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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	CHALLENGES OF INFORMATION & COMMUNICATION TECHNOLOGY (ICT) AS A TEACHING AND LEARNING TOOL IN THE EDUCATION SECTOR IN ZAMBIA: A CASE STUDY OF SELECTED SECONDARY SCHOOLS OF MONGU DISTRICT <i>DR. B. NGWENYA & J. KAUNDA</i>	1
2.	TO MEASURE SIGNIFICANT DIFFERENCE IN FINANCIAL PERFORMANCE OF SELECTED FERTILIZER COMPANIES IN INDIA BASED ON PROFITABILITY RATIOS <i>ANKIT D. PATEL</i>	4
3.	A STUDY ON DEMOGRAPHIC PROFILE AND PROBLEMS FACED BY THE POWERLOOM OWNERS WITH SPECIAL REFERENCES TO COIMBATORE CLUSTER <i>DR. S. SARAVANAN & K. A. RAMYA</i>	8
4.	ANALYTICAL STUDY OF DIRECT TAX CODE TO BE INTRODUCED IN INDIAN ECONOMY <i>DR. MAHESH BHIWANDIKAR</i>	13
5.	NEED OF ICT FOR DIRECT RELATION BETWEEN FARMER AND CONSUMER <i>DR. MANOJKUMAR JYOTIRAM GAIKWAD & PRAKASHKAILASHCHANDRAVYAS</i>	16
6.	FINANCIAL ANALYSIS OF COMMERCIAL BANKS: A COMPARATIVE STUDY <i>DR. ATIYA MAHBOOB</i>	19
7.	EFFICIENCY OF COMMODITY FUTURES IN PRICE DISCOVERY: AN EMPIRICAL STUDY OF AGRICULTURAL COMMODITIES <i>SIDDULA NARSIMHULU & DR. S. V. SATYANARAYANA</i>	22
8.	NON PERFORMING ASSETS MANAGEMENT IN HDFC BANK <i>S. R. PRASAD</i>	29
9.	COMMERCIALISATION OF FOREST RESOURCES: AN EMERGING ISSUE IN ARUNACHAL PRADESH <i>DR. TASI KAYE</i>	33
10.	AN ANALYSIS OF FACTORS AFFECTING ONLINE CONSUMER BUYING BEHAVIOR IN INDIA <i>PRACHI GOYAL & DR. BHUMIJA CHOUHAN</i>	38
11.	EVOLUTION OF INDIA'S TELECOMMUNICATIONS INDUSTRY <i>GAUTAM KUMAR JHA</i>	46
12.	STUDENT AWARENESS OF EDUCATION LOANS AS A SOURCE OF FINANCING – A STUDY OF BELGAUM CITY, KARNATAKA <i>SONAL REVANKAR</i>	55
13.	EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY OF LISTED MANUFACTURING COMPANIES IN SRI LANKA <i>ANANDASAYANAN S & SUBRAMANIAM V. A.</i>	57
14.	AN EVALUATION OF THE ECONOMIC AND FINANCIAL CAPACITY OF INDIGENOUS UNDERWRITING FIRMS FOR MARINE RISKS AND INVESTMENT COVER IN NIGERIA <i>NWOKORO, IGNATIUS A. & NWOKEDI, THEOPHILUS C.</i>	61
15.	HOUSEHOLD SAVING BEHAVIOR IN JIMMA ZONE OF OROMIA REGION, ETHIOPIA <i>TADELE MENGESHA</i>	65
16.	AN EMPIRICAL ANALYSIS OF FACTORS AFFECTING WLB OF EMPLOYEES IN SERVICE SECTOR <i>ANJU CHAWLA</i>	77
17.	PROSPECT AND POTENTIAL OF RURAL TOURISM IN BODHGAYA <i>AJIT KUMAR SINGH</i>	81
18.	VERTICAL PRICE TRANSMISSION BETWEEN CEREALS AND BREAD AND OTHER PREPARED FOODS: DOES PRICE STABILITY IN CEREALS MARKET STABILIZES PRICE OF BREAD AND OTHER PREPARED FOODS? <i>YONAS ABERA MAMO, HABTAMU REGASSA LEMMA & YOHANNES MENGESHA</i>	83
19.	SERVICE MARKETING INNOVATION: A PARADIGM SHIFT (A CASE STUDY OF INDIAN BANKING SYSTEM) <i>AHMAD AZHAR</i>	91
20.	A CASE STUDY OF SAHARA INDIA PARIWAR SCANDAL (WITH REFERENCE TO ETHICAL AND GOVERNANCE ISSUES INVOLVED) <i>NANCY RAO</i>	100
	REQUEST FOR FEEDBACK & DISCLAIMER	104

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EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY OF LISTED MANUFACTURING COMPANIES IN SRI LANKA

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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. The problem statement to be analyzed in this study is: Does capital structure affect the listed manufacturing companies in Sri Lanka? The study sample consists of 12 Manufacturing companies listed in Colombo stock Exchange . Net profit ratio is used to measure the profitability. Debt equity ratio, Long term loans to total asset and short term loan to total assets ratios are used to measure the capital structure of the companies. Applying correlations and fixed effect regression analysis, the results reveal significantly negative relation between debt and profitability. This suggests that profitable firms depend more on equity as their main financing option .Yet recommendations based on findings are offered to improve certain factors like the firm must consider using an optimal capital structure .

KEYWORDS

Capital Structure , Long term liabilities, Net profit ratio, Colombo Stock Exchange.

1. INTRODUCTION

The capital structure is defined as the mix of debt and equity that the firm uses in its operation. The capital structure of a firm is a mixture of different securities. In general, firms can choose among many alternative capital structures. For example, firms can arrange lease financing, use warrants, issue convertible bonds, sign forward contracts or trade bond swaps. Firms can also issue dozens of distinct securities in countless combinations to maximize overall market value (Abor, 2005). Firms can use either debt or equity capital to finance their assets. The best choice is a mix of debt and equity. In the case where interest was not tax deductible, firms' owners would be indifferent as to whether they used debt or equity, and where interest was tax deductible, they would maximize the value of their firms by using 100% debt financing (Azhagaiah and Gavoury, 2011). The use of debt in capital structure of the firm leads to agency costs. Agency costs arise as a result of the relationships between shareholders and managers, and those between debt holders and shareholders (Jensen and Heckling, 1976). The pecking order hypothesis suggests that firms are willing to sell equity when the market overvalues it (Myers, 1984; Chittenden et al., 1996). This is based on the assumption that managers act in favor of the interest of existing shareholders. Consequently, they refuse to issue undervalued shares unless the value transfer from "old" to new shareholders is more than offset by the net present value of the growth opportunity. It can be concluded that new shares are only issued at a higher price than that imposed by the real market value of the firm. Therefore, investors interpret the issuance of equity by a firm as signal of overpricing. If external financing is unavoidable, the firm will opt for secured debt as opposed to risky debt and firms will only issue common stocks as a last resort (Abor, 2005).

This study examines the relationship between capital structure and profitability of the Sri Lankan manufacturing firms. The literature cites a number of variables that are potentially associated with the profitability of firms. In this study, the selection of exploratory variables is based on the alternative capital structure, profitability theories and previous empirical work. The choice can be limited, however, due to data limitations.

LITERATURE REVIEW

Velnampy (2012) analyzed the relationship between capital structure & profitability of listed banking industry in Sri Lanka. They found that there was a negative relationship between debt to equity and return on equity. Further the results suggest that 89% of the total assets in the banking sector of Sri Lanka were represented by debt.

Nirajini and Praia (2013) have done a research on "impact of Capital structure on financial performance of the Trading companies in Sri Lanka". They found there was a positive relationship between capital structure and financial performance. and also capital structure is significantly affect on gross profit, net profit and ROCE.

Anandasayanan et al (2013) analyzed "The determinant of leverage of the listed companies in Sri Lanka; An empirical Study". The purpose of present study was to investigate the determinants of leverage (or capital structure) decision of Sri Lankan firms based on a panel data set over a period of five years from 2007-2011 comprising of 60 companies. This study examined the impact of five firm specific factors – firm size, firm growth rate, profitability, and asset tangibility, on the leverage decision of listed companies in Sri Lanka. The results showed that financial leverage of Sri Lankan firms is influenced by firm size, firm growth rate and profitability. This study contributed to the literature on the factors that influence financial leverage of the firm.

Modigliani and Miller (1958) have a theory of "capital structure irrelevance" where argue that financial leverage does not affect the firm's market value with assumptions related to homogenous expectations, perfect capital markets and no taxes.

Sarkar and Zapatero (2003) find a positive relationship between leverage and profitability. Myers and Majluf (1984) find firms that are profitable and generate high earnings are expected to use less debt capital comparing with equity than those that do not generate high earnings.

Sheel (1994) showed that all leverage determinants factors studied, excepting firm size, are significant to explain debt behavior variations. Gleason, et al., (2000) Using data from retailers in 14 European countries, which are grouped into 4 cultural clusters, it is shown that capital structures for retailers vary by cultural clusters. This result holds in the presence of control variables. Using both financial and operational measures of performance, it is shown that capital structure influences financial performance, although not exclusively. A negative relationship between capital structure and performance suggests that agency issues may lead to use of higher than appropriate levels of debt in the capital structure, thereby producing lower performance. Graham (2000) integrates under firmspecific benefit functions to estimate that the capitalized tax benefit of debt equals 9.7% of firm value. The typical firm could double tax benefits by issuing debt until the marginal tax benefit begins to decline.

METHODOLOGY

The purpose of this research is to contribute towards a very important aspect of financial management known as capital structure. Here the relationship between capital structure practices and its effects on profitability of 12 Listed Manufacturing companies for a five year period from 2008 to 2012 will be examined.

VARIABLE OF THIS STUDY

Independent and dependent variables of the selected sample firms for the period of study

I. DEPENDENT VARIABLE (PROFITABILITY VARIABLE)

Net profit ratio (NPR) is a popular profitability ratio that shows relationship between net profit after tax and net sales. It is computed by dividing the net profit (after tax) by net sales.

II. INDEPENDENT VARIABLE (CAPITAL STRUCTURE VARIABLES)

- Debt to Equity Ratio: A measure of a company's financial leverage calculated by dividing its total liabilities by stockholders' equity. It indicates what proportion of equity and debt the company is using to finance its assets.
- Total debt to total assets: A metric used to measure a company's financial risk by determining how much of the company's assets have been financed by debt. Calculated by adding short-term and long-term debt and then dividing by the company's total assets.
- Short term debt to total: This key ratio describes the relationship between current assets and the company's total assets.

III. CONTROLLED VARIABLE

Firm Size: firm size is measured by taking the natural logarithm of the total assets.

Non-debt tax shield (NDTS) is defined as a ratio of total annual depreciation to total assets.

Capital intensity ratio: Capital intensity ratio of a company is a measure of the amount of capital needed per Rupees of revenue. It is calculated by dividing total assets of a company by its sales. It is reciprocal of total asset turnover ratio.

Tangibility is measured as a ratio of net fixed assets divided by total assets.

RESEARCH HYPOTHESES

The following Hypotheses were formulated

H1: There is significant relationship between Debt to equity and profitability.

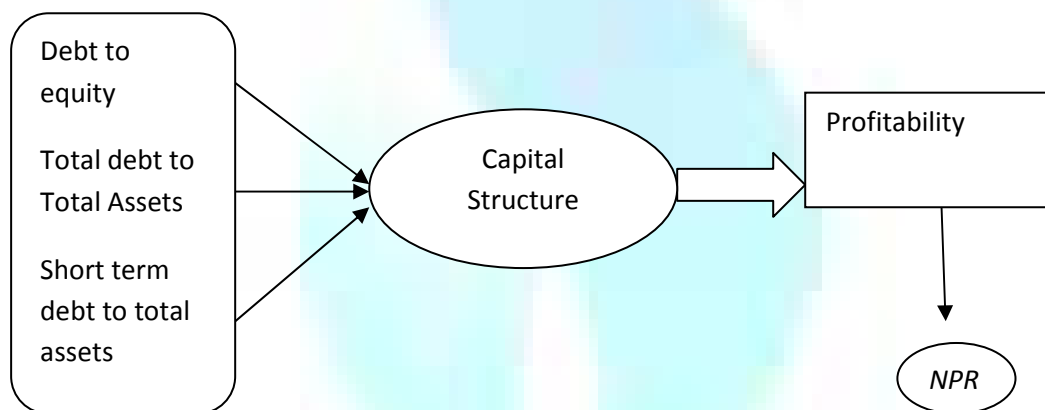
H2: There is significant relationship between short term debt to total asset to Profitability

H3: There is significant relationship between long-term debt to total assets and profitability

CONCEPTUALIZATION

After the careful study of review of literature, researcher developed the following conceptual model.

FIG. 1



Source: Developed By researchers

STATISTICAL TECHNIQUE USED IN THIS STUDY

This paper uses panel data set over a period of five years between 2008-2012 to investigate the effect of capital structure on profitability of Manufacturing companies listed in CSE. The fixed effects test is employed to test the hypotheses. The fixed effects regression equation can be expressed as:

MODEL 01

$$Profit\ i\ t = \alpha\ i + \beta_1\ De/Eq\ i\ t + \beta_2\ Size\ i\ t + \beta_3\ Tan\ i\ t + \beta_4\ NDTs\ t + \beta_5\ Capital\ inten\ i\ t + \epsilon\ i\ t$$

Where i = 1, 2, 3, ..., 12 for the sample companies

t = 1, 2, 3, 4, 5 (time period).

α is the intercept of the equation

β1, β2, β3, β4, β5 = are the coefficients for the five explanatory variables in the model.

MODEL 02

$$Profit\ i\ t = \alpha\ i + \beta_1\ LD/TA\ i\ t + \beta_2\ Size\ i\ t + \beta_3\ Tan\ i\ t + \beta_4\ NDTs\ t + \beta_5\ Capital\ inten\ i\ t + \epsilon\ i\ t$$

Where i = 1, 2, 3, ..., 12 for the sample companies

t = 1, 2, 3, 4, 5 (time period).

α is the intercept of the equation

β1, β2, β3, β4, β5 = are the coefficients for the five explanatory variables in the model.

MODEL 03

$$Profit\ i\ t = \alpha\ i + \beta_1\ STD/TAt\ i\ t + \beta_2\ Size\ i\ t + \beta_3\ Tan\ i\ t + \beta_4\ NDTs\ t + \beta_5\ Capital\ inten\ i\ t + \epsilon\ i\ t$$

Where i = 1, 2, 3, ..., 12 for the sample companies

t = 1, 2, 3, 4, 5 (time period).

α is the intercept of the equation

β1, β2, β3, β4, β5 = are the coefficients for the five explanatory variables in the model.

RESULTS AND DISCUSSION

TABLES 01: INDUSTRY AVERAGE OF RELATED VARIABLES IN THIS STUDY

Year	Long Term to Total Assets Ratio	Short Term Total Debt Ratio	Equity/Debt	Capital Intensity	Tangibility	NonDebtTaxShielded	Profitability	Firm size
2008	0.1015	0.405	0.506	1.23	0.458	0.0039	0.0097	9.08
2009	0.1339	0.3394	0.473	1.326	0.480	0.00075	0.0005	9.32
2010	0.1317	0.315	0.438	1.2329	0.462	0.1020	0.10177	9.620
2011	0.10737	0.388	0.520	1.4282	0.433	0.056	0.0733	9.01
2012	0.0997	0.341	0.440	1.362	0.492	0.0762	0.0842	9.72

(Source : Published Data By CSE)

Table 01 shows the Average figures of Variables from 2008 to 2012 relating in this study. When we see the long term debt to total assets ratio, while in 2008 Industry average was 10.15% and , in 2012 This ratio declined to 9.97%. This reflects that long term debt financing has reduced. In 2008 Short term to total asset ratio was 0.405 but in 2012 this value was .341 . In 2008 Average short term to total assets ratio is 40.4%, in 2012 this ratio has declined as 34.12%. Reason for this deduction is deduction of short term assets to financing total assets.

While Debt to Equity ratio in 2008 is .506 and in 2012 this ratio has also declined as .4407. This reveals that companies has utilized the equity as source of financing its assets. The range of the capital intensity ration is 1.23 to 1.42. The need of the capital required for this period has increased. When we see the tangibility ratio, in 2008 this ratio is 0.45, in 2012 this value increases as 0.49. In 2008 the non debt tax shield is 0.0039. It increases as 0.076 in 2012. Companies average net profit in 2008 is 0.97% , this ratio increases as 8.42 in 2012.

The following figure represents the trend of the industry related above variables in this study from 2008 to 2012.

TABLE 02: CORRELATION MATRIX

Variables	Debt/Equity	Long term debt to Total assets	Short term debt to total assets	Non tax shield	Firm Size	Tangibility	Capital Intensity	Profitability
Debt/Equity	1	.545**	-.296*	-.271*	-.114	.318*	.076	-.317*
Long term debt to Total assets		1	.560**	-.389**	-.201	.121	.093	-.300**
Short term debt to total ass			1	-.216	-.073	-.171	.129	-.237
Non tax shield				1	.264*	.112	.275*	.945**
Firm Size					1	.202	.389**	.257
Tangibility						1	.383**	-.007
Capital Intensity							1	.163
Profitability								1

*Correlation significant at the 0.05level

**Correlation significant at the 0.01 level.

Table 02 shows the Pearson correlation summary between the variables used in this study. According to this results, the co-efficient value between the debt to equity to Profitability is .317. This is significant at 5%level. This reveals that debt to equity ratio increases , that will reduce the profitability .

The correlation co-efficient value of the Long term to total assets ratio to profitability is -0.317. This is also significant at 1% level. This reflect increasing the utilization of long term debt ratio will reduce the profitability of the companies.

The correlation coefficient value between the short term loan to total assets ratio and the profitability ratio is -0.237. This is not significant. This results support for existing literatures such as Velnampy et al (2012) and Booth et al (2001)

TABLE 03: REGRESSION RESULTS MODEL 01

Variables	Co efficient	t Value	sig
Constant	0.046	4.064	.000
Debt Equity	-0.024	-.413	.061
Non Tax shield	.965	20.917	.000
Firm Size	.056	1.209	.232
Capital intensity	-0.012	-2.080	0.043
Tangibility	-0.087	-1.847	0.071
R2	.913		

Table 04 shows the regression results of the Regression model 01.In this model debt to equity ratio is the independent variable. Profitability ratio is considered as dependent variable. According to the summary , Beta value for the debt to equity ratio is -0.024 and the p Value is 0.061. This is significant at 10 % level. So H1 is accepted. That is Debt to equity ratio significantly impact on the profitability of Listed Manufacturing companies in Sri Lanka. Firm size has a positive impact on leverage .The relationship between non tax shield , firm capital intensity and tangibility are significantly impact o profitability. .

TABLE 04: REGRESSION RESULTS MODEL 02

Variables	Co efficient	t Value	sig
Constant	0.019	3.051	0.004
Total Debt to Total Assets ratio	-0.022	-.752	.455
Non Tax shield	.933	19.641	.000
Firm Size	0.55	1.207	.233
Capital intensity	-.012	-2.127	.038
Tangibility	-.046	-2.059	0.045
R2	.893		

Table 04 shows the regression results of the model 02. According to the summary of table 04 Beta value of total debt to total assets ratio is -0.022 and the p value is 0.455. So total debt to total assets ratio significantly impact on profitability of the Manufacturing companies. This is significant at 5 % level. So H2 is accepted. That is Debt to equity ratio significantly impact on the profitability of Listed Manufacturing companies in Sri Lanka. .The relationship between non tax shield , firm capital intensity and tangibility are significantly impact on profitability.

TABLE 05: REGRESSION RESULTS MODEL 03

Variables	Co efficient	t Value	sig	
Constant	.018	3.883	.000	
Short Term debt ratio	-.076	-1.735	.089	
Non Tax shield	.954	21.630	.000	
Firm Size	.060	1.343	.185	
Capital intensity	-.119	-2.636	.011	
Tangibility	-.094	-1.999	.051	
R2	.905	-.076	-1.735	.089

Table 05 shows the regression results of the model 03. According to the summary of table 05 Beta value of total short term debt to total assets ratio is -0.076 and the p value is 0.089. So short term debt to total assets ratio significantly impact on profitability of the Manufacturing companies. This is significant at 10 % level. So H3 is accepted. That is short term debt to total asset ratio significantly impact on the profitability of Listed Manufacturing companies in Sri Lanka. The relationship between non tax shield, firm capital intensity and tangibility are significantly impact on profitability.

CONCLUSION

This paper examined the impact of the capital structure on profitability of manufacturing companies listed in Colombo stock exchange. The results of the study based on the fixed effect estimation show that the variables in the model 01 Model 02 and Model 03: Debt to Equity, Long term debt to Total assets and short term debt to total assets have strong significant influence on firm's profitability. This paper support for existing literatures such as Velnampy et al (2012) and Raheman, A., B (2007) The objective of an investment is to maximize the wealth of owners. In order to achieve this objective investors should select the shares of companies which have higher profitability. Therefore the findings of this research will help investors in selecting profitable shares by considering their capital structure and to maximize their return. Companies can alter their capital structure according to their needs. The findings of this study will also help to companies to determine the optimum leverage which maximizes their profitability. By increasing their profitability companies can also increase the market values of their shares.

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