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An Analysis on the Relationship between Capital Structure and Operational Cost Adhesion

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A B S T R A C T

The main objective of this research is to examine the adhesion of general, administrative and selling costs. The research also has investigated the impact of capital structure characteristics such as current liabilities, long-term liabilities, and total liabilities on the intensity of cost adhesion. The study is an applied research in terms of objectives and a correlational one in terms of method nature. The research results for the 130 stock active companies in 7 industrial groups in the temporal territory from 2009 to 2016 show that the general, administrative and selling costs are adhesive. The findings suggest that current liabilities, long-term liabilities and total liabilities have a significant positive impact on the intensity of general, administrative and selling costs adhesion.

Keywords: Capital Structure, Operational Costs Adhesion.

INTRODUCTION

Planning and control are two important tasks of management. The information related to costs that managers need to perform these tasks may not be found from classified information reflected in the financial statements (Bloom, Garicano, Sadun, & Van Reenen, 2014; Mocetti, Pagnini, & Sette, 2017; Trantopoulos, von Krogh, Wallin, & Woerter, 2017). Managers for planning and control objectives require being aware of costs behavior, i.e. how costs change(Drury, 2013; Kerzner & Kerzner, 2017). Costs behavior refers to how costs react to changes in the level of activity. In fact, costs changes can be explained by changes in the sales income through the association between cost and income (Cannon, 2014; Hammoudeh & Choi, 2006; Subramaniam & Watson, 2016).

Knowing how costs behave in relation to changes in the activity level or sales level is important information for management decisions regarding budgeting, planning, pricing products, determining break-even point and other management cases(Kotler, 2015). Some recent research suggests that the increase amount of costs while increasing activity level is more than the decrease amount of costs while reducing the volume of activity(Martínez-Ferrero, Banerjee, & García-Sánchez, 2016; Noreen & Soderstrom, 1997). Such behavior of costs is called "costs adhesion".

The companies' activity environment is rapidly growing and highly competitive. Companies, in order to survive, have to compete with several factors at the national and international levels

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and expand their activities through new investments(Katzenbach & Smith, 2015; Shukla & Sanghvi, 2017). Financial leverage reflects the company's ability to meet long-term and short-term commitments. These ratios are calculated by comparing fixed costs and earnings or by relating liabilities to assets (Ashraf, Felixson, Khawaja, & Hussain, 2017; Kini, Shenoy, & Subramaniam, 2017; Malshe & Agarwal, 2015). This study aims to review the theoretical bases and previous studies conducted in this regard, as well as pursue the following functional objectives, using an empirical analysis: Investigation of cost adhesion behaviors (general, administrative, distribution and selling) and Investigation of changes in the intensity of adhesion and its relation to the company's capital structure (financial leverage index).

RESEARCH LITERATURE

Management accounting literature in terms of costs behavior states that cost variations depends only on the amount of change in activity level and does not correlate with the direction of the changes in activity level. For example, in 2006 cost adhesion discussion was introduced by Banker and Chen (2006) at first in an article titled a review on adhesion of general administrative and selling costs. This paper presented costs adhesion investigation main model that was used by other researchers for the subsequent papers. Empirical evidences of this research show that the rate of increase in some costs while increasing sales level is faster than the reduction rate in costs while reducing the level of sales.

Anderson, Banker, Huang, and Janakiraman (2007) on another interesting research claimed that unlike traditional analyses to evaluate company performance, increased ratio of general, administrative and selling costs to net sales is not necessarily a minus sign of current and future performance of the company. They found some evidences that such analyses are valid only in income increasing periods. In periods of income declining fundamental analyses should be evaluated according to the behavior of costs adhesion.

Cannon (2014) has studied the determinants of costs adhesion in America aeronautical transportation companies. The result was such that if the marginal cost of increasing the capacity when demand increases, is more than the marginal benefit of reducing the capacity while demand reduces, costs adhesion increases, and since the decline in product price decrease while demand decreases is more than product price increase when demand increases, costs adhesion is more in demand decrease state.

In another study, Weiss examined the asymmetric impact of costs on analysts' earnings forecasts and the results showed that in companies that have more adhesive costs, the accuracy of earnings forecasts by analysts is less and costs adhesion effects on the analysts covering priorities. Investors in evaluating the firm value consider the adhesion of the costs(Weiss, 2010).

METHODOLOGY

The present study is an applied research in terms of objectives and in terms of methodology is a descriptive study and evaluates the correlation between variables and in terms of time dimension it an Ex-Post Facto approach is implemented. Also, the study is a quasi-experimental research in the field of PAT research. It will be performed using multivariate regression model and econometric patterns. Given the fact that in the present research temporal territory Iran's capital market has undergone much inflation, in order to increase the reliability of the results, the research hypotheses were tested cross-sectionally. To provide information, various sources have been used, including compact discs of Tehran Securities and Exchange Organization, Tadbir Pardaz software

and information site of Securities and Exchange Organization. To study the theoretical bases of the research library method was used. For data processing Eviews 7 and Excel software are employed.

The study population includes companies listed in Tehran Stock Exchange since the beginning of 2009 until the end of 2016, an eight year period, during which they have preserved their membership in the stock exchange. To achieve reliable results, companies that entered the stock exchange after 2005 or those that exit the stock exchange during the research period are not included in the research population. In addition, to achieve the desired statistical sample systematic elimination method is used. Therefore, the statistical population is adjusted using the following conditions:

1. Investment, insurance and financial intermediaries companies are excluded from the sample.
2. The end of the financial year of the company must be March.
3. Financial information of the company must be available on the study period.
4. The sample companies must be audited and their audit report must not be fail.

Due to the expressed limitations 130 companies were selected as the target population in the time period of 2009-2016. Therefore, to achieve better results pooled data method is used and to estimate regression models, 1040 observations (year - company) have been used.

RESULT

In order to achieve the research objective that is to investigate the relationship between capital structure and costs adhesion in companies listed in Tehran stock exchange the results are obtained as follows: The first hypothesis of the study evaluates the adhesion of general, administrative and selling costs. To test this hypothesis, a multivariate regression model was used, where the dependent variable is the logarithm of the growth rate of general, administrative and selling costs ($Ln\ SGA_t/SGA_{t-1}$) and the independent variable is the logarithm of the growth rate of sales revenue ($Ln\ Sales_t/Sales_{t-1}$).

According to the results in Table1 the F-statistic is significant with 99% confidence level. Therefore, the research first model is significant generally and the independent variables are able to explain the dependent variable. In addition, the adjusted determination coefficient obtained from the model test is 0.2167. This figure represents that approximately 22% of the variability of the dependent variable that is the logarithm of the growth rate of general, administrative and selling costs is due to changes in the explanatory variables included in the model and the other 78% percent of the variation is due to other factors. The results show that the general, administrative and selling costs have been adhesive relative to sales revenue changes. Thus, the first hypothesis of the research has been approved.

Table 1. Results of the first hypothesis test

Description	Coefficient		t	p
Fixed coefficient (intercept)	β_0	-0.3287	-4.6554	0.0008
$ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_1	0.3406	6.8273	0.0001
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_2	-0.1224	-3.0067	0.0264
R-squared	0.2289			
Adjusted R-squared	0.2167			
F	4.6286			
p	0.001			
D-W	2.2691			
Dependent variable in the first model:	$ln\left(\frac{SGA_{i,t}}{SGA_{i,t-1}}\right)$			

The dependent variable is the logarithm of the growth rate of general, administrative and selling costs ($Ln\ SGA_t/SGA_{t-1}$) and the independent variable is the logarithm of the growth rate of sales revenue ($Ln\ Sales_t\ /Sales_{t-1}$) and damper variable is the ratio of current liabilities to total assets. According to the third model significance test results in Table 2 the F-statistic is significant with 99% confidence level. Therefore, the research third model is significant generally. In addition, the adjusted determination coefficient obtained from the model test is 0.2167. This figure represents that approximately 22% of the variability of the dependent variable that is the logarithm of the growth rate of general, administrative and selling costs is due to changes in the explanatory variables included in the model and the other 78% percent of the variation is due to other factors. The results show that the costs of general, administrative and selling are adhesive relative to sales revenue changes and by increasing the current liabilities level, the adhesion intensity of general, administrative and selling costs increases. Negative β_2 coefficient indicates the adhesion of general, administrative and selling costs and negative β_3 coefficient indicates the increased intensity of adhesions when increasing the current liabilities level. This means that with 1% increase in sales revenue, general, administrative and selling costs will increase 29% and with 1% decrease in sales revenue, general, administrative and selling costs will decrease 13% = (29% - 10% -6.71%). Thus, the second hypothesis of the study has been approved.

Table 2. Results of the second hypothesis test

Description	Coefficient		t	p
Fixed coefficient (intercept)	β_0	-0.1428	-2.8922	0.0418
$ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_1	0.2984	6.2117	0.0001
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_2	-0.1089	-3.2156	0.0217
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) * ln\left(\frac{current\ \ debt_{i,t}}{Asset_{i,t}}\right)$	β_3	-0.0671	-4.0896	0.0004
R-squared	۰/۲۲۸۹			
Adjusted R-squared	۰/۲۱۶۷			
F	۴/۶۲۸۶			
p	0.001			
D-W	۲/۲۶۹۱			
Dependent variable in the third model:	$ln\left(\frac{SGA_{i,t}}{SGA_{i,t-1}}\right)$			

The third hypothesis of the study evaluates the impact of the amount of long term liabilities on the adhesion intensity of general, administrative and selling costs. The dependent variable is the logarithm of the growth rate of general, administrative and selling costs ($Ln\ SGA_t/SGA_{t-1}$) and the independent variable is the logarithm of the growth rate of sales revenue ($Ln\ Sales_t/Sales_{t-1}$) and damper variable is the ratio of long-term liabilities to total assets. According to the fifth model significance test results and the coefficients in Table [3], the F-statistic is significant with 95% confidence level. Therefore, the research fifth model is significant generally and the independent variables are able to explain the dependent variable. In addition, the adjusted determination coefficient obtained from the model test is 0.2684. This figure represents that approximately 26% of the variability of the dependent variable that is the logarithm of the growth rate of general, administrative and selling costs is due to changes in the explanatory variables included in the model and the other 74% percent of the variation is due to other factors. The results show that the general, administrative and selling costs are adhesive relative to sales revenue changes, but by

increasing the long-term liabilities level, the adhesion intensity of general, administrative and selling costs do not increase. Negative β_2 coefficient indicates the adhesion of general, administrative and selling costs and negative β_3 coefficient indicates the increased intensity of adhesions when increasing the long-term liabilities level. Thus, the third hypothesis of the study has been approved.

Table 3. Results of the third hypothesis test

Description	Coefficient		t	p
Fixed coefficient (intercept)	β_0	-0.0029	-2.9182	0.0302
$ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_1	0.129	6.1902	0.0001
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_2	-0.0216	-3.6122	0.0246
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) * ln\left(\frac{long\_term\ debt_{i,t}}{asset_{i,t}}\right)$	β_3	-0.0645	-2.8293	0.0412
R-squared	0.2881			
Adjusted R-squared	0.2684			
F	3.4128			
p	0.0231			
Dependent variable in the fifth model:	$ln\left(\frac{SGA_{i,t}}{SGA_{i,t-1}}\right)$			
F	3.6993			
p	0.028			
Dependent variable in the sixth model:	$ln\left(\frac{cost_{i,t}}{cost_{i,t-1}}\right)$			

The fourth hypothesis of the study

The fourth hypothesis of the study evaluates the impact of total liabilities rate on the adhesion intensity of general, administrative and selling costs. The dependent variable is the logarithm of the growth rate of general, administrative and selling costs ($Ln\ SGA_t/SGA_{t-1}$) and the independent variable is the logarithm of the growth rate of sales revenue ($Ln\ Sales_t/Sales_{t-1}$) and damper variable is the ratio of total liabilities to total assets. According to the seventh model significance test results and the coefficients in Table [4], the F-statistic is significant with 99% confidence level.

Therefore, the research eighth model is significant generally and the independent variables are able to explain the dependent variable. In addition, the adjusted determination coefficient obtained from the model test is 0.1883. This figure represents that approximately 18% of the variability of the dependent variable that is the logarithm of the growth rate of general, administrative and selling costs is due to changes in the explanatory variables included in the model and the other 88% percent of the variation is due to other factors. The results show that the general, administrative and selling costs are adhesive relative to sales revenue changes, and by increasing the total liabilities level, the adhesion intensity of general, administrative and selling costs increase. Negative β_2 coefficient indicates the adhesion of general, administrative and selling costs and negative β_3 coefficient indicates the increased intensity of adhesions when increasing total liabilities level.

This means that with 1% increase in sales revenue, general, administrative and selling costs will increase 9.78% and with 1% decrease in sales revenue, general, administrative and selling costs will decrease 4.23% = (9.78% - 1.08% -4.47%). Thus, the fourth hypothesis of the study has been approved.

Table 4. Results of the fourth hypothesis test

Description	Coefficient		t	p
Fixed coefficient (intercept)	β_0	-0.0426	-1.8994	0.0663
$ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_1	0.0978	4.2246	0.0002
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$	β_2	-0.0108	-3.1324	0.0118
$Dec * ln\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) * ln\left(\frac{total\ debt_{i,t}}{Asset_{i,t}}\right)$	β_3	-0.0447	-2.9378	0.0316
R-squared	0.1968			
Adjusted R-squared	0.1883			
F	8.0216			
p	0.0001			
Dependent variable in the seventh model:	$ln\left(\frac{SGA_{i,t}}{SGA_{i,t-1}}\right)$			

CONCLUSION

The empirical evidences of this study indicate the adhesion behavior of general, administrative and selling costs in active companies in Tehran Stock Exchange, which are consistent with research results of Anderson et al. (2007). What can be stated in summarizing and general conclusions of research hypotheses test based on the adhesion of general, administrative and selling costs as well as the impact of capital structure characteristics (factors such as current liabilities, long-term liabilities, total liabilities) on the intensity of costs adhesions in the period of 2009 to 2016 is that general, administrative and selling costs are adhesive. This must be taken into considerations in analyses of managers and when reviewing the work of managers.

The impact of capital structure characteristics on the adhesion intensity of general, administrative and selling costs was approved. The findings showed that there is a significant positive relationship between the characteristics of the capital structure and the adhesion intensity of general, administrative and selling costs.

According to the survey results, some recommendations based on the findings of the research hypotheses are as follows:

1- The auditors in the presentation of financial statements are recommended evaluating the amount of given costs with regard to the adhesive behavior of costs and their asymmetric behavior with changes in sales revenue and level of the company's activity related to the discovery of any error or fraud.

2- The results of this study indicated the adhesive behavior of general, administrative and selling costs. Corporate managers are recommended considering costs adhesion and their intensity in planning and budgeting activities of the company to predict future costs. So, they can present a more accurate forecasting and more comprehensive budgeting.

REFERENCES

Anderson, M., Banker, R., Huang, R., & Janakiraman, S. (2007). Cost behavior and fundamental analysis of SG&A costs. *Journal of Accounting, auditing & finance*, *22*(1), 1-28.

Ashraf, D., Felixson, K., Khawaja, M., & Hussain, S. M. (2017). Do constraints on financial and operating leverage affect the performance of Islamic equity portfolios? *Pacific-Basin Finance Journal*, *42*, 171-182.

Banker, R. D., & Chen, L. (2006). Predicting earnings using a model based on cost variability and cost stickiness. *The Accounting Review*, *81*(2), 285-307.

Bloom, N., Garicano, L., Sadun, R., & Van Reenen, J. (2014). The distinct effects of information technology and communication technology on firm organization. *Management Science*, *60*(12), 2859-2885.

Cannon, J. N. (2014). Determinants of "sticky costs": An analysis of cost behavior using United States air transportation industry data. *The Accounting Review*, *89*(5), 1645-1672.

Drury, C. M. (2013). *Management and cost accounting*: Springer.

Hammoudeh, S., & Choi, K. (2006). Behavior of GCC stock markets and impacts of US oil and financial markets. *Research in International Business and Finance*, *20*(1), 22-44.

Katzenbach, J. R., & Smith, D. K. (2015). *The wisdom of teams: Creating the high-performance organization*: Harvard Business Review Press.

Kerzner, H., & Kerzner, H. R. (2017). *Project management: a systems approach to planning, scheduling, and controlling*: John Wiley & Sons.

Kini, O., Shenoy, J., & Subramaniam, V. (2017). Impact of financial leverage on the incidence and severity of product failures: Evidence from product recalls. *The Review of Financial Studies*, *30*(5), 1790-1829.

Kotler, P. (2015). *Framework for marketing management*: Pearson Education India.

Malshe, A., & Agarwal, M. K. (2015). From finance to marketing: the impact of financial leverage on customer satisfaction. *Journal of Marketing*, *79*(5), 21-38.

Martínez-Ferrero, J., Banerjee, S., & García-Sánchez, I. M. (2016). Corporate social responsibility as a strategic shield against costs of earnings management practices. *Journal of Business Ethics*, *133*(2), 305-324.

Mocetti, S., Pagnini, M., & Sette, E. (2017). Information technology and banking organization. *Journal of Financial Services Research*, *51*(3), 313-338.

Noreen, E., & Soderstrom, N. (1997). The accuracy of proportional cost models: evidence from hospital service departments. *Review of Accounting Studies*, *2*(1), 89-114.

Shukla, T., & Sanghvi, R. (2017). India's Fastest Growing FMCG Company: An Insight into Patanjali's Marketing Strategies. *Evidence Based Management*, 105.

Subramaniam, C., & Watson, M. W. (2016). Additional evidence on the sticky behavior of costs *Advances in Management Accounting* (pp. 275-305): Emerald Group Publishing Limited.

Trantopoulos, K., von Krogh, G., Wallin, M. W., & Woerter, M. (2017). External knowledge and information technology: Implications for process innovation performance. *MIS quarterly*, *41*(1), 287-300.

Weiss, D. (2010). Cost behavior and analysts' earnings forecasts. *The Accounting Review*, *85*(4), 1441-1471.