COMPETENCY BUILDING STRATEGIES IN BUSINESS & TECHNOLOGY

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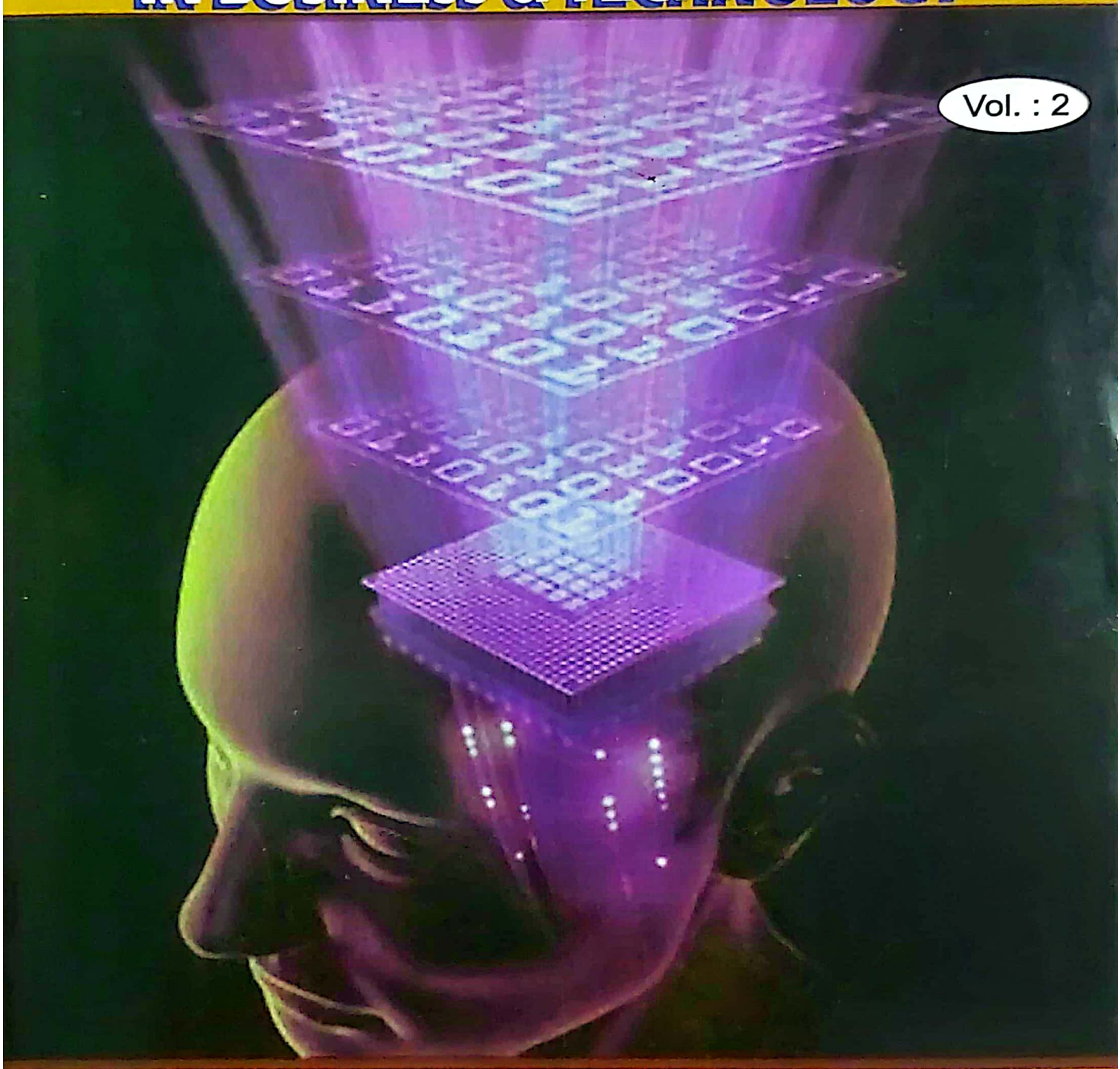

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A STUDY OF THE RELATIONSHIP BETWEEN FINANCIAL LEVERAGE AND PROFITABILITY OF LISTED CHEMICALS AND PHARMACEUTICALS COMPANIES IN SRI LANKA

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Abstract

The major objective of this paper is to analyze and understand the relationship between financial leverage and profitability of the firm. This paper aims to know the impact of financial leverage on profitability for the listed Chemicals and Pharmaceuticals companies for the period from 2005 to 2010 in Sri Lanka. This study also explains the relationship of debt financing, total assets and size of the firm on the profitability of listed Chemicals and Pharmaceuticals companies in Sri Lanka. In this study, listed Chemicals and Pharmaceuticals companies are taken for analysis and hypothesis are examined with the help of Pearson's correlation and regression analysis. Simple least square model is used in the estimation of a function relating to the Return on equity with the independent variables including Equity multiplier, Total assets turnover, and size of the firm. The results indicate that debt negatively affects companies' profitability and Firms with high percentage of debt have less profitability. Further Total assets turnover positively affects companies' profitability and Firm size has a significant effect on companies' profitability.

Keywords: Financial leverage, Profitability, Return on equity, Assets turnover, Size of firm

1. Introduction

Debt is one of the tools used by many companies to leverage their capital in order to increase profit. However, the affectivity of debt to increase profitability varies between companies. The ability of the company's management to increase their profit by using debt indicates the quality of the management's corporate governance. Good corporate governance

shows the companies' performance on their use of debt to increase their profit (Maher and Andersson, 1999). One method that can be use to measure the effectiveness of debt to maximize the profit is by using Du Pont chart analysis. Du Pont chart analysis can describe the relationship between profitability and the use of debt as reflected by return on equity ratio of a company. The proper use of debt can raise the return on equity ratio. This means that the company's management can make use of the debt to increase the profit. It also can indicate the ability of company's management to maximize its operation on assets in making profit (Brigham and Ehrhardt, 2005).

However, profitability might not only be affected by debt. Other factors might affect the profitability of the companies whether they are internal factors or external factors. Internal factors are reflected by operating decisions and companies' size, while external factors are reflected by the type of industry that the companies run its business and the macro factors that might affect directly to the companies' performance. Profitability can be affected by operating decisions when the assets are used effectively to increase profit. Operating decisions can indicate the effectiveness of the companies' management in making the profit from the assets used. Therefore operational efficiency can be achieved by dividing sales or revenue with total assets (Sari, 2007). However, to increase the assets to generate more profits, companies might use leverage. One type of leverage that companies use is debt. When debt is used to expand the companies by adding more operational assets, then it can generate more cash flows which are expected to increase the value of return on equity ratio (Brigham and Ehrhardt, 2005).

Moreover, Iyer (1995) defined profitability as "the ability of a given investment to a earn a return from its use". Return on equity can also be useful in comparing the profitability of the company to the other company in the same industry (www.investopedia.com). This is important because different companies might produce different profitability. Hence the present study is initiated to identify the relationship between financial leverage and profitability of listed chemicals and pharmaceuticals companies in Sri lanka.

2. Objective of the study

The main objective of the study is to know the impact of financial leverage on profitability for the listed chemicals and pharmaceuticals companies for the period from 2005 to 2010 in Sri Lanka.

To achieve the main objective, the relationship of debt financing, long term debt and equity financing on the profitability of Chemicals and Pharmaceuticals companies are estimated.

3. Review of the Literature

Titman and Wessels (1988) observed that highly profitable firms have lower levels of leverage than less profitable firms because they first use their earnings before seeking

outside capital. In addition, stock prices reflect how the firm performs. Firms tend to issue equity rather than use debt when their stock price increases, so that their leverage levels stay lower than firms using debt. Similar findings were reported more recently in Gu (1993), Sheel (1994), Sunder & Myers (1999) and Wald (1999). According to Wald (1999), profitability, which is the most significant determinant of firms' financial leverage, negatively affects the debt to asset ratios in the heteroskedastic tobit regression model. Sheel (1994) also supported the negative relationship between debt-to-asset ratio and non-debt tax shield or/and between firm's leverage behavior and its past profitability. Specific to the restaurant industry, Gu (1993) found that the fine dining restaurant segment, which uses debt lightly compared to the fast-food restaurant and the economy/family restaurant segments, has the highest percentage of profit margin and of return on assets. The research concluded that medium debt use may not be the optimal capital structure but little or no debt use may be optimal. Because of the characteristics of the food service industry, such as its vulnerability to seasonality and economic adversity, using debt could bring greater risk than for those firms in industries where cost of debt may be lower than restaurant industry (Gu, 1993).

The findings made by Lawrence, Diewert, and Fox (2004) describe that firm's profit is affected by the change in productivity, price, and firm's size. Their research founds that when the companies increase their size to increase their productivity, the shareholders will enjoy higher return even though the product price decreases. This means that when the companies size increase, the profit of the companies will also increase. As Kotany (1922) research found that every different industry presents its optimum size such as shoe manufacturing and tanning industry. They have optimum size when the companies have capital or assets in the value between $ 100,000 and $ 250,000. While for meat packing industry the optimum size is between $ 10,000,000 and $ 25,000,000. This research is strengthened by Ammar, Hanna, Nordheim, and Russell (2003) findings that for electrical contractor industry the profitability of a company drops as it grows larger than $ 50,000,000 in sales.

The research made by Listiadi (2007) on PT. Merck Tbk. annual report between 2003 and 2004 found that TATO ratio gives direct impact to ROE. This shows that operational decisions have direct impact to company's profitability. Upneja and Dalbor (2001d) examined the capital structure decisions of U.S. restaurant firms. From the restaurant firms which are publicly-held in the U.S., the study found that the results tended to support the concept that both the pecking-order and the financial growth cycle influenced financing decision. They showed that firms with a high probability of bankruptcy had debt, but more short-term than long-term. According to the study, firms with high cash flows appeared to use more debt, while older firms used more total and long-term debt. They found, moreover, that short-term debt was significantly and negatively related to operating cash flows (Upneja & Dalbor, 2001b).

A related study was conducted by Upneja and Dalbor (2001a) for firms in the lodging industry. They found that debt ratio was positively related to growth opportunities, firm quality, and ratio of fixed assets for publicly-held U.S. lodging companies. According to this research, firm size was not found to be a significant factor in the choice of long-term debt in the lodging industry. The results of this study are somewhat different than those of a previous study by Upneja and Dalbor (2001b), specifically for the "growth opportunity" and "firm size" variables. The growth opportunity was significantly and positively related to the long-term debt ratio, but this was contrary to their prior study (2001b). However, other variables including firm quality, PP&E (property, plant and equipments) and depreciation tax shields were significantly related to the long-term debt ratio.

Nuri and Archer (2001) found that the debt ratios in the UK lodging industry were higher than the debt ratios in the UK retail industry. They pointed out that the trade-off theory rather than the pecking order theory was more consistent with the lodging and retail industry in the UK. They stated that profitability was the most important factor for the retail industry, followed by non-debt tax shields as related factors to leverage level. Non-debt tax shields, management contracts, and profitability were the most important factors for the UK hotel industry.

Thus the various studies on financial leverage and profitability were done in different countries. But there are no studies in Sri Lankan context specially in listed chemicals and pharmaceuticals companies. Therefore the present study examine the relationship between financial leverage and profitability for listed chemicals and pharmaceuticals companies for the period 2005-2010 in Sri Lanka.

4. Research Methodology

4.1 Data collection

The secondary data was used for the present study during the six years of 2005-2010. The data was collected from the hand books of listed companies published by Colombo Stock Exchange (CSE), annual reports of the companies, journals and books.

The scope of the study is the listed Chemicals Pharmaceuticals firms in Sri Lanka. Now, there are nine listed Chemicals and Pharmaceuticals companies operated in Sri Lanka. Therefore, to recognize the impact of financial leverage on profitability, Chemanex Limited, Chemical Industries (Colombo) Limited, Haycarb Plc, Industrial Asphalts (Ceylon) Limited, J.L.Morison, Son & Jones (Ceylon) Limited, Lankem Ceylon Limited, Laxapana Batteries Limited, Singalanka Standard Chemicals Limited, Union Chemicals Lanka Limited are taken.

4.2 Reliability and validity:

Information was collected from annual reports and hand books of listed companies published by Colombo Stock Exchange. Therefore the researcher satisfied with the content and construct validity, then it was decided to continue the analysis.

4.3 Measurement

Secondary data were used to measure the indicators which are related to profitability. One of the ways to measure the profit enjoyed by shareholders is by using return on equity (ROE) ratio. The reason is that ROE ratio is comparable between one companies to the other and can indicate the profitability of one industry with the other (Helfert, 2001). Return on equity (ROE) ratio indicates the profitability of the company. ROE measures the rate of return on common stockholder's investment.

$$ROE = \frac{\text{Net income}}{\text{Common equity}}$$

Equity multiplier describes the value of all assets compare to the value of equity of the company. It can also be considered as the amount of debt used over the total assets that the company has. The formula for equity multiplier is:

$$\frac{\text{Total Assets}}{\text{Total Equity}}$$

It can also be:

$$1 + \frac{\text{Total Debt}}{\text{Total Equity}}$$

Total assets turnover indicates the operational decision made by the management. It is measured by dividing sales with total assets. Total assets can show the management's performance based on the amount of sales that they can produce by investing into several amount of assets.

$$TATO = \frac{\textit{Total sales}}{\text{Total assets.}}$$

Firm size indicates the value of sales that the company has.

5. Hypotheses

The following hypotheses are taken for the research to show the effect of financial leverage on the profitability.

H_1: Debt negatively affects companies' profitability

H_2: Total assets turnover positively affects companies' profitability.

H_3: Firm size positively affects companies' profitability.

6. Types of Analysis

Descriptive and quantitative analysis is used for this research. Descriptive analysis presents maximum and minimum values, standard deviation and mean for each variable

used in the study. In quantitative analysis, Pearson's correlation and regression analysis is used. In regression analysis simple least square is used to investigate the relationship between financial leverage and profitability for Pharmaceuticals and Chemicals companies and also to prove the hypotheses.

7. Data Analysis & Discussion

The results of descriptive and quantitative analysis are presented below. The first table shows the results of descriptive analysis which include the mean, standard deviation, minimum and maximum value for each variable included in the study. The descriptive Statistics of variables used in this study are presented in Table 1.

Table 1 - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Equity multiplier	9	-155.44	2.16	-15.8278	52.35582
TATO	9	.01	2.08	.9808	.62057
ROE.	9	-10.09	13.17	.44265	.84891
Size	9	1.26	6.06	2.4986	1.49338
Valid N	9				

Source: Calculations Based on Annual reports of firms from 2005-2010

In the above table ROE has a mean value 0.4426 with a deviation from the mean value by 5.84891. The maximum profitability for a firm in any year is 13.17 while the minimum is -10.09. To check the debt financing and its relationship with the profitability equity multiplier is used. The results of descriptive statistics show that the average equity multiplier for the Chemicals and Pharmaceuticals firms is -15.8278 with a standard deviation of 52.35582. The maximum debt used by a company is 2.16. The minimum level of the equity multiplier is -155.44 The total assets turnover indicates that on average firm uses 0.9808 of total sales in their total assets with a standard deviation of 0.62057. The firm's size averagely is 2.4986 with a standard deviation of 1.49338.

Correlation analysis

In this analysis correlation is used as a tool of statistics to see the relationship between financial leverage and profitability. The results of correlation analysis are discussed in Table 2.

Table 2 - Correlation matrix

	Equity Multiplier	TATO Size	ROE
Equity Multiplier	1		
TATO	-.662		
	.052	1	
Size	.199	-.487	
	.607	.184	1
ROE	-.814**	.838**	-.675*
	.008	.005	.046

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

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

The correlation for equity multiplier with ROE is -0.814** which reveals that the two variables negatively correlated with each other meaning thereby that if one variable increases the other decreases and it is significant at 0.01 level. The result for the relationship of total assets turnover with ROE is positive and the correlation coefficient is 0.838** and it is also significant at 0.01 level. The value of correlation between size and ROE of Chemicals and Pharmaceuticals firms is -0.675* which is significant at 0.05 level. This denotes that if one variable increases, other variable decreases.

Regression Analysis

This regression is estimated using the simple least squares method. The results are shown in Table 3.

Table 3 - Regression

Independent Variables	Coefficient	Standard error	R^2	t	Sig
Equity multiplier	-0.091	0.025	0.662	-3.704	0.008
TATO	7.894	1.946	0.701	4.056	0.005
Size	-2.643	1.093	0.455	-2.419	0.046

Dependent variable: ROE

The results of this regression indicate that the coefficient of equity multiplier is -0.091 and it is significant at level of 1%. It implies that the increase or decrease in equity multiplier will

significantly affect the profitability of firms. It means that if leverage of the firms increases, it will adversely affect its profitability. R^2 value of 0.662 for equity multiplier denotes that 66.2% of the observed variability on profitability can be explained by the differences in debt financing.

The results for Total assets turnover (TATO) are highly significant. The regression coefficient is 7.894 means there is positive relation between total assets turnover and ROE. If the firms will keep on increasing the total assets it will lead to increase profitability. R^2 value of 0.701 for total sales to total assets denotes that 70.1% of the observed variability on profitability can be explained by the differences in total assets turnover.

The results of this regression indicate that the coefficient of size is -2.643. It implies that the increase or decrease in size will significantly affect the profitability of firms. R^2 value of 0.455 for size denotes that 45.5% of the observed variability on profitability can be explained by the differences in size of the firm.

8. Conclusion and Recommendation

This section will conclude, summarize and recommend based on the research findings and relate it with the previous research findings.

Conclusion

We conclude that firstly numeric verifications and statistical analysis shows negative relationship between profitability and debt (equity multiplier) which verify first hypothesis and it is accepted. Previous research by Harjanti and Tandelilin (2007) found that leverage is negatively significant with profitability, and implies the companies that have high profitability tend to have more internal funding than the smaller one. The companies that have high profitability will use less debt because the capital used is achieved from retained earnings.

Secondly there is positive relationship between total assets turnover and profitability which means that firms with having more total assets are more profitable. Therefore second hypothesis is accepted. This research support Listiadi (2007) research finding on PT. Merck Tbk that found TATO have significant effect to PT. Merck Tbk. profitability. According to IDX categorization of industry, PT. Merck Tbk is categorized in consumer goods industry. This also supports this research finding that in consumer goods industry that TATO is positively significant to affect ROE.

Thirdly there is negative relationship between firm size and Profitability. Therefore third hypothesis is rejected. Lawrence, Diewert, and Fox (2004) found that as firm size increases the production increases as well and that generate higher return. Lawrence et all (2004) finding is consistent with this research finding that firm size negatively affects profitability. However, miscellaneous, and property, real estate, and building construction industry in contrary found to have insignificant effect toward profitability.

Therefore if these Chemicals Pharmaceuticals companies want to increase their profitability, they will have to give more consideration to the financing mix. So that they can earn more profit.

Recommendation

This research result can give insight to the investor and the companies themselves on measuring their companies' performance based on how well the companies manage their debt to increase profit. Moreover, the relationship between firm size and profitability could be an additional indicator of company's profitability since the relationship indicates negatively significant.