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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

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- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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CAPITAL STRUCTURE ANALYSIS: AN INTER AND INTRA-INDUSTRY STUDY

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ABSTRACT

The capital structure decision is one of the most crucial decisions faced by a firm. Capital structure decisions can influence the value of the firm through the earnings available to the shareholders and the cost of capital. Therefore, a company should select an optimal capital structure that maximizes the value of the equity shares and at which the cost of capital is the least. The nature of industry can be one of the most important elements in determining the degree of financial leverage a firm can safely include in its capital structure. The purpose of this paper is to identify whether there is a significant difference in the financial mix of firms belonging to a particular industry and if the capital structures of the 15 sampled industries are significantly different. The result of this study indicates that firms in majority of the 15 industries have debt-equity ratios significantly different from the industry average and that the capital structures do not differ significantly across the sample of 15 industries.

KEYWORDS

Capital Structure, Debt Equity ratio, Financial mix, Difference in capital Structure.

INTRODUCTION

The capital structure decision is one of the most crucial decisions faced by a firm. Capital structure refers to the proportion of firm's liabilities and owner's equity. Capital structure decisions can influence the value of the firm through the earnings available to the shareholders and the cost of capital. Therefore, a company should select a capital structure that maximizes the value of the equity shares and at which the cost of capital is the least. Such a combination of debt and equity is called the optimum capital structure. This highlights the consequence of an appropriate capital structure. Modigilani and Miller (1958), however, came up with an irrelevance proposition that under certain assumptions the market value and it cost of capital of any firm is independent of its capital structure.

Extensive consideration has been given to the relationship between industry membership and capital structure. The capital structure of a firm is likely to be highly influenced by the industry in which it operates. The nature of industry can be one of the most important elements in determining the degree of financial leverage a firm can safely include in its capital structure.

It is generally accepted that in a given industry, firms have similar leverage ratios and that the leverage ratios vary across industries (Harris and Raviv, 1991). Bradley, Jarrel and Kim (1983) provide empirical evidence that firm leverage ratios are industry related. Their theory highlights three firm-specific factors that influence the firm's optimal capital structure: the variability of firm value, the level of non-debt tax shields, and the magnitude of the costs of financial distress. These three factors are considered to quite plausibly exhibit important industry commonalities. Titman and Wessels (1988) suggests that firms manufacturing machines and equipments require the availability of specialized servicing and spare parts and will find liquidation costly. Such firms are likely to be financed by relatively less debt.

The purpose of this research is twofold-

1) To analyze whether there is any difference in the capital structures of 15 industries- Aviation, Breweries, Cement Products, Cigarettes, Finance (Large), Hospital, Hotels(Large), IT And BPO, Paper(Large), Power Generation, Shipping-(Large), Steel(Large), Sugar Integrated, Telecom Services, Tyres (Large) and

2) To study whether the leverage level of firms within these industries is industry independent.

In accordance with this aim, to consider statistically significant relationships (using ANOVA) between firm capital structure and the industry capital structure, a sample consisting of the company debt-equity ratios has been included. The study uses data of 1919 listed firms extracted from Capitaline Plus database for the period of five years, from 2007-2011.

REVIEW OF LITERATURE

Studies on capital structure of companies date back to the nineteen fifties. Since the controversial irrelevance proposition by Modigilani and Miller (1958), the literature on capital structure has extended to explain the corporate leverage and its evolution. The three major theories that subsequently came up are the Static Trade off theory (Myers, 1984), the Pecking Order theory (Myers & Majluf, 1984) and the Agency Cost theory (Jenkins & Meckling, 1976).

Static Trade-off Theory states that a firm's optimal debt ratio is usually viewed as determined by a tradeoff of the costs and benefits of borrowing, holding the firm's assets and investment plans constant. The firm is portrayed as balancing the value of interest tax shields (advantages) against various costs of bankruptcy or financial distress (disadvantages). The firm is supposed to substitute debt for equity, or equity for debt, until the value of the firm is maximized. The literature on costs of financial distress supports two qualitative statements about financing behavior:

1) Risky firms ought to borrow less, other things equal. Here "risk" would be defined as the variance rate of the market value of the firm's assets. The higher the variance rate, the greater the probability of default on any given package of debt claims. Since costs of financial distress are caused by threatened or actual default, safe firms ought to be able to borrow more before expected costs of financial distress offset the tax advantages of borrowing.

2) Firms holding tangible assets-in-place will borrow less than firms holding specialized, intangible assets or valuable growth opportunities. The expected cost of financial distress depends not just on the probability of trouble, but the value lost if trouble comes. Specialized, intangible assets or growth opportunities are more likely to lose value in financial distress. However, some researchers have expressed problems in the ability of static trade-off theory to explain actual firm behavior.

Myers (2001) argued that static trade-off theory implies that highly profitable firms should have high debt ratios in order to shield their large profits from taxation, whereas in reality, highly profitable firms tend to have less debt than less profitable firms

Pecking Order Theory states that which the firm prefers internal to external financing and debt to equity if it issues securities. In the pure pecking order theory, the firm has no well-defined target debt-to-value ratio. If external finance is required, firms issue the safest security first. That is, they start with debt, then possibly hybrid securities such as convertible bonds, then perhaps equity as a last resort. In this story, there is no well-defined target debt-equity mix, because

there are two kinds of equity, internal and external, one at the top of the pecking order and one at the bottom. Each firm's observed debt ratio reflects its cumulative requirements for external finance (Myers, 1984).

Myers (2001) explains why the bulk of external financing comes from debt. It also explains why more profitable firms borrow less: not because their target debt ratio is low but because profitable firms have more internal financing available. Less profitable firms require external financing, and consequently accumulate debt.

Therefore it can be said that the pecking order theory implies that more profitable companies will have lower debt ratios as they can finance their investments through internal sources and would not have to resort to debt financing. Also, firms with high growth rates will have a higher debt ratio since they would have a higher need for external funds (Sinha, 1993).

Agency Cost Theory: Jensen and Meckling identify managers as the agents who are employed to work for maximizing the returns to the shareholders, who are the principals. Jensen and Meckling identify monitoring the agent's actions as a source of agency cost, but they also identify at least two other sources: bonding costs borne by the agent, and the wealth loss borne by the principal when the agent's actions do not maximize his welfare (referred to as "residual loss"). Jensen and Meckling investigate the incentives faced by each of the parties and the elements entering into the contract characterizing the relationship between the manager (i.e., agent) of the firm and the outside equity and debt holders (i.e., principals).

The agency cost theory of capital structure states that an optimal capital structure will be determined by minimizing the costs arising from conflicts between the parties involved. Jensen and Meckling argue that agency costs play an important role in financing decisions due to the conflict that may exist between shareholders and debt holders. If companies are approaching financial distress, shareholders can encourage management to take decisions, which, in effect, expropriate funds from debt holders to equity holders. Sophisticated debt holders will then require a higher return for their funds if there is potential for this transfer of wealth. Debt and the accompanying interest payments, however, may reduce the agency conflict between shareholders and managers. Debt holders have legal redress if management fails to make interest payments when they are due, hence managers concerned about potential loss of job, will be more likely to operate the firm as efficiently as possible in order to meet the interest payments, thus aligning their behavior closer to shareholder wealth maximization.

In terms of agency cost theory, we would expect young, owner managed firms to have the least debt, and that debt levels will gradually increase as the firm develops and acquires a greater number of shareholders and more professional managers.

SCOPE & METHODOLOGY

Analysis in this study is based on the data obtained from Capitaline Plus Databases of the debt-equity ratios of the companies included in the sample. The sample comprises of 1919 listed companies representative of 15 different industries of India. The sample data is for a five year period, from 2007-2011. The details are as follows:

INDUSTRY	NO. OF COMPANIES
Aviation	15
Breweries	59
Cement Products	22
Cigarettes	9
Finance-Large	657
Hospital	66
Hotels – Large	118
IT & BPO	509
Paper- Large	118
Power Generation	121
Shipping- Large	44
Steel-Large	13
Sugar Intergrated	86
Telecom Services	57
Tyres- Large	25
TOTAL	**1919**

The sample is exclusive of companies merged or wound-up during the period.

Editing, classification and tabulation of the data collected from the secondary sources has been done as per the requirements of the study.

The average of the debt equity ratios was computed for each of the companies as well as the industries for the five year period. In order to ensure whether there is any difference in the capital structures of 15 industries and to judge the leverage level of firms within these industries is industry independent, hypotheses were developed and tests through the one-way ANOVA was used at a 5% level of significance. For analyzing data statistical computations have been done using Microsoft Excel.

ANALYSIS AND OBSERVATION

INTRA INDUSTRY ANALYSIS OF CAPITAL STRUCTURES

1. **AVIATION INDUSTRY**

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 15 companies of the Aviation industry are equal.

H_1: The average debt ratios of the sampled 15 companies of the Aviation industry are not equal.

The results of ANOVA were as under:

TABLE 1: ANALYSIS OF VARIANCE TABLE FOR DEBT- EQUITY RATIO OF AVIATION INDUSTRY

Source of Variation	*SS*	*df*	*F*	*P-value*	*F crit*
Between Groups	529.965232	14	4.128694501	5.45738E-05	1.860242
Within Groups	550.12052	60			
Total	1080.08575	74			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of the Aviation industry.

2. **BREWERIES INDUSTRY**

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 59 companies of the Breweries industry are equal.

H_1: The average debt ratios of the sampled 59 companies of the Breweries industry are not equal.

The results of ANOVA were as under:

TABLE 2: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF BREWERIES INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	4819.853	58	1.214429	0.159768	1.38071
Within Groups	16149	236			
Total	20968.85	294			

Since the P-value is greater than the significance level, the null hypothesis is accepted and it can be concluded that the average debt equity ratios of the sampled companies of the Breweries industry are not significantly different.

3. CEMENT PRODUCTS INDUSTRY

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 22 companies of the Cement industry are equal.

H_1: The average debt ratios of the sampled 22 companies of the Cement industry are not equal.

The results of ANOVA were as under:

TABLE 3: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF CEMENT PRODUCTS INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	475.7826	21	1.185709	0.283574	1.677224
Within Groups	1681.488	88			
Total	2157.271	109			

Since the P-value is greater than the significance level, the null hypothesis is accepted and it can be concluded that there is a no significant difference between the average debt equity ratios of the sampled companies of the Cement Products industry.

4. **CIGARETTES INDUSTRY**

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 9 companies of the Cigarettes industry are equal.

H_1: The average debt ratios of the sampled 9 companies of the Cigarettes industry are not equal.

The results of ANOVA were as under:

TABLE 4: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF CIGARETTES INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	93.20952	8	1.193784	0.329993	2.208518
Within Groups	351.3558	36			
Total	444.5653	44			

As can be seen, the P-value is greater than the significance level, hence the null hypothesis is accepted and it can be concluded that there is a no significant difference between the average debt equity ratios of the sampled companies of the Cigarettes industry.

5. **FINANCE(LARGE) INDUSTRY**

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 657 companies of the Finance (Large) industry are equal.

H_1: The average debt ratios of the sampled 657 companies of the Finance (Large) industry are not equal.

The results of ANOVA were as under:

TABLE 5: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF FINANCE (LARGE) INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	623397.6	656	3.456425	1.4E-110	1.104939
Within Groups	722536	2628			
Total	1345934	3284			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of the Finance (Large) industry.

6. HOSPITAL INDUSTRY

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 66 companies of the Hospital industry are equal.

H_1: The average debt ratios of the sampled 66 companies of the Hospital industry are not equal.

The results of ANOVA were as under:

TABLE 6: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF HOSPITAL INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	372342.4	65	1.064126	0.360057	1.357527
Within Groups	1421151	264			
Total	1793493	329			

As can be seen, the P-value is greater than the significance level, hence the null hypothesis is accepted and it can be concluded that there is a no significant difference between the average debt equity ratios of the sampled companies of the Hospital industry

7. HOTELS (LARGE) INDUSTRY

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 118 companies of the Hotels (Large) industry are equal.

H_1: The average debt ratios of the sampled 118 companies of the Hotels (Large) industry are not equal.

The results of ANOVA were as under:

TABLE 7: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY OF HOTELS (LARGE) INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	22967.72	117	8.243716	7.16E-63	1.259727
Within Groups	11239.61	472			
Total	34207.33	589			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of the Hotels (Large) industry.

8. IT & BPO INDUSTRY

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 509 companies of the IT & BPO industry are equal.
H_1: The average debt ratios of the sampled 509 companies of the IT & BPO industry are not equal.
The results of ANOVA were as under:

TABLE 8: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF IT & BPO INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	781739.4	508	1.245729	0.000654	1.119782
Within Groups	2515084	2036			
Total	3296823	2544			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of the IT & BPO industry.

9. PAPER (LARGE) INDUSTRY

Statistical hypothesis are:
H_0: The average debt ratios of the sampled 118 companies of the Paper (Large) industry are equal.
H_1: The average debt ratios of the sampled 118 companies of the Paper (Large) industry are not equal.
The results of ANOVA were as under:

TABLE 9: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF PAPER (LARGE) INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	85395.73	117	1.606178	0.000312	1.259727
Within Groups	214485.8	472			
Total	299881.5	589			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of the Paper (Large) industry.

10. POWER GENERATION INDUSTRY

Statistical hypothesis are:
H_0: The average debt ratios of the sampled 121 companies of the Power Generation industry are equal.
H_1: The average debt ratios of the sampled 121 companies of the Power Generation industry are not equal.
The results of ANOVA were as under:

TABLE 10: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF POWER GENERATION INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	3163926	120	1.069052	0.310442	1.256216
Within Groups	11936903	484			
Total	15100829	604			

As can be seen, the P-value is greater than the significance level, hence the null hypothesis is accepted and it can be concluded that there is a no significant difference between the average debt equity ratios of the sampled companies of the Power Generation industry.

11. SHIPPING (LARGE) INDUSTRY

Statistical hypothesis are:
H_0: The average debt ratios of the sampled 44 companies of the Shipping (Large) industry are equal.
H_1: The average debt ratios of the sampled 44 companies of the Shipping (Large) industry are not equal.
The results of ANOVA were as under:

TABLE 11: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF SHIPPING (LARGE) INDUSTRY

Source of Variation	*SS*	*df*	*F*	*P-value*	*F crit*
Between Groups	8416.397	43	2.51197	1.34E-05	1.449704
Within Groups	13713.74	176			
Total	22130.14	219			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of Shipping (Large) industry.

12. STEEL (LARGE) INDUSTRY

Statistical hypothesis are:
H_0: The average debt ratios of the sampled 13 companies of the Steel (Large) industry are equal.
H_1: The average debt ratios of the sampled 13 companies of the Steel (Large) industry are not equal.
The results of ANOVA were as under:

TABLE 12: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF STEEL (LARGE) INDUSTRY

Source of Variation	*SS*	*df*	*F*	*P-value*	*F crit*
Between Groups	180.9767	12	30.75851	2.17E-19	1.943617
Within Groups	25.49644	52			
Total	206.4731	64			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of Steel (Large) industry.

13. SUGAR INTERGRATED INDUSRTY

Statistical hypothesis are:
H_0: The average debt ratios of the sampled 86 companies of the Sugar Intergraded industry are equal.
H_1: The average debt ratios of the sampled 86 companies of the Sugar Integrated industry are not equal.
The results of ANOVA were as under:

TABLE 13: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF SUGAR INTERGRATED INDUSTRY

Source of Variation	*SS*	*df*	*F*	*P-value*	*F crit*
Between Groups	127616.4	85	10.71087	1.33E-58	1.30873
Within Groups	48219.34	344			
Total	175835.7	429			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of Sugar Intergrated industry.

14. TELECOM SERVICE INDUSRTY

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 57 companies of the Telecom Service industry are equal.

H_1: The average debt ratios of the sampled 57 companies of the Telecom Service industry are not equal.

The results of ANOVA were as under:

TABLE 14: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF TELECOM SERVICE INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	59398.25	56	1.120278	0.278914	1.388173
Within Groups	215871.2	228			
Total	275269.5	284			

As can be seen, the P-value is greater than the significance level, hence the null hypothesis is accepted and it can be concluded that there is a no significant difference between the average debt equity ratios of the sampled companies of the Telecom Service industry.

15. TYRES (LARGE) INDUSTRY

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 25 companies of the Tyres (Large) industry are equal.

H_1: The average debt ratios of the sampled 25 companies of the Tyres (Large) industry are not equal.

The results of ANOVA were as under:

TABLE 15: ANALYSIS OF VARIANCE TABLE FOR DEBT OF TYRES (LARGE) INDUSTRY

Source of Variation	*SS*	*Df*	*F*	*P-value*	*F crit*
Between Groups	1115.425	24	7.184732	5.37E-13	1.626708
Within Groups	646.8724	100			
Total	1762.298	124			

Since the P-value is less than the significance level, the null hypothesis is rejected and it can be concluded that there is a significant difference between the average debt equity ratios of the sampled companies of Tyres (Large) industry.

INTER INDUSTRY ANALYSIS OF CAPITAL STRUCTURES

Statistical hypothesis are:

H_0: The average debt ratios of the sampled 15 industries are equal.

H_1: The average debt ratios of the sampled 15 industries are not equal.

The results of ANOVA were as under:

TABLE 16: ANALYSIS OF VARIANCE TABLE FOR DEBT-EQUITY RATIO OF 15 INDUSTRIES

Source of Variation	*SS*	*df*	*F*	*P-value*	*F crit*
Between Groups	460.0747	14	1.702835	0.078932	1.860242
Within Groups	1157.921	60			
Total	1617.995	74			

Since the P-value is greater than the significance level the null hypothesis is accepted and it can be concluded that there is a no significant difference between the average debt equity ratios of the sampled 15 industries.

SUMMARY & CONCLUSION

In this paper, we studied the average debt equity ratios of a sample of 1919 companies of 15 different sectors from 2007-2011. Using One-way ANOVA at a 5% significance level, we examined whether there were any differences in the debt-equity ratios of the companies within the 15 industries (intra-industry analysis) and if there was a difference across industries in the capital structure (inter-industry analysis).

Based on the analyses, this study reported significant differences regarding the debt equity ratio in the following industries:

- Aviation
- Finance-Large
- Hotels – Large
- IT & BPO
- Paper- Large
- Shipping- Large
- Steel-Large
- Sugar Intergrated
- Tyres- Large

This means that the capital structures of companies in the above industries are different from the average industry financial mix.

Whereas, in the remaining 6 industries- Breweries, Cement Products, Cigarettes, Hospital, Power Generation and Telecom Services; companies have capital structures similar to the average industry financial mix.

The second implication emanating from this research is that capital structures do not differ significantly across the sample of 15 industries. Naidu (1984) also arrived to an akin conclusion for India in his paper on dependence of industry on the capital structure of a firm.

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