i.e. debt and equity) will cost differently to the company. Companies are in the dilemma of knowing the optimum proportion of debt and equity to finance their assets without affecting their profit margins. Profitability ratios are the metrics that helps in finding company's ability to generate profits from their debt and equity proportions. Capital structure decision is an important decision, since the profitability measures of the companies are related directly with those decisions. In order to know the proportion of debt and equity in food processing and manufacturing companies listed in NSE. This paper tends to analyze whether the proportion of debt and equity used in these companies has impacted their profitability performance during the period of the study from 2017 to 2022.

### LITERATURE REVIEW

“Dr. Ayad Shaker sultan and Dr. Mustafa Hassan Mohammad Adam” done the research on “The effect of capital structure on profitability”. This study examines relationship between debt, equity and profitability of firms listed in Iraq. Statistical tools used in the study is descriptive statistics, correlation, and regression using ordinary least squares. The study found that capital structure

positively influences profitability of firms listed in Iraq, profitability and firm size (assets) found to be negatively influencing the capital structure.

“Dr. Ramachandran Azhagaiah and Dr. CandasamyGavoury” done the research on “The impact of capital structure on the profitability with special reference to IT industry in India”. 102 sample IT firms was chosen by multi stage sampling technique. The methodology used here is descriptive statistics, Pearson correlation and multiple regression model. The study proves strong one to one relationship between capital structure and profitability.

“NuraddeenUsmanMiko PhD and Ibrahim Para” conducted a study on “capital structure and profitability of listed manufacturing firms in Nigeria”. The study considered a sample size of 39 manufacturing firms listed in Nigerian stock exchange for the years of 2008-2017. The study adopted ordinary least square regression technique. The study found that debt finance, equity finance, debt to equity finance have significant impact on profitability.

“Koech Robert, Kimetto Richard and Rono P. k” examined the “effect of capital structure on financial performance of firms listed in Kenya”. Statistical tools like Anova, T-test, and regression model is used for analysis for the year of 2008-2013 by adopting explanatory non experimental research. And found equity and long term financing has positive and significant effect on financial performance, while short term debt financing has negative and significant effect on financial performance.

“Joshua Abor” conducted study on “Capital structure and profitability of listed firms in Ghana”. The study found short term debt has a positive relation with ROE, negative relation between long term debt and ROE, and also a positive relation between total debt and ROE. And suggested most profitable firms in Ghana uses short term debt financing for their operations.

“Ini S. Udom and Eze, Onyekachi R” his study examined “the effect of capital adequacy requirements on the profitability of commercial banks in Nigeria”. Ordinary least square regression model (OLS) for data analysis. This study found that capital adequacy has positive impact on the financial performance of commercial banks in Nigeria.

“Md. MusfiqurRahman, FarjanaNurSaima, KawasarJahan” conducted research on “the impact of financial leverage on Firms profitability”, an empirical evidence from listed textile firms of Bangladesh. A sample of 22 DSE (Dhaka stock exchange) listed textile firms were taken and pooled OLS regression, fixed effect, generalized method of moments (GMM). Found that there exist a significant negative relationship between leverage and profitability using pooled OLS regression. The results found is also consistent with the fixed effects and generalized method of moments.

“Ishaya Luka Chechet PhD, AbduljeleelBadmusOlayiwola” has examined the “capital structure and profitability of Nigerian quoted firms”, in the agency cost theory perspective. They took a sample of 70 out of population of 245 firms listed in the Nigerian stock exchange (NSE) for a period of ten years from 2000-2009. The study also found that DR (debt ratio) is negatively related with profitability variable, equity finance affects the firm’s profitability positively but not significantly and also provides evidence against the agency cost theory.

“S. Revathy, Dr. V. Santhi” has conducted the study on “The impact of capital structure on profitability of manufacturing companies in India”. Multistage sampling is used and selected 70 companies for the period of Apr1991 to Mar2012. Data collected are analyzed using the structural equation modelling. Findings shows that increase in debt ratio inversely affects the profit of the manufacturing companies listed in Bombay stock exchange.

“Mr. Bhushan Singh and Dr. Mohinder Singh” examined the “the impact of capital structure on firm’s profitability: a study of selected listed cement companies in India”. The period for the study is five years from 2009-2010 and 2013-2014. Sample of top 10 cement companies has been selected out of 42 cement companies. Found negative and significant relationship between capital structure and profitability variables.

“KwadoBoatengPrempeh, Allan McBrightSekyere, Eric Kwame AmponsahAddy” has conducted the study on “Multivariate analysis of determinants of profitability: evidence from selected manufacturing companies listed on Ghana stock exchange”. The study found leverage and interest rate have a

negative relationship with profitability, firm and liquidity has significant positive relationship with profitability, tangibility and GDP have insignificant relationship with profitability.

“Preeti Gupta” has done an “empirical study of relationship between capital structure and profitability of foreign promoter holding companies in India”. The study covered a period of five years 2008-2013. By using multiple regression model the study found that the debt to total asset ratio, and debt to equity ratio has significant negative relationship with profitability measures ROA, ROE and EPS.

“Nassar S” conducted the study on “the impact of capital structure on financial performance of firms: evidence from Borsa Istanbul”. Sample of 136 industrial companies listed on Istanbul stock exchange for the period of 8 years from 2005-2012. Multivariate regression analysis is used to test the relationship between capital structure and financial performance. And found that there exist a negative significant relationship with profitability.

“Amarjit Gill, Nahum Biger, and Neil Mathur” conducted study on “effect of capital structure on profitability: evidence from united states”. A sample of 272 firms was selected for the period off three years from 2005-2007. The panel data was analyzed using the correlation and regression analysis for estimation. Found that positive relationship between total debt to total assets ratio and profitability in both manufacturing and service industries. Concluded that profitable firms mainly depend on debt financing.

“A.M. Goyal” conducted a study on “impact of capital structure on performance of listed public sector banks in India”. The analysis of the data is done through descriptive, correlation, and regression analysis. The analysis results shows that there is a positive relationship between short term debt and ROE, ROA and EPS.

#### **RESEARCH PROBLEM**

This research is intended to find the impact of capital structure on the profitability of food processing companies listed in NSE.

#### **OBJECTIVES OF THE STUDY**

The purpose of the study is to examine the impact of capital structure on profitability of food processing companies for the period of 2017-2022. The objective of the study is

- To establish relationship between capital structure variables and the profitability variables
- To find the impact of the capital structure variables on the profitability variables

#### **HYPOTHESIS OF THE STUDY**

**H<sub>0</sub>**: There is no significant negative relationship between capital structure variables and profitability variables

**H<sub>1</sub>**: There exists a significant negative relationship between capital structure variables and profitability variables

**H<sub>0</sub>**: There is no significant negative impact of capital structure variables on the profitability variables

**H<sub>1</sub>**: There exists a significant negative impact of capital structure variables on the profitability variables

#### **RESEARCH DESIGN**

Since this research is based on the secondary data. Quantitative research is used in the present study to investigate whether the capital structure (proportion of debt and equity mix) in the food processing listed in the NSE has impacted their profitability during the period of study.

#### **SAMPLING DESIGN**

The population of the study consists of various companies under different sectors listed in the NSE. Purposive sampling is used in this study and selected food processing companies. The data for few food processing companies are not available and hence those companies are omitted. Hence final sample for the study consists of 18 companies listed in the national stock exchange (NSE).

#### **DATA COLLECTION**

The present study is mainly based on the secondary data which was collected using the Prowess software. From the financial statements of selected food processing companies for the period from 2017-2022.

**TOOLS USED**

**Descriptive Statistics** are used to describe the overall summary of the data collected from the sample of this study and helps to project the collected data’s in a meaningful way. Since the raw data would be difficult to analyze. Mean is the most popular and commonly used measure in descriptive statistics. Also known as the average value or common value in the given data set. It can be obtained by dividing the overall values by number of values. Standard deviation is the value which represents the variation or dispersion of our data set. It is a measure that how far our data is spread out from the mean value.

**Correlation** is the test statistic that measures the relationship between variables. It is the most popular method to find the association of two or more variables. It commonly ranges between -1 and +1. If the value ranges close to -1 then it has a strong negative correlation and if it ranges close to +1 then it has a strong positive correlation. It is performed using Statistical Software for Social Science (SPSS).

**Regression Analysis** is a statistical technique used to find the estimation of relationship between a dependent variable and two or more independent variables. It is used to find which variables has impact on the dependent variable. Hence multiple regression model is used in the study to find the impact that capital structure variables has on profitability variables used here. It is performed using statistical software for social science (SPSS).

Table 1: Variables and symbols used

Variables	Symbol	Method
Operating Profit Margin	OPM	(Operating Profit/Net Sales)x100
Net Profit Margin	NPM	(Net Profit/Net Sales)x100
Return On Assets	ROA	Net Income/Total Assets
Return On Capital Employed	ROCE	EBIT/(Total Assets – Current Liabilities)
Debt Ratio	DR	Total Debt/Total Assets
Equity Ratio	ER	Total Equity/Total Assets
Firm Size	FZ	log(Total Assets)

**ANALYSIS & INTERPRETATION**

Table 2: Descriptive Statistics

VARIABLES	Mean	Std. Deviation	N
OPM	9.86	5.01	18
NPM	4.74	3.58	18
ROA	8.28	5.58	18
ROCE	11.29	8.23	18
DR	0.19	0.11	18
ER	0.51	0.16	18
FZ	3.67	0.49	18

The descriptive statistics for the 7 variables used in the present study. The mean value of 18 companies starting from operating profit margin is 9.86, net profit margin is 4.74, return on assets is 8.28, return on capital employed 11.29, debt ratio is 0.19, equity ratio is 0.51 and for firm size its 3.67. Whereas the standard deviation for net profit margin is 3.58, operating profit margin is 5.01, return on assets is 5.58, return on capital employed is 8.23, debt ratio is 0.11, equity ratio is 0.16 and firm size is 0.49.

Table 3: Correlation Matrix

	OPM	NPM	ROA	ROCE	DR	ER	FZ
OPM	1	.923**	.686**	.675**	-0.049	0.19	-0.025
NPM	.923**	1	.800**	.766**	-0.258	0.386	0.027
ROA	.686**	.800**	1	.982**	-0.283	0.275	0.384
ROCE	.675**	.766**	.982**	1	-0.258	0.185	0.404
DR	-0.049	-0.258	-0.283	-0.258	1	-.817**	-0.427

<b>ER</b>	0.19	0.386	0.275	0.185	-.817**	1	0.095
<b>FZ</b>	-0.025	0.027	0.384	0.404	-0.427	0.095	1

It clearly shows that there is no significant negative relationship between capital structure (debt ratio, equity ratio) and profitability variables (operating profit margin, net profit margin, Return on assets, return on capital employed).

Table 4: Multicollinearity Test

	Tolerance	VIF
<b>DR</b>	0.209	4.792
<b>ER</b>	0.253	3.955
<b>FZ</b>	0.623	1.604

One of the major assumptions of regression analysis is multicollinearity problem. Here the VIF(variation inflation factor) is less than 10. Hence there is no multicollinearity.

$$OPM = \beta_0 + \beta_1(DR) + \beta_2(ER) + \beta_3(FZ)$$

Table 5: Operating Profit Margin (autocorrelation)

Model	R	R <sup>2</sup>	Durbin-Watson
1	0.28	0.078	1.988

The value of R square is 0.078 which means the model explains 7.8% of variance in the dependent variable. And the Durbin Watson value of 1.988. The value lies between 1to3, therefore there is no autocorrelation.

Table 6: Operating Profit Margin (Regression Analysis)

	B	Std. Error	Beta	T	Sig.
<b>Constant</b>	-6.50	21.76		-0.29	0.76
<b>DR</b>	20.21	25.93	0.43	0.77	0.44
<b>ER</b>	16.39	15.55	0.53	1.05	0.31
<b>FZ</b>	1.133	3.32	0.11	0.34	0.73

The above coefficient table shows the significance value for debt ratio is 0.449, which is greater than 0.05 hence there is no significant impact of debt ratio on operating profit margin. The significance value of equity ratio is 0.31, which means no significant impact of equity on operating profit margin. The significance value of firm size is 0.739, hence there is no significant impact on operating profit margin. The B value tells us relationship between operating profit margin and independent variables. From the table B value of debt ratio, equity ratio and firm size is 20.21, 16.39 and 1.133. Hence there is no negative relationship. The beta tells us importance of these independent variables in influencing the operating profit margin. The Beta value of debt ratio is 0.43, equity ratio is 0.53 and firm size is 0.11.

$$NPM = \beta_0 + \beta_1(DR) + \beta_2(ER) + \beta_3(FZ)$$

Table 7: Net Profit Margin (Autocorrelation)

Model	R	R <sup>2</sup>	Durbin-Watson
1	0.404	0.163	1.75

The value of R square is 0.163 which means the model explains 16.3% of variance in the dependent variable. And the Durbin Watson value of 1.75. The value lies between 1to3, therefore there is no autocorrelation.

Table 8: Net Profit Margin (Regression Analysis)

	B	Std. Error	Beta	t	Sig.
<b>Constant</b>	-5.65	14.82		-0.38	0.70
<b>DR</b>	8.57	17.66	0.26	0.48	0.63
<b>ER</b>	12.88	10.59	0.59	1.21	0.24
<b>FZ</b>	0.59	2.26	0.08	0.26	0.79

The above coefficient table shows the significance value for debt ratio is 0.635, which is greater than 0.05 hence there is no significant impact of debt ratio on net profit margin. The significance value of equity ratio is 0.244, which means no significant impact of equity on net profit margin. The significance value of firm size is 0.796, hence there is no significant impact on net profit margin. The B value tells us relationship between net profit margin and independent variables. From the table B value of debt ratio, equity ratio and firm size is 8.57, 12.88 and 0.59. Hence there is no negative relationship. The beta tells us importance of these independent variables in influencing the net profit margin. The Beta value of debt ratio is 0.26, equity ratio is 0.59 and firm size is 0.08.

$$ROA = \beta_0 + \beta_1(DR) + \beta_2(ER) + \beta_3(FZ)$$

Table 9: Return on Assets (Autocorrelation)

Model	R	R <sup>2</sup>	Durbin-Watson
1	0.477	0.227	1.404

The value of R square is 0.227 which means the model explains 22.7% of variance in the dependent variable. And the Durbin Watson value of 1.404. The value lies between 1to3, therefore there is no autocorrelation.

Table 10: Return on Assets (Regression Analysis)

	B	Std. Error	Beta	t	Sig.
Constant	-23.49	22.21		-1.05	0.30
DR	16.86	26.47	0.32	0.63	0.53
ER	16.92	15.88	0.49	1.06	0.30
FZ	5.43	3.39	0.47	1.60	0.13

The above coefficient table shows the significance value for debt ratio is 0.534, which is greater than 0.05 hence there is no significant impact of debt ratio on return on assets. The significance value of equity ratio is 0.305, which means no significant impact of equity on return on assets. The significance value of firm size is 0.132, hence there is no significant impact on return on assets. The B value tells us relationship between return on assets and independent variables. From the table B value of debt ratio, equity ratio and firm size is 16.86, 16.92 and 5.43. Hence there is no negative relationship. The beta tells us importance of these independent variables in influencing the return on assets. The Beta value of debt ratio is 0.32, equity ratio is 0.49 and firm size is 0.47.

$$ROCE = \beta_0 + \beta_1(DR) + \beta_2(ER) + \beta_3(FZ)$$

Table 11: Return on Capital Employed (Autocorrelation)

Model	R	R <sup>2</sup>	Durbin-Watson
1	0.435	0.189	1.337

In this above model the dependent variable is operating profit margin and the independent variables are debt ratio, equity ratio and firm size. The value of R square is 0.189 which means the model explains 18.9% of variance in the dependent variable. And the Durbin Watson value of 1.33. The value lies between 1to3, therefore there is no autocorrelation.

Table 12: Return on Capital Employed (Regression Analysis)

	B	Std. Error	Beta	T	Sig.
Constant	-24.56	33.54		-0.73	0.47
DR	10.83	39.97	0.14	0.27	0.79
ER	13.02	23.98	0.26	0.54	0.59
FZ	7.40	5.13	0.44	1.44	0.17

The above coefficient table shows the significance value for debt ratio is 0.79, which is greater than 0.05 hence there is no significant impact of debt ratio on return on capital employed. The significance value of equity ratio is 0.596, which means no significant impact of equity on return on capital employed. The significance value of firm size is 0.171, hence there is no significant impact on return on capital employed. The B value tells us relationship between return on capital employed and

independent variables. From the table B value of debt ratio, equity ratio and firm size is 10.83, 13.02 and 7.40. Hence there is no negative relationship. The beta tells us importance of these independent variables in influencing the return on capital employed. The Beta value of debt ratio is 0.14, equity ratio is 0.26 and firm size is 0.44.

#### **FINDINGS AND CONCLUSION**

This study is intended to find the impact of capital structure variables on profitability variables using the regression analysis and correlation matrix for the food processing companies listed in NSE. The findings of the study found that there is no significant relationship between operating profit margin, net profit margin, return on assets, return on capital employed and capital structure variables (debt ratio, equity ratio). Hence the null hypothesis is accepted, that there is no significant relationship between profitability and capital structure variables.

From the results of regression analysis, the study found that there is no significant negative impact of capital structure variables (debt ratio, equity ratio) on operating profit margin, net profit margin, return on assets, return on capital employed. Hence the null hypothesis is accepted, that there is no significant negative impact of capital structure on profitability. Therefore, the proportion of debt and equity mix used in the companies during the period of study 2017-2022 was found to be 19% with debt financing and 51% with equity financing. Hence this study concludes that the food industries are using equity financing higher than the debt financing.

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