CAPITAL STRUCTURE AND ITS IMPACT ON PROFITABILITY: A STUDY OF LISTED MANUFACTURING COMPANIES IN SRI LANKA

Balasundaram Nimalathasan
University of Jaffna
Faculty of Management Studies & Commerce
Jaffna, Sri Lanka
Assoc. Prof. Valeriu Brabete Ph.D
University of Craiova
Faculty of Economics and Business Administration
Craiova, Romania

Abstract: Capital structure is one of the most complex areas of financial decision making due to its interrelationship with other financial decisions variables. Capital structure is the composition of debt and equity capital that comprise a firm's financing its assets and can be rewritten as the sum of net worth plus preferred stock plus long-term debts. In this study an attempt has been made to analyze the capital structure and its impact on profit earning capacity during 2003 to 2007 (05 years) financial year of listed manufacturing companies in Sri Lanka. The results shows that debt to equity ratio (D/E) ratio is positively and strongly associated to all profitability ratios [gross profit ratio (GPR); operating profit ratio(OPR); and net profit ratio(NPR)] except return on capital employed (ROCE) and return on investment (ROI). Debt to assets (D/A) ratio is positively and strongly associated to OPR, NPR and ROCE. Similarly capital gearing (CG) ratio is also positively correlated to GPR and NPR. Further, interest coverage (IC) ratio is significantly correlates to ROCE and NPR. Further capital structure has a great impact on all profitability ratios except ROCE and ROI. The outcomes of the study may guide entrepreneurs, loan- creditors and policy planners to formulate better policy decisions in respect of the mix of debt and equity capital and to exercise control over capital structure planning and thereby to control and reduce bankruptcy costs.

JEL classification: M1; M4: M41

Key words: capital structure; profitability; manufacturing companies; financial decision

1. Introduction

Of all the aspects of capital investment decision, the capital structure decision is the vital one since the profitability of an enterprise is directly affected by such decision. Hence, proper care and attention need to be given while determining the capital structure decision. In the statement of affairs of an enterprise, the overall position of the enterprise regarding all kinds of assets, liabilities are shown. Capital is a vital part of that statement (hereafter called Balance Sheet). So, virtually, capital structure is a part of financial structure. The term 'capital structure' of an enterprise, is actually, a combination of equity shares, preferences shares and long-term debts. This term may be

defined in two senses, viz. Narrow and wider. According to Bierman and Smidt and Guthman and Donglalls capital structure is the relative proportion of the various kinds of securities a company has used. The opinions of Taylor and Venhorne regarding capital structure is that is the total sum of outstanding long-term securities, both equity and debt. Weston and Bringham (1978) define it as the permanent financing of the firm represented by long-term debt plus preferred stock and net worth. Though there are different views about the total nature of 'capital structure' it is obviously true from the fact that everybody has agreed about the common items, i.e. total of equity and long-term debt which represent the permanent source of financing of a company. Therefore, capital structure may be defined as the permanent source of capital in the form of long-term debt, preference shares, ordinary shares, reserve and surplus.

Theories of Capital Structure

The literature of finance is replete with analysis of the corporate financing decision with regard to the optimal mix of debt and equity [Wilson, (1974) as quoted by Hoque, (1987)]. The more important theories in this regard are found those of David Durand, Ezra- Soloman, Modigliani and Miller, Schwartz, Childs and the like [Hoque,A.K.M.Z, (1989)].Out of these theories a short description of the first three is given below. Basically there are three schools-one advocated by Ezra-Soloman and the other by Modigliani and Miller which is just opposite to the Soloman's theory. The third one i.e the David Durand's theory occupies the middle position between the first two.

Ezra Soloman's Approach – The Traditional Approach

Soloman [as quoted Mahmud and Bhattarcharjee (1989)] who led traditional view point believes that a judicious use of debt increase the value of a firm and reduce the cost of capital. He is in the opinion that there is a definite impact on firm's total market value when leverage is charted. According to the traditional, until gearing reaches at an optimal point, the financial risks of debt is more than the benefit offered by the introduction of that debt.

Modigliani-Miller Approach

Modigliani-Miller (Hereafter referred to as MM) (1958; 1959 and 1963) who in a series of justly famous article provided a rigorous justification for the Net Operating Income (NOI) method. M&M analysis implies that firms are indifferent concerning the method of financing (all combinations of equity and debt are equally good) if there are no taxes, vat with corporate taxes, firms should be financed with virtually all debt. However, the MM model assumes away many factors that can imply that a particular blend of debt and equity financing is but for a given firm (Lawrence, 1986). If we want to draw a conclusion of MM analysis, this can be done by giving the following two summarized results of the same.

The only benefit of debt financing (relative to equity financing) is the reduction in corporate income taxes due to the tax deductibility of debt interest.

There are no disadvantages of debt financing relative to equity financing (Lawrence, 1986).

David Durand Approach

David Durand [Weston and Brigham, (1978)] identified the two extreme cases such as Net Income Approach (NI) and Net Operating Income Approach (NOI). Under the NI approach independent of the capital structure, but the weighted average or overall cost of capital decline and the total value (value of equity plus value of debt) rises, with increase use of gearing. Under the NOI approach, the cost of equity increases, the weighted average cost of capital remains constant and the total value of the firm also remains constant as gearing is changed. Thus, if the NOI approach is the correct one, gearing is an important variable and debt policy decisions have a significant influence on the value of the firm. However, if the NOI approach is the correct one, then the firm's management need not be too concerned with financial structures because it simply does not greatly matter.

Standard Ratios of Capital Mix

The question of evolving or proper ratio or debt-equity is not merely academic, as the consequences flouring from it are vital and have a direct bearing and the profitability of the undertakings and the image they project (Hoque, 1989). But practices are different from theory. Practically what we see is that there are no universally acceptable ratios. Moreover, no uniform ratios are also indicated by researches but it is true that, any wrong fixation of debt-equity ratio tends to escalate the losses or decrease the profits earned by the undertakings. Leo (1979) has suggested same ratios for the selected industries to express standard of debt-to-net-worth. These are as follows (1) The Capitalization Standard (debt capacity is expressed in terms of the balance sheet relationship between long-term and the total of all long-term resources, i.e., total capitalization); (2) The Earnings Coverage Standard (it is also become customary to express the limits of debts in terms of income statement data); (3) The Cash Adequacy Standard (It is based on the concept that dept limits should be determined by a measure of the risk of the firm's running out of cash, particularly in session period considered in the light of the stockholders managements willingness to bear risk in the interest of future profitability).

Literature Review and Previous Studies

The essence of financial management is the creation of shareholder value. According to Ehrhard and Bringham (2003), the value of business based on the going concern expectation is the present value of all the expected future cash flows to be generated by the assets, discounted at the company's weighted average cost of capital (WACC). From this it can be seen that the WACC has a direct impact on the value of a business (Johannes and Dhanraj, 2007). The choice between debt and equity aims equity to find the right capital structure that will maximized stockholder wealth. WACC is used to define a firm's value by discounting future cash flows. Minimizing WACC of any firm will maximize value of the firm (Messbacher, 2004). Debt policy and equity ownership structure 'matter' and the way in which they matter differs between firms with many firms with few positive net present value project. Ross's (1977) model suggests that the values of firms will rise with leverage, since increasing the market's perception of value.

In their second seminal paper on corporate capital structure, Modigliani and Mill (1963) show that firm value is an increasing function of leverage due to the tax deductibility of interest payments at the corporate level. In the 30 years since, enormous

academic effort has gone into identifying the relevant costs associated with debt financing that firms presumably trade off against this substantial corporate tax benefit. Although direct bankruptcy costs are probably small, other potentially important factors include personal tax, agency cost, asymmetric and corporate control considerations. Surveys of this literature include Bradley, Jarrell and Kim (1984), Harris and Raviv (1991), Masulis (1988) and Miller (1977).

Early empirical evidence on the trade-off theory [e.g., Bradley, Jarrell and Kim, (1984)] yield mixed results. However, recent studies examining capital structure response to change in corporate tax exposure. Mayer (1986) argues that the trade-off theory also fails to predict the wide degree of cross-sectional and time variation of observed debt ratios. Return on stock increases for any announcement of issue exchange offers. Overall, 55 percent of the variance in stock announcement period returns is explained (Masulis, 1998). Under some conditions capital structure does not affect the value of the firm. Splitting a fund into some mix of shares relating to debt, dividend and capital directly add value to the company (Gemmille, 2001). Uddin (1993) has drawn a conclusion in such a way that there is no relationship between capital structure and return on investment. Price-earnings ratio and earnings per share i.e., capital structure is independent of these issues. He, of course, mentioned that a 'real world' it is absolutely surprising.

Sina and Matubber (1998) observed the adverse position in the industry's managerial performance, profit earning capacity, liquidity etc that are the result of operational inefficiency , effective credit policy, improper planning and controlling of working capital, increased cost of raw materials, labour and overhead. Choudhury (1993) mentioned that the decreased use of debt tends to decrease profitability of a company. Because due to lack of adequate finances it has to give up some of the profitable opportunities and vice-versa. Banu (1990) stated that the capital structure of a firm has a direct impact on its profitability. She suggested that the concerned financial executives should put emphasis on various aspects of capital structure. Otherwise the capital structure of the enterprise will be unsound producing adverse impact on its profitability. Rahman (1995) identified the various aspects of problem of the sugar mills in Bangladesh and particularly of Kushtia Sugar Mills Ltd. Based on the above literature, we can say that several studies have been done on this area, but a comprehensive study has not yet been conducted, especially in manufacturing sector. Hence, this paper is an attempt to evaluate the capital structure and its impact on profitability of the listed manufacturing companies in Sri Lanka.

Conceptual Frame Work

After the careful study of literature review, the following conceptual model is formulated to illustrate the relationship between capital structure and profitability.

The conceptualization model from figure 1 shows the relationship between capital structure and profitability of listed manufacturing companies.

2. Objectives

The main objective of the study is to find out the capital structure and its impact on profitability in listed manufacturing companies in Sri Lanka and specific objectives are:

- To identify the profitability of Listed Manufacturing companies over the 05 years during 2003 to 2007.
- To find out the relationship between capital structure and profitability.

- To recognizes the capital structure.

Hypotheses

The following hypotheses are formulated for the study.

Capital structure and profitability is significantly correlated.

Capital structure has an impact on profitability.

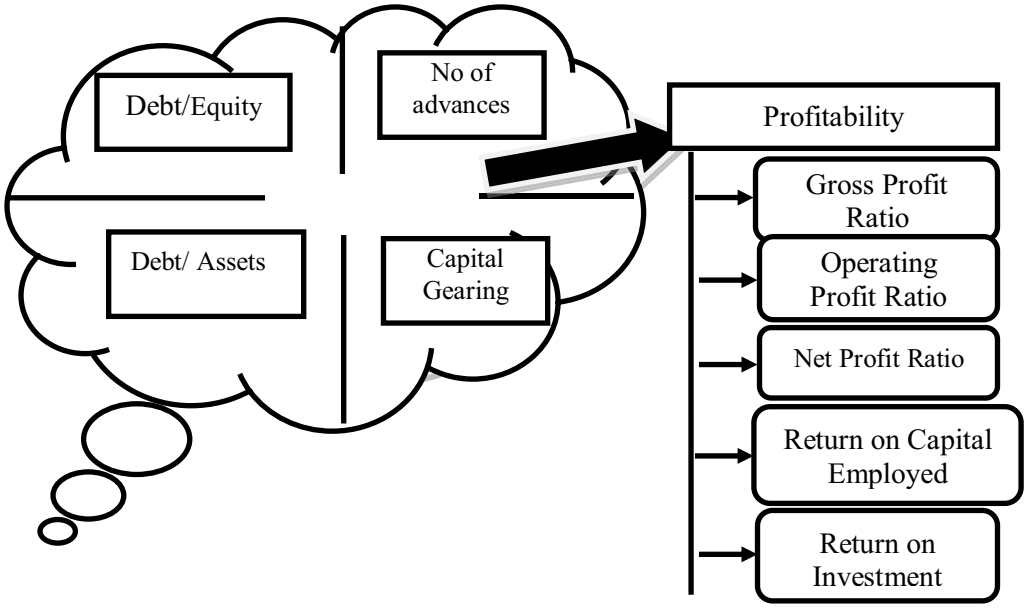

Figure no 1: Conceptual framework

3. Methodology

Scope

The scope of the study is listed manufacturing companies on Colombo Stock Exchange (CSE), Sri Lanka. Thirty one companies are listed under manufacturing sectors.[1] Hence, out of thirty one, only thirteen companies are selected for the study purpose as random. The companies include (1) Abans Electrical Ltd (ABANS); (2) Acl Cables Ltd (ACL); (3) Acme Printing and Packaging Ltd(ACME);(4) Central Industries Ltd (CIND); (5) Dipped Products Plc (DIPP); (6) Kelani Cables Ltd (KCAB); (7) Lanka Aluminium Industries Ltd (LALU); (8) Parquet (Ceylon) Ltd (PARQ); (9) Printcare PLC (CARE); (10) Pelwatte Sugar Industries Ltd (SUGA); (11) Royal ceramic lanka Ltd (RCL); (12) Samson International Ltd (SIL); (13) Tokyo Cement co (Lanka) Ltd (TKYO).

Data Sources

In order to meet the objectives of the study, data were collected from secondary sources mainly from financial report of the selected companies, which were published by Colombo Stock Exchange in Sri Lanka.

[1] Handbook of Listed Companies (2007). Colombo Stock Exchange, Colombo, Sri Lanka:,p.19.

Reliability and Validity

Reliability coefficients: α_1 = Capital structure; α_2 = Profitability

Capital structure	**Profitability**
No. of Samples = 13	No. of Samples = 10
No. of Items = 04	No. of Items = 05
α_1 = 0.560	α_2 = 0.670

The reliability value α_1 =0.560 ; and α_2 = 0.670 were substantially higher than the prescribed acceptance value [Cronbach, (1951); Nunnally and Bernstein, (1994); Bagozzi and Yi, (1988)]. Secondary data for the study were drawn from audit accounts (i.e., income statement and balance sheet) of the concerned companies; therefore, these data may be considered reliable for the purpose of the study. Necessary checking and cross checking were done while scanning information and data from the secondary sources. All these efforts were made in order to generate validity data for the present study. Hence researcher satisfied content validity.

4. Analyses

The following capital structure and profitability ratios are taken into accounts which are given below.

Table no1: Calculations of Capital Structure and Profitability Ratios

Capital Structure Ratio	
Debt/ Equity Ratio	= Long term debts/ Shareholders' funds or net worth
Debt/ Assets Ratio	= Total debt/ Total assets
Capital Gearing Ratio	= Net worth or Equity Capital/ Fixed interest bearing securities
Interest Coverage Ratio	= Net profit before interest and taxes / Fixed interest charges
Profitability Ratio	
Gross Profit Ratio	= Gross Profit/ Net Sales X100
Net Profit Ratio	= Net Profit Before Tax/ Net Sales X100
Operating Profit Ratio	= Profit from Operating Activities / Net SalesX100
Return on Capital Employed	= Profit after Interest and Taxes/ Capital Employed X100
Return on Investment	= Profit after Interest and Tax / Total AssetsX100

Multiple regression analysis was performed to investigate the impact of capital structure on profitability which the model used for the study is given below.

Profitability = f (GPR; OPR: NPR: ROCE; and ROI)

It is important to note that the profitability depend upon debt/equity (D/E); debt/ assets (D/A); capital gearing (CG) and interest earned (IE). Since five profitability ratios gross profit ratio (GPR); operating profit ratio (OPR); net profit ratio (NPR): ROCE; ROI), the following six models are formulated to measure the impact of organizational growth on profitability.

GPR =ßO+ß1(D/E)+ ß2 (D/A) + ß3 (CG) + ß4 (IC) + e (1)

OPR= ßO+ß1(D/E) + ß2 (D/A) + ß3 (CG) + ß4 (IC) + e (2)

NPR= ßO+ß1 (D/E) + ß2 (D/A) + ß3 (CG) + ß4 (IC) + e (3)

ROCE= ßO+ß1(D/E)+ ß2 (D/A) + ß3 (CG) + ß4 (IC) + e (4)

ROI = ßO+ß1(D/E)+ ß2 (D/A) + ß3 (CG) + ß4 (IC) + e (5)

Where: e - error term

Based on the above regression model GPR; OPR; NPR; ROCE and ROI are considered as the dependent variables where as D/E; D/A; CG and IC are the

independent variables. The detail analysis is carried out with the help of above indicators.

Results and Discussions

Banu (1990) stated that the capital structure of a firm has a direct impact on its profitability. She suggested that the concerned financial executives should put emphasis on various aspects of capital structure. Otherwise the capital structure of the enterprise will be unsound producing adverse impact on its profitability. Hence, capital structure indicators such as D/E; D/A; CG and IC should have a relationship with profitability indicators such as GPR; OPR; NPR; ROCE; ROE and ROI. The correlation analysis was carried out to test the relationship and the results are summarized in Table no 2.

Table no 2: Correlation matrix for Capital Structure and Profitability

Variables	D/E	D/A	CG	IC	GPR	OPR	NPR	ROCE	ROI
D/E	1								
D/A	0.978** (0.000)	1							
CG	0.984** (0.003)	0.198 (0.517)	1						
IC	0.907** (0.000)	0.862** (0.000)	0.006 (0.984)	1					
GPR	0.670** (0.004)	0.242 (0.426)	0.703** (0.007)	0.246 (0.418)	1				
OPR	0.915** (0.000)	0.617* (0.025)	0.395 (0.181)	0.259 (0.392)	0.039 (0.900)	1			
NPR	0.610** (0.007)	0.714* (0.006)	0.403* (0.012)	0.564* (0.045)	0.147 (0.632)	0.647* (0.017)	1		
ROCE	0.107 (0.727)	0.600* (0.030)	0.069 (0.822)	0.827** (0.000)	0.220 (0.471)	0.048 (0.877)	0.443 (0.129)	1	
ROI	0.194 (0.525)	0.064 (0.835)	0.161 (0.599)	0.052 (0.867)	0.473 (0.102)	0.086 (0.779)	0.102 (0.740)	0.060 (0.845)	1

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

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

From the table-2 we can observe that D/E ratio is positively and strongly associated to all profitability ratios (GPR; OPR; NPR) except ROCE and ROI. D/A Ratio is positively and strongly associated to OPR, NPR and ROCE.Similarly CG ratio is also positively correlated to GPR and NPR.

IC is significantly correlates to ROCE and NPR.As we mentioned in mode of analysis, five models were formulated and the results are summarized in Table no 3.

Table no 3: Predictor of Profitability – Model Summary

Details	GPR	OPR	NPR	ROCE	ROI
D/E	1.428 (0.191)	1.413 (0.195)	1.453 (0.184)	0.603 (0.563)	0.469 (0.651)
D/A	1.198 (0.265)	4.058 (0.004)	0.821 (0.436)	1.321 (0.223)	0.262 (0.800)
CG	4.637 (0.002)	0.931 (0.379)	0.821 (0.440)	0.092 (0.929)	0.327 (0.752)
IC	0.586 (0.574)	2.969 (0.018)	0.377 (0.716)	3.278 (0.011)	0.269 (0.795)

Details	GPR	OPR	NPR	ROCE	ROI
Constant	**6.938 (t = 0.657; P = 0.530)**	**-145.773 (t = -3.134; P =0.014)**	**46.779 (t = 0.665; P= 0.525)**	**62.262 (t=3.385;P=0.010)**	**21.956 t=0481;P=0.643)**
R	0.864	0.864	0.818	0.863	0.235
R^2	0.747	0.747	0.669	0.745	0.055
Adjusted R^2	0.620	0.620	0.504	0.618	-0.417
Standard Error	1.67330	7.367	11.152	3.241	7.223
F Value	5.899 (0.016)	5.898(0.016)	4.045 (0.044)	0.523(0.668)	0.117 (0.973)

Note: Figure in the Parentheses indicate P- value

The specification of the four variables such as D/E; D/A; CG and IC in the above model revealed the ability to predict profitability (R^2 = 0.747; 0.747; 0.669; 0.745 and 0.055 respectively). In this model R^2 value of above five profitability ratios denote that 74.7%; 74.7%; 66.9%;74.5% and 55.5% to the observed variability in profitability can be explained by the differences in four independent variability namely debt to equity ratio; debt to assets ratio, capital gearing ratio and interest coverage ratio. The remaining 25.3%; 25.3%; 33.1% and 44.5% are not explained, because the remaining part of the variance in profitability is related to other variables which are not depicted in the model.

An examination of the model summary in conjunction with ANOVA (F–value) indicates that the model explains the most possible combination of predictor variables that could contribute to the relationship with the dependent variables. For model 1- F value is 5.899 and respective P value is 0.016 which is statistically significant at 5 percent levels. In this case it reveals that GPR has a significant impact on CG at 1 percent levels (t = 4.637). Again considering model 2- F value is 5.898 (P=0.016) which is statistically significant at 5 percent levels, it indicates that OPR has a significant impact on D/A (t = 4.058) and IC (t =2.969) at 1 percent levels and 5 percent levels. On the other hand, model 3, F-value is 4.045 and respective P value is 0.044 which statistically significant at 10 percent levels. Model 4, we see that all of the corresponding F Value is insignificant in respect to their consequent P values. However, it should be noted here that there may be some other variables which can have an impact on financial performance, which need to be studied.

5. Conclusions

This paper examined capital structure and its impact on profitability: a study of listed manufacturing companies in Sri Lanka. The analysis of listed manufacturing companies shows that D/E ratio is positively and strongly associated to all profitability ratios (GPR; OPR; NPR) except ROCE and ROI. D/A Ratio is positively and strongly associated to OPR, NPR and ROCE. Similarly CG ratio is also positively correlated to GPR and NPR. Further, IC ratio is significantly correlates to ROCE and NPR. Further capital structure has a great impact on all profitability ratios.

REFERENCES

1. Bagozzi R. P., Yi Y. On the Evaluation of Structural Equation Models. Journal of the Academy of Marketing Science, 1988.
2. Banu, S. Evaluation of Financial Structure of Rajshahi Jute Mills Ltd. The Islamic University Studies, 1990.

3. Bierman, H., (Jr), Simidt, S. The Capital Budgeting Decisions, New Delhi: Macmillan Company.
4. Bradley, M., Jarrell, G.A., Kim, E.H. On the Existence of an optimal Capital Structure: Theory and evidence. Journal of Finance, 1984.
5. Choudhury, J.A. Evaluation of Capital Structure of Three companies Listed with Dhaka Stock exchange. The Cost and Management, XXI (4), 1993.
6. Cronbach, L.J. Coefficient Alpha and the Internal Structure of Tests. Psychometrika, 1951.
7. Ehrhardt, M.C., Brigham, E.F. Corporate Finance: A Focused Approach, (1st ed.), Mason, Thomson, 2003.
8. Gemmill, G. Capital Structure and Firm value: A Study of Split-Capital Closed-End funds in the UK, City, 2001.
9. Guthman, H.G., Dougalls, H.E. Corporate and Financial Policy, 4th ed, Prentice Hall Ic, Englewood Cliffs New Jersey.
10. Harris, M., Raviv, A. The Theory of Capital Structure. Journal of Finance, 1991.
11. Hoque, A.K.M.Z. Some Issues of Corporate Capital Structure: A Case study of Engineering Industries Listed on the Dhaka Stock Exchange. The Cost and Management, July –August, 1989.
12. Mahmud, M.M., Bhattarcharjee, M.K. A Comparative Analysis of Capital Structure. Chittagong University Studies, 1989.
13. Mayer, C. Corporation tax, finance and the cost of capital, Review of Economic Studies, 1986.
14. Masulis, R.M. The Debt/equity Choice, Ballinger, Cambridge, Mass, 1998.
15. Messbacher, U. Does Capital influence firms value?, Ulster, 2004.
16. Miller, M.H. Debt and Tax. Journal of Finance, 1977.
17. Modigliani, F., Miller, M.H. The Cost of Capital, Corporation Finance and the Theory of Investment. American Economic Review, 1958.
18. Modigliani, F., Miller,M.H. The Cost of Capital Corporation Finance and Theory of Investment. American Economic Review, 1959.
19. Modigliani, F., Miller, M.H. A Reply and Corporation Income Taxes and the Cost of Capital; A Correction. American Economic Review, 1963.
20. Modigliani, F., Miller, M.H. Corporate Income Taxes and the Cost of Capital, 1963.
21. Lawerence, D.S., Charles, W.H. Introduction to Financial Management,4th ed. New York :McGraw-Hill Book Company, 1986.
22. Leo, T. Almanac of Business and Industrial Financial Ratios, Englewood cliffs, N.J. Prentice-Hall, as quoted by James C. Venhorne. Fundamentals of Financial Management, 1982.
23. Nunnally, J. C., Bernstein. Ira Psychometrics Theory: New York. McGraw – Hill, 1994.
24. Rahman, M.M. Financial Performance of Kushtia Sugar Mills Ltd. The Islamic University Studies, 1995.
25. Sina, M.A., Matubber, M.A.A. Financial Statement Analysis of Khulna News Print Mills Ltd. The Islamic University Studies, 1998.
26. Taylor, W.B. Financial Policies of Business Enterprises, 2nd ed, Appleton – Century, Crofts N.Y.
27. Venhorne, G. Financial Management Policy, Prentice-Hall of India Private Ltd,

New Delhi.

28. Weston, F,J ., Brigham, E.F. Managerial Finance, Holt, Rinehart and Winston,, N.Y, 1978.
29. Wilson, R.M.S. Financial Control: A Systems Approach, McGraw Hill book Company (U.K) Ltd., London: 214 as quoted by Hoque, M.J.(1987). Published Ph.D Thesis Chittagong University Press, 1974.