

# Debt Equity Mix & Financial Performance: Evidence from Indian IT Sector

Deepika Upadhyay, Lisa Bardhan, Anand Mishra, Miklesh Prasad Yadav

**Abstract:** Business organizations across the world uses a mix of debt and equity to fund its operations. It represents the capital structure of a firm which is also referred as financial leverage. According to various pre-established theories, capital composition plays a predominant role in its profitability. The present study investigates the effect of debt equity mix on the financial performance of the selected companies. Sample of 44 companies listed on the S&P BSE Information Technology Index has been taken to analyze the influence of the capital composition on its profitability results. Ten years data from 2010 to 2019 have been captured to analyze the objective. Three accounting-based ratios have been used as measures of financial performance i.e. Return on Asset (ROA), Return on Equity (ROE), and Earnings per Share (EPS). Debt equity mix, size and age of the company along with growth in sales are used as independent variables. Panel data analysis was applied to estimate the effect of debt equity mix on financial performance of the selected firms. Hausman test was conducted to choose the best fit between fixed effect and random effect on panel data regression. The empirical results demonstrate that the debt equity mix does not have a significant effect on ROA and ROE. However, it has a notable effect on and a strong positive correlation with EPS of companies. It was also found that size of the company has a significant correlation with EPS but it does not have a notable effect on its ROE. It was also observed that age of the company have no significant effect on its ROA, ROE and EPS. Growth in sales has a significant association with ROA and EPS but it does not impact the ROE significantly.

**Keywords :** Debt equity ratio, capital composition, IT companies, firm performance, ROA (Return on Asset), ROE (Return on Equity), EPS (Earning per Share), age, size of the company, sales growth, RStudio.

## I. INTRODUCTION

Debt and equity in a specific combination represents the capital structure which a business entity uses to fund its operations (Abor, 2005). It represents the interrelationship between equity and borrowed funds in the capital structure. Debt equity mix and capital structure have been used interchangeably in this paper. Optimal capital mix is very important as it impacts the overall performance of the firm by

Revised Manuscript Received on December 05, 2019.

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lowering the cost of capital and enhancing its market value. Decisions pertaining to debt and equity are crucial for success of corporates across the world. They strive to achieve an optimum capital structure for their companies. Capital structure comprises of equity, preferred stock and debt deployed by the firm at any point of time. Equity capital is represented by equity shares, free reserves and surplus and debt is represented by bonds, debentures, loans from banks and financial institutions etc. Thus, equity and debt are the main constituents of capital structure.

Theoretically, capital structure should be decided at the time of promotion and incorporation, however, it is a perpetual exercise as organizations need to make it as and when they require funding for their operations, investment and expansion activities (Chadha & Sharma, 2015). The management of the company has to analyze advantages and disadvantages related to different sources of capital thoroughly before deciding the ideal one for them keeping optimal capital structure in mind. Use of borrowed funds in its capital composition is known as financial leverage. It is the strategy used by the financial managers to optimize the return on investments by using debt capital. Entities which only have equity in its capital composition are known as “unlevered firms” whereas companies which have both equity and debt are known as “levered firms”. Borrowed funds are considered as an economical source of finance, but if it is excessively high in one’s capital structure, it will increase the chances of insolvency. Thus, the financial stability of a firm and the risk of insolvency are mainly dependent on the sources of funds and the relative size of such funds from different sources.

Financial managers continuously keep a watch on its capital composition. They devise ways to improve the required ratio between debt and equity. It also helps in value maximization of the firm. It does so by cutting down the cost of capital, increasing the investment and growth opportunities and thus as a result increasing their value in the stock market.

Efficiency of any organization can be measured through its profitability. Profitability is influenced by many factors including factors that are internal as well as external to the business entity. Empirical evidences exhibit that capital composition of a firm has an influence on its financial conduct. Besides this, other elements like size of the organization, increase in sales and age of the firm also have an effect on its profitability.

## II. LITERATURE REVIEW

Determining ideal capital composition has been puzzling the corporates and it has been a controversial discussion for more than six decades. It can be



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traced back to the significant and path breaking work of Franco Modigliani and Merton H. Miller, which advocated irrelevance theory of capital structure (Modigliani & Miller, 1958) wherein they concluded that capital composition is not related to valuation of the firm i.e. the market value of an unlevered firm is same as the a levered one. The theory also states that, value of a firm is affected by its operating income. This theory assumes that there are no taxes which led to a lot of controversy in the domain of financial management. Later, in their next paper they took tax into consideration and arrived at the conclusion that procuring debt would provide the firm with tax advantage, which in turn will improve its profitability as compared to a firm which does not have any debt (Modigliani & Miller, 1963).

The companies need to decide the mix which is at its optimal and gets it the advantage of leverage. This combination of debt and equity is capital mix. Attaining an appropriate capital mix is very important. Equity, preference capital and debt are a firm's perpetual sources of finance (Van Horne, 1971). Companies have financial managers keeping a watch on its capital structure and devise ways to improve the required ratio of debt and equity. This mix helps in maximizing the value of the firm, by cutting down its cost of capital, increasing investment and growth opportunities and thus, enhancing the share value in the stock market. When companies have cash flows from operations, it can be used as retained earnings for contingencies and repayment of debt component or can be distributed among the equity shareholders as dividend. Financial leverage is the strategy used by the financial managers to optimize the return on investments by the use of the debt capital. This can also be used to ascertain the risk and the capital gearing ratio. The debt equity ratio is the most popular method for determining the capital leverage (Chandra, 1984).

A sound capital structure is essential for a business entity (Baser, Brahmhatt, & Joshi, 2011). It is usually expressed in form of debt-equity ratio (Kazmierska-Jozwiak, Marzatek, & Sekula, 2015). The share of debt and equity needs to be stabilized to give a suitable capital mix for the firm.

According to various authors a company's age, size, debt ratio and ownership structure are very important factors for determining profitability, defined by Return on Capital Employed (ROCE). Interest rate and inflation also influence the profitability. (Bhayani, 2010). The age of the firm is a decisive factor for the sanction of the debts, and thus the capital structure.

Banking system plays a dominant role in acquiring debt for the firms. The firms' size is a major factor for approval of such debts (Ghosh, 2007). Net assets of a company are used to ascertain its size. The firm's size is positively associated to its Debt-Equity (Taub, 1975).

The ownership structure is defined by the versatility, necessities, concentration and management. The capital structure is certainly impacted by the ownership structure because of the diversified needs of the shareholders but not vice versa (Ganguli, 2013).

A company can decide to work on its short term or long-term goals or can also combine both. The company can also define their objectives as wealth maximization or profit maximization. The objective of wealth maximization is the

most desired (Baser, Brahmhatt, & Joshi, 2011).

The suitability of the debt-equity ratio varies, whereas there exist several provisional theories for the capital budgeting decisions like the pecking order theory (Chua & Woodward, 1993) and the tradeoff theory (Tilman, 2004). There are also firms with zero debt and doing substantial business (Ghose & Kabra, 2016). Analyzing debt equity mix is a way to understand the connect between a firm's capital and financial position (Pettengill & Lander, 2011).

Growth in sales contribute to the firm's growth and subsequent size. A firm's size makes difference in the capital composition and the growth prospects (Ghosh, 2007). The firm's performance can be closely related to its age and the stage of its life cycle (Rocca, Rocca, & Cariola, 2011).

The available literature guided us to take other performance indicators like ROA, ROE, and EPS. EPS have been widely used for valuation of companies and analyzing the capital structure. So, it is of relevance to take EPS as a financial performance indicator.

In a study conducted in Ghana, it was found that there is a positive connect between the total debt and the total assets ratio with ROE. It was also observed that the ratio of long-term debt to total assets had strong negative connection with ROE (Abor, 2005). A study in 2009 inferred that capital mix has a very weak effect on profitability indicators like ROE, gross profit margin, etc. in non-financial firms listed in Egypt (Ebaid, 2009). An analysis of contractors and developers in construction sector in Hong Kong revealed that debt equity mix has a positive influence on firm's assets but has an unfavourable association with profit margins (Hung, Albert, & Eddie, 2002). Similar study conducted for listed firms in Nigeria found that capital structure had a significant influence on both ROA and ROE as financial parameters (John, 2013). In 2013, a similar study was conducted for listed non-financial firms in Pakistan analyzing the impact of capital constitution on its profitability. It found that firm performance as measured by return on assets (ROA) is negatively influenced by short term, long term and total debt ratio (Sheikh & Wang, 2013). In Vietnam, a similar conclusion was drawn since all ratios related to debt have a significantly opposing correlation with the ROA and ROE (Le & Phan, 2017).

### III. OBJECTIVE OF THE STUDY

The present paper investigates the effect of debt equity ratio on financial conduct of the companies listed on S&P BSE Information Technology index, across ten years (from 2010 to 2019). From the literature pertaining to corporate finance, other factors which were identified for the study are size of the organization, growth in sales and age of the organization.

Following dependent variables have been identified for the purpose:

- 1) Return on Assets (ROA)
- 2) Return on Equity (ROE)
- 3) Earnings per share (EPS)

### IV. RATIONALE OF THE STUDY

Deciding the capital mix is crucial. Companies need to maintain it for their survival and aging strategies. The GDP is a measure of economic value generated in a financial year by a country. According to IMF, India is a developing economy with the growth rate of 7.1% in the year 2018 and estimated to be 7.3% for the year 2019. According to the Ministry of Statistics & Program Implementation, the service sector contributed 54.15% to the country's GDP. Information technology (IT) sector has provided a major breakthrough for generating jobs and revenues in the country (Statistics Times, 2019). IT companies in India have different forms of capital structure i.e. some companies are highly leveraged and some companies are having a considerably low level of debt as compared to equity capital. There are also companies like Infosys which have zero debt in their capital structure. Therefore, it arouses research interest on the given topic. An attempt has been made to investigate how capital structure has a role in the profit generation. There are very few studies conducted on the topic. Therefore, it is very important to explore the topic and thus add to the limited literature.

## V. RESEARCH METHODOLOGY

Sample consists of stocks listed on the S&P BSE Information Technology Index from 2010 to 2019, i.e. for a period of 10 years. Initially the number of companies in the sample was 57, which later on was reduced to 44 companies because of non-availability of data for the variables considered for the study. Period of 10 years have been taken to ensure reliability.

Table 6 shows the complete list of companies used for the study. The study is dependent on secondary data set that is acquired from ACE analyser. ACE analyser is a database which provides financial and non-financial information relating to Indian companies (Accord Fintech Pvt. Ltd.). The database is widely used and is a reliable source for research and development. The data is extracted from the respective company's annual financial standalone statements. The financial statements are the key source for understanding the level of activity and fair position of the company. The eminence of the results is dependent upon the accuracy of database information acquired from Ace analyser. Ratios relevant for the study have been taken from the database. For the analysis, RStudio version 3.6.1 has been used.

The paper aims to analyze the effect of capital composition on ROA, ROE and EPS. These factors altogether embody the company's financial performance. Other elements influencing the financial conduct include size of the company, its age and sales growth. These have also been studied to analyze the hypothesis.

Saurabh Chadha and Anil K. Sharma (Chadha & Sharma, 2015) analyzed and many previous studies have also used different variables like ROA, ROE. The applicable regression model is as follows:

$$Y_{nt} = \beta_0 + \beta_1 X_{nt} + \beta_2 A_{nt} + \beta_3 S_{nt} + \beta_4 G_{nt} + U_{nt}$$

Where,

Y is the firm performance

X = Debt- Equity ratio

A = Age of the company

S = Size of the company

G = Growth in sales (year-on-year)

$\beta_1, \beta_2, \beta_3, \beta_4$  = Coefficient of respective independent variables

Here, three regression models have been developed to test the relationship between company's financial performance (EPS, ROA, ROE) and debt-equity mix, age, size & sales growth of the company. Following are the regression models formed:

Model 1: Return on Asset (ROA) is the dependent variable with debt-equity mix, size, age and increase in sales of the firm as independent variables. ROA is an accounting-based ratio which is calculated as the net income divided by the total assets. It shows the efficiency of the total assets for profit generation.

$$ROA_{nt} = \beta_0 + \beta_1 X_{nt} + \beta_2 A_{nt} + \beta_3 S_{nt} + \beta_4 G_{nt} + U_{nt}$$

H1: There exists a significant interrelationship between ROA and D/E ratio, size, age and sales growth.

Model 2: Return on Equity (ROE) is the dependent variable. Debt-equity mix, size, age and increase in sales are taken as independent variables. ROE is an accounting-based ratio which is calculated as the net income divided by the equity capital. It establishes the relationship between profits of the company and its equity capital. This ratio is more useful to the holders of equity shares who are interested in knowing the real profits of the company. Following is the regression equation:

$$ROE_{nt} = \beta_0 + \beta_1 X_{nt} + \beta_2 A_{nt} + \beta_3 S_{nt} + \beta_4 G_{nt} + U_{nt}$$

H1: There exists a significant interrelationship between ROE and debt-equity mix, size, age and increase in sales.

Model 3: Earnings per share (EPS) is the dependent variable. Debt-equity mix, size, age and increase in sales are taken as independent variables. EPS is the indicator of the net income that have been earned by each share of equity stock. It is computed as the profits earned after paying interest on borrowed funds and taxes. This amount available to the equity shareholders have to be divided by the total number of equity shares. It shows the per equity share profitability or loss for a given span of time. The following hypothesis and regression model are formed:

$$EPS_{nt} = \beta_0 + \beta_1 X_{nt} + \beta_2 A_{nt} + \beta_3 S_{nt} + \beta_4 G_{nt} + U_{nt}$$

H1: There exists a significant interrelationship between EPS and debt-equity mix, size, age and increase in sales.

The debt-equity ratio is calculated as the total long-standing debts divided by the total equity capital (King & Santor, 2008).

Size of the firm is computed as the natural log of the total value of assets (King & Santor, 2008).

Company's age is computed as the number of years since its incorporation. The older the company is; the more credibility it possesses.

The company ages with more individuals confiding in it (Muritala, 2012).

Sales growth are calculated with respect to the previous year sales percentage. Higher sales growth indicates better performance by the company.

Hausman test was used to analyze whether fixed effect



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model or random effect model should be applied to the panel data. The result of Hausman test implied the usage of random effect model for running regression on the panel data to analyze the effect of capital structure and other independent variables on ROA, ROE and EPS respectively. That is, random effect panel regression has been applied to Model 1, Model 2, and Model 3.

### VI. DATA ANALYSIS, FINDINGS AND INTERPRETATION

Table 1 exhibits the descriptive statistics for all the variables used in the study. 440 cross sections are obtained for a period of 10 years (2010-2019). The mean value of ROA is approximately 8.965% and of ROE is 2.501%. The average EPS is Rs. 20.573. It is also observed that, on an average, IT companies finance 24.3% of their total capital structure using debt. This implies that IT companies prefer equity over debt for their capital financing. The average age is 25.5 years for such companies. The sales are growing at an average pace of 21.64% which shows positive prospects for the IT industry in India.

**Table - 1: Descriptive Statistics of Data**

	Media	Mean	Min.	Max.	SD	N
EPS	7.58	20.57	(150.500)	178.22	33.43	440
ROA	8.45	8.96	(62.390)	36.94	10.83	440
ROE	12.34	2.50	(4157.010)	62.33	199.61	440
Age	23.00	25.50	2.00	79.00	12.75	440
Size	6.30	6.54	1.33	11.29	1.85	440
DE	0.03	0.24	(6.050)	6.63	0.71	440
Sales Growth	9.18	21.64	(88.829)	2010.45	113.41	440

*Source: ACE Analyser, Statistical Tool: RStudio*

Table 2 depicts the correlation matrix between all independent variables. It can be seen from the matrix that there is no high degree of correlation between any of the independent variables and therefore regression will be free from the issue of multicollinearity.

**Table - 2: Correlation Matrix of Independent Variables**

	D/E	Age	Size	Sales Growth
D/E	1	(0.071)	(0.020)	(0.041)
Age	(0.071)	1	0.392	(0.053)
Size	(0.020)	0.392	1	(0.123)
Sale Growth	(0.041)	(0.053)	(0.123)	1

*Source: ACE Analyser, Statistical Tool: RStudio*

With an object to analyze the effect of debt-equity mix on financial conduct of the sample of 44 companies listed on the S&P BSE Information Technology Index, three regression models are developed. Panel data regression approach has been used. Hausman test was performed to find the appropriate fit between fixed and random effect models of regression. The results of the test accept the null hypothesis and found that the random effect model for panel regression should be applied in each of the three models used in the study. After performing the relevant diagnostic tests on the results of the random effect regression, final results were

obtained. The empirical findings for each model are displayed in the following tables.

**Table - 3: Model 1 (ROA as the dependent variable for firm performance)**

Independent Variables	Co-Efficient	Std. Error	t-Value	P-vale
D/E ratio	(3.362)	1.728	(1.945)	0.052
Age	(1.628)	0.874	(1.863)	0.063
Size	2.164	0.193	11.224	0.000*
Sales Growth	0.007	0.002	3.714	0.000*
Period	10			
Cross-Sections	44			
Total Panel (balanced) Observations	440			
Adjusted R <sup>2</sup>	0.186			
Hausman Test Chi-Sq. (χ <sup>2</sup> )/P Value	4.915/0.296			

*Source: Ace Analyser, Statistical Tool: RStudio, "\*" Significant at 5% level.*

Table 3 reveals the result of Regression Model 1. Here random effect regression model has been used. It is observed that there is no significant interrelationship between D/E ratio and the ROA. Thus, debt-equity mix has no effect on the ROA of IT companies. However, size and growth in sales have a significant positive influence on the ROA. Further, the age of the company has no significant effect on ROA of IT companies.

**Table 4: Model 2 (ROE as the dependent variable for firm performance)**

Independent Variables	Co-Efficient	Std. Error	t-Value	P-vale
D/E ratio	106.714	98.747	1.081	0.280
Age	(47.834)	31.453	(1.521)	0.129
Size	0.412	1.766	0.233	0.816
Sales Growth	0.014	0.012	1.218	0.224
Period	10			
Cross-Sections	44			
Total Panel (balanced) Observations	440			
Adjusted R <sup>2</sup>	0.153			

*Source: Ace Analyser, Statistical Tool: RStudio, "\*" Significant at 5% level.*

Table 4 exhibits the result of Regression Model 2. Random effect regression model is used to analyze the effect of capital structure. The empirical results show that, there is no significant effect of any of the independent variables on the ROE.

**Table 5: Model 3 (EPS as the dependent variable)**

Independent Variables	Co-Efficient	Std. Error	t-Value	P-vale
D/E ratio	(9.331)	3.817	(2.445)	0.015*
Age	(0.976)	1.513	(0.645)	0.519
Size	9.637	0.699	13.784	0.000*
Sales Growth	0.024	0.011	2.168	0.031*
Period	10			
Cross-Sections	44			
Total Panel (balanced) Observations	440			
Adjusted R <sup>2</sup>	0.329			
Hausman Test Chi-Sq. ( $\chi^2$ )/P Value	3.532/0.473			

*Source: Ace Analyser, Statistical Tool: RStudio, “\*” Significant at 5% level.*

Table 5 represents the outcome of Regression Model 3. Here the random effect regression model is used. The empirical results suggest that there is a significant effect of capital composition on EPS. It is also observed that EPS and DE have a strong negative correlation. This means when D/E ratio increases by 1%, it will result in a 9.33% decrease in EPS. It has also been found that the EPS is not affected by age of the companies. Whereas, size and growth in sales of companies have a significant effect on EPS which is represented by a positive correlation.

Therefore, it may be concluded that capital structure has no effect on the financial output in the Indian IT sector, where the financial performance parameters are ROA and ROE. However, it has a remarkable impact on EPS.

## VII. CONCLUSION

Deciding capital structure is critical for all business organizations. In today’s competitive era, such decisions have a significant role in augmenting returns of firms. The present study appraises the association between the capital composition and its profitability for companies listed on the S&P BSE Information Technology Index.

ROA, ROE and EPS are defined as dependent variables for determining company’s financial performance. Besides capital structure, other determinants like age, size and growth in sales have also been taken as independent variables. The outcome of the study reveals that capital structure has no effect on the ROA and ROE. However, it has a remarkable effect and strong negative correlation on the EPS of the companies. Size of the companies has a significant effect on ROA and EPS. Whereas, it does not have a significant effect on ROE. Age has no notable effect on any of the parameters chosen. Growth in sales has significant effect and positive association with ROA and EPS, but it does not have any significant effect on ROE. The study also shows that size of the companies has a strong positive correlation with the EPS. An important observation made in the study was that none of the chosen independent variables have any significant effect on the ROE. A prominent outcome of the study is that the

capital structure theory (Modigliani & Miller, 1958) has been rejected by IT sector companies in India.

Thus, the study would enrich the literature on capital structure and is relevant to the IT sector in India which is one of the most dominant and emerging sectors in the country. The study is based on very recent data therefore it will be useful for further research in the area of capital structure.

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## ANNEXURE-I

**Table 6: List of all the companies used for the study (with year of incorporation)**

Serial No.	Name of Company	Year of Incorporation
1	3i INFOTECH LIMITED	1993
2	63 Moons Technologies Ltd	1988
3	Allsec Technologies Ltd	1998
4	Aptech Ltd	2000
5	AurionPro Solutions Ltd	1997
6	AXISCADES Engineering Technologies Ltd	1990
7	Cerebra Integrated Technologies Ltd	1993
8	Cigniti Technologies Ltd	1998
9	Cyient Ltd	1991
10	D-Link India Ltd	2008
11	Datamatics Global Services Ltd	1987
12	Expleo Solutions Ltd	1998
13	Firstsource Solutions Ltd	2001
14	Genesys International Corp Ltd	1983
15	HCL Infosystems Ltd	1986
16	HCL Technologies Ltd	1991
17	Hinduja Global Solutions Ltd	1995
18	HOV Services Ltd	1989
19	Infosys Ltd	1981
20	Kellton Tech Solutions Ltd	1993
21	Mastek Ltd	1982
22	MindTree Ltd	1999
23	MphasiS Ltd	1992
24	NIIT Ltd	1981
25	NIIT Technologies Ltd	1992
26	Nucleus Software Exports Ltd	1989
27	Oracle Financial Services Software Ltd	1989
28	Persistent Systems Ltd	1990
29	Ramco Systems Ltd	1997
30	Rolta India Ltd	1989
31	Sasken Technologies Ltd	1989
32	Shivalik Bimetal Controls Ltd	1984
33	Sonata Software Ltd	1994
34	Subex Limited	1994
35	Take Solutions Ltd	2000
36	Tanla Solutions Ltd	1995
37	Tata Consultancy Services Ltd	1995
38	Tata Elxsi Ltd	1989
39	Tech Mahindra Ltd	1986
40	Trigyn Technologies Ltd	1986
41	TVS Electronics Ltd	1995
42	Wipro Ltd	1945
43	Zen Technologies Ltd	1993
44	Zensar Technologies Ltd	1963

## AUTHORS PROFILE



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