Implementing Target Costing in Small and Medium Scale Enterprises in Ogun Industrial Metropolis

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Abstract

The study investigated the relationship that existed among target costing technique and turnover and profitability of small and medium scale enterprises in Ogun industrial metropolis. Multiple regressions were used to explore the relationship that existed between two continuous dependent variables (average annual profit and average annual turnover) and an independent variable (Target costing technique). The results of the analysis showed that there was a statistical significant relationship between target costing technique and annual turnover in Ogun industrial metropolis ($p<0.05$) and also between profitability of small and medium scale enterprises in the Metropolis ($p<0.05$). The study revealed that enhancing business performance should be considered as part of ongoing strategy and not a core growth strategy. The study therefore, concluded that implementing target costing technique would enhance sales and profitability of this level of business in Nigeria.

Keywords: Target costing, cost reduction, market competition, customers' requirement and profitability

1.0 Introduction

Target costing is a proactive cost planning, cost management, and cost reduction practice whereby costs are planned and managed at product design and development cycles, rather than during the latter stages of product development and production (Akao 1990). Target costing obviously applies to new products and to product modifications of succeeding generations of products. The main objective of target costing is to enable business executives manage the business profitably in a competitive marketplace (Zengin and Ada, 2010). The foundations of target costing namely market-based prices, price-based costs, and cross-functional participation is used for existing products, although costs are more difficult to reduce once a product is in production process (Liaqat, 2006). The costs most typically emphasized in the target costing process are those most directly affected by material and purchased parts, conversion costs such as labour and identifiable overhead expenses, tooling costs, development expenses, and depreciation. However, because target costing is a comprehensive cost planning, management and cost reduction process which are affected by early product planning decisions (Fuld 1985). Target costing includes more indirect overhead expenses through the production stage, and beyond, such as service costs, and assets, such as inventory. Target costing is intended to prepare managers ahead of future costs and implications of other decisions to be made (Brimson, 1991). Following the introductory section is section 2 that dealt with the review of related literature, while section 3 concerned methodological issues. Section 4 presented the data and results of analysis using Regression Analysis while the last section 5 draws the study conclusion.

Abdel-Kader and Luther (2006) and Zengin and Ada (2010) affirmed that there are few studies done in developing countries by academics on the application and implementation of target costing to influence market competition so as to improve sales level of business, whereas an awareness of target costing technique had been created through continuous studies in developed parts of the world such as U.K., Japan and Australia.

Maqbool-ur-Rehman (2011) added that such researches in those countries provide opportunity for effective implementation of target costing technique as successfully employed by firms to enhance turnover. Maqbool-ur-Rehman (2011) pointed out that the cost management techniques employed in a complex and dynamic business environment is particularly sophisticated in order to enhance profitability. Hibberts, Albright and Funk (2003) assert that some of the advantages of target costing technique could be explored to cope with business dynamic environment of SMEs in developing economy for improved profitability. Ibru (2012) pointed out that operators in SMEs in Nigeria need to explore techniques that will enable the sector to cope effectively with Nigerian business environment and become more vibrant and effective in view of its roles as a major contributor to the country's economy Gross Domestic product. Hence, the inadequate studies on the adoption of target costing technique by SMEs in Nigeria to influence business environment for improved sales and profitability call for further studies.

2.0 Extant Literature

The first step in target costing process is to establish the proposed new product's target price which involves a number of considerations. The present and future market needs such as customers' wants and prices they are willing to pay for alternative features and the competitive offerings (Akao1990). A good way of determining current and future wants and needs is to interview the existing and prospective customers (Zengin and Ada 2010). Companies such as Toyota, Sony, and more recently Ford spend a great deal of time undertaking sophisticated market research, including surveys and focus groups, to ascertain what functions and features customers want and how much they are willing to pay for them (Liaqat, 2006).

The target price is based on the market needs assessment, the competitive analysis, and the company's preliminary plans to deliver a new or modified product with certain functions, features, aesthetics, and other characteristics. Fuld (1985) concluded that the principal point is that companies employing target costing base their target price on market and competitive conditions, and on the long-term pricing and market penetration objectives. Grant, (1990) posit that once target price has been established, then a target profit margin should be calculated. In order to be successful in the long run, companies have to yield a return in excess of the firm's cost of capital. Different product lines or products will have different target profit margins established for them, depending on a number of factors (Brimson, 1991). The typical factors considered are the strength of target market price or aggressiveness of management's pricing strategies to penetrate markets. The firm's own cost position is a low-cost producer with the level of investment required to support the product so that a higher investment can lead to a higher profit margin and vice versa.

The difference between the target price and the target profit margin is the allowable cost that the company can commit to the product in question (Tanaka, 1993). Different companies define the costs to be included within the definition of the allowable costs and target profit margin differently and virtually all companies include materials and purchased parts which would include variable production conversion costs, including labour and associated costs, and directly identifiable and variable manufacturing overhead (Akao 1990). Usually, new products require R&D expenditures, tooling costs, and, especially in an era of increasing automation, significant capital investment and the impact of these items, such as depreciation, should also be included to the extent that there are other non-manufacturing costs of distribution, advertising and promotion, sales and service, and even investments in inventory, these may also be included (Howell and Sakurai, 1992).

Horvath (1993) opines that the target costing process is important to examine the extent financial and non-financial objectives are achieved. The allowable and target cost figures are either aggregated or disaggregated along traditional lines primary building blocks, sub-assemblies and functional dimensions, ultimately to underlying components (Fuld, 1985). As the project team works together, it is important to track the gains and shortfalls against the target cost reductions and allowable costs and some companies maintain detailed status boards aggregating where they guide against major building block or function targets, broken down to individual components (Grant, 1990). In this way, the team knows at all the times where it stands against the objectives and where additional opportunities should be found and maintained.

Effective assessment of current costs is also important, as they serve as the foundation for target cost determination and a report on how well the allowable costs are achieved (Tanaka, 1993). The definition of the costs to be included in target costing becomes more comprehensive, including shared manufacturing and non-manufacturing costs, the application and benefits to be derived from target cost increase (Akao, 1990).

Horvath (1993) and Howell and Sakurai (1992) in their studies reveal that major cost reduction opportunities are best achieved during the early stages of the concept, design, development, and production cycle and nevertheless in those companies truly committed to cost management, the quest for cost improvements continues, even during the production stage. The target costing technique and other techniques normally employed the Quality Function Deployment (QFD) which is a tool used in operations management in order to understand customers' requirements in terms of technical attributes required and their importance. Leading companies look for ways to eliminate waste and reduce costs, even after a product has gone into production and modifications to the product and its design, supplier management efforts, and continual process improvement initiatives are all part of target costing through the assistance of kaizen costing effort (Grant, 1990). Akao (1990) concludes that some of the principal opportunities that Japanese companies pursue in kaizen costing efforts include the total elimination of wastes such as material scrap, material handling, excess inventory, and burdensome administrative activities.

Delmar, (1997) described profit as a business finance term that deals with the amount of money made from selling a product/service over a period of time usually a year. Chandler and Hanks (1994) asserted that it is important for a company to keep a track of firm's annual profit in order to determine if selling a particular product/service is worthwhile or not. If the business does not make adequate annual profit, a wise decision is to change the product/service and its marketing strategy or to drop the product/service entirely, having considered other qualitative factors, so that the company does not continue to make losses (Olabisi 2009).

Ayinde (2006) focuses on the growth of sales and profits only, whilst Baum, Locke, & Smith, (2001) measure profitability growth in terms of employees, but also in annual sales and profits. Chandler and Hanks (1994) examine the growth of market share, cash flow and sales whilst Bennett and Robson (1999) investigated the relative employee and turnover growth measures. Shepherd (2005) on the other hand argues that a firm's growth can be measured in terms of outputs (sales revenue and profits). Ardishvili, Cardozo, Harmon, Vadakath, (1998) and Delmar, (1997) argues that the possible indicators for measuring profitability growth are assets, employment, market share, physical output and sales. Profit is the difference between sale value and cost of sales (Ayinde 2006). Ayinde asserted that, the relationship between sale and profit is that average profit can be improved either by increasing the average turnover value or reducing the cost or both simultaneously. Olabisi (2009) has however, argued that in most cases, sale value depends on market forces, which may rarely be influenced by managers. Usually, even a real increase in cost cannot be passed on fully to the customers and a portion of the cost is borne by the business (Grant, 1990). It is therefore, not always possible to improve profit by increasing the sale value. Cost reduction is generally the only alternative for improving the profitability of a product with all-round increase in the costs of inputs and increase in competition. Cost reduction has assumed great importance in SMEs in Ogun Industrial Metropolis of Nigeria.

Harrison (1986) posits that the impact of business environment on the survival and profitability can be described in any form which can be termed positive or negative business environment. Oni (2004) asserted that the operating environment may be negative if there are inflationary rates, government policy on taxes and increased cost of production or overhead costs. Oni concluded that in Nigeria, the business environment determines the survival and profitability of small and medium scale enterprises. It is important to note that to make enough profit and continue in business is also contingent upon the skills, capabilities and business acumen of the managers and entrepreneurs to innovate and take the right and quick business decisions in the face of difficulties. Olaniyan (2005) argues that the ultimate success of any business is contingent on the skills capabilities and abilities of entrepreneurs to innovate and take risks in the face of various uncertainties. Ogundele (2004) identified indirect action elements in the environment that affect profitability and survival to include socio-cultural, technological, economic, political, legal and international environment.

3.0 Methodology

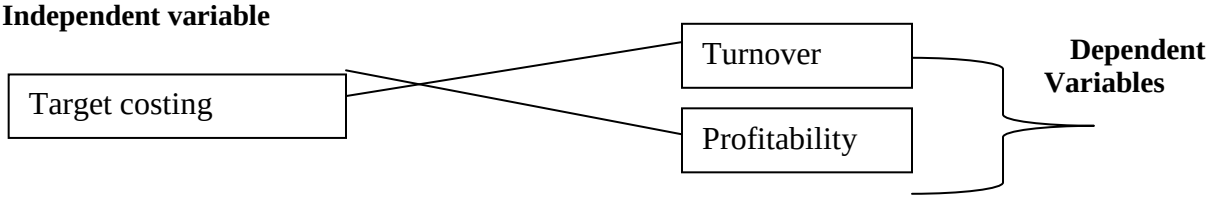
The study employed a cross-sectional survey where data derived from the operations of small and medium scale enterprises were collected at one point in time from a sample selected to represent the population of the study. The study selected 138 SMEs from the three senatorial districts in Ogun industrial metropolis.

The SMEs investigated included manufacturing, confectionery, general trading and agro-allied. These categories of enterprise registered with Corporate Affairs Commission (CAC) in the State and were within the definitions of National Council on Industries.

Multiple regressions were used to explore the relationship between one continuous dependent variable (average annual profit) and a number of independent variable (Target costing technique). Statistical Package for Social Sciences (SPSS) was applied in computing the five years figures of average annual profit and average annual turnover obtained.

Table 3.1: Operationalization of Variables

Independent variable



Hypothesis 1:there is no significant relationship between target costing technique and turnover of small and medium scale enterprises in Ogun industrial metropolis.
Hypothesis 2: there is no significant relationship between target costing technique and profitability of small and medium scale enterprises in Ogun industrial metropolis.

Hence, Model 1 for H_{o1} is stated as APP = f (TCT) and $y_1 = \beta_0 + \beta_1 x_1 + \varepsilon_1$
Hence, Model 2 for Ho_2 is stated as AAT = f (TCT) and $y_2 = \beta_0 + \beta_1 x_1 + \varepsilon_1$

3.1.1 Analysis and interpretation of hypothesis one

The data analysed were estimated using multiple regression analysis technique. The data regressed were average annual profit (AAP) and target costing technique (TCT) as independent variables, using the ordinary least square (OLS) method. The model as specified was re-represented:

$AAP = \alpha 0 + \alpha 1TCT + \mu$ _____ (i)

Where:

AAP = Average annual profit
TCT = Target costing technique
α_O and α_1 are the parameter estimate with zero mean and variance zero.

3.1.2 Correlations

The correlation between the two random variables is a measure of the degree of linear association /relationship between the two variables. Here, the relationship between average annual profit and the target costing technique of the small and medium scale enterprise were measured. The population correlation coefficient was denoted by ρ which took any value from -1 through 0 to 1

The possible values of ρ and their interpretations were given below:

When ρ is zero = No linear relationship

When ρ is 1= Perfect, Positive linear relationship between dependent and independent variables, which signifies that when one variable increases, the other variable increases and vice versa.

When ρ is -1= Perfect negative linear relationship between the dependent and independent variables, which means when one variable increases, the other decreases and when one decreases, the other increases. When ρ is between 0 and 1 in absolute term, it reflected the relative strength of the linear relationship between the two variables i.e:
0.90 implies a relatively strong positive relationship between the variables.

0.30 implies a relatively weak positive linear relationship.

From the SPSS outputs the following were extracted for interpretation:

Average Annual Profit (AAP) – Dependent variable =1

Independent variable is Target costing technique = .987

From these results, it showed that with AAP posting 1, there is a perfect positive linear relationship between the performance indices that are the independent variables, and that increase in AAP means other variable must have increased. Hence, the results of the independent variables they were in absolute value of 0.987 which reflected a very strong linear relationship between target costing techniques and Average annual profit. The result showed that there was strong relationship between Average annual profit and target costing technique and any changes in target costing technique of small and medium scale enterprise would reflect in the average annual profit.

3.1.3 Collinearity Diagnostics

This is to test if the use of regression for this work has violated the assumption of multicollinearity. If the value of each variable under collinearity tolerance is low near to zero value, then this indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity. From the extraction from the SPSS output, the Collinearity statistics tolerance for the independent variables is stated thus:

Target costing technique =.001

The result shows that there is multicollinearity of all the variables and no violation of the multiple regression assumption multicollinearity.

3.1.4 Model Summary

This tells us how much of the variance in the dependent variable (Average annual profit) is explained by the model which includes the variable target costing technique. This is denoted by R Square in the output. From the Model summary table, the R Square is 97.3 percent. The remaining 2.7 percent of changes is explained by the stochastic error term (μ). This figure is quite a respectable result and hence in terms of goodness of fit, we can say that the test is conclusive.

For adjustment if there is overestimation in the R Square figure, Adjusted R Square corrects this value to provide a better estimate of the true population value. From the Adjusted R Square the true population value of the independent variables in the dependent variable is 96.4 percent which is high and impressive. This proves the reliability of model and the results derived from the computations.

3.1.5 Evaluating of Each of the Independent Variables

Here we considered which of the independent variables contributed to the prediction of the dependent variable. We looked at the standardized coefficients and checked the column labeled Beta. Standardized means, which were the values for each of the different variables, have been converted to the same scales so that comparison could be made. Using the Beta values enables us to compare the contribution of each independent variable to explaining the dependent variable.

From the SPSS output the beta value (Coefficients) was extracted:

Target costing technique = 0.987

3.2.1Analysis and Interpretation of Hypothesis Two

The data analysed were estimated using multiple regression analysis technique. The data regressed were the average annual turnover (AAT) and Target costing technique (TCT), using the ordinary least square (OLS) method. The model as specified was re-represented:

$AAT = \alpha 0 + \alpha 1TCT + \mu$ _____ (i)

Where:

Y =AAT = Average annual turnover (Dependent variable)
X = TCT = Total cost Technique (Independent variable)

α_O and α_1 are the parameter estimate with zero mean and variance zero.

3.2.2 Correlations

The correlation between the two random variables was a measure of the degree of linear association /relationship between the variables. Here we measured the relationship between Average annual Turnover and the target cost technique of the small and medium scale enterprise. The population correlation coefficient is denoted by ρ which will take any value from -1 through 0 to 1

The possible values of ρ and their interpretations were given below:

When ρ is zero = No linear relationship

When ρ is 1= Perfect, Positive linear relationship between dependent and independent variables, which signifies that when one variable increases, the other variable increases and vice versa.

When ρ is -1= Perfect negative linear relationship between the dependent and independent variables, which means if /when one variable increases, the other deceases and when one decreases, the other increases.

When ρ is between 0 and 1 in absolute term, it reflects the relative strength of the linear relationship between the two variables i.e.:

0.90 implies a relatively strong positive relationship between the variables.
0.30 implies a relatively weak positive linear relationship.

From the SPSS output the following were extracted for interpretation:

Average annual turnover (AAT) – Dependent variable =1
Independent variable is:
Target costing technique = .985

From these results, it shows that with AAT posting 1, there is a perfect positive linear relationship between it and the performance indicator that were independent variables, and that increase in AAT means other variable must have increased.

From the results of the independent variables they are in absolute value of 0.985 which reflects a very strong linear relationship between them and Average annual turnover. The result shows that there is strong relationship between Average annual turnover and target costing technique and any changes in Small and medium enterprise reflects the average annual turnover.

3.2.2 Collinearity Diagnostics

This is to test if the use of regression for this work violates the assumption of multicollinearity. If the value of each variable under collinearity tolerance is low near to zero value, then this indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity.

From the extraction from the SPSS output, the Collinearity statistics tolerance for the independent variables is stated thus:

Target costing technique =.001

The result shows that there is multicollinearity of all the variables and no violation of the multiple regression assumption multicollinearity.

3.2.3 Model Summary

This tells us how much of the variance in the dependent variable (Average annual turnover) is explained by the model which includes the variable total costing technique. This is denoted by R Square in the output. From the Model summary table, the R Square is 97 percent. The remaining 3 percent of changes is explained by the stochastic error term (μ). This figure is quite a respectable result and hence in terms of goodness of fit, we can say that the test is conclusive.

For adjustment if there is overestimation in the R Square figure, Adjusted R Square corrects this value to provide a better estimate of the true population value. From the Adjusted R Square the true population value of the independent variables in the dependent variable is 96 percent which is high and impressive. This proves the reliability of model and the results derived from the computations.

3.2.4 Evaluating of Each of the Independent Variables

Here we consider which of the independent variables contributed to the prediction of the dependent variable. We look at the standardized coefficients and checked the column labeled Beta. Standardized means, which are the values for each of the different variables, have been converted to the same scales so that comparison can be made. Using the Beta values enables us to compare the contribution of each independent variable to explaining the dependent variable.

From the SPSS output the beta value (Coefficients) was extracted and target costing technique = 0.985

To determine the significant relationship that exists between Average annual turnover and target costing technique, we computed the Analysis of Variance using Statistical Package for Social Sciences (SPSS).The table below shows the output. At the alpha level of 0.05, and degree of freedom 1, 3, the computed F-test is 97.326 as against the tabulated critical value of 10.13.Also the ρ of .002 is less than the significance level of .05. This means that the parameters, $\alpha 0$, $\alpha 1$, are statistically significant in explaining the AAT.

Therefore the null hypothesis should be rejected and accept the alternate which says there is a significant relationship between target costing technique and average annual turnover of SMEs in Lagos and Ogun States.

4.0 Findings and Discussion

This study confirms that profit can be improved either by increasing the sale value or reducing the cost components of or both simultaneously. In most situations, sale value depends on market forces, which can seldom be substantially influenced by managers. This conclusion is in consonance with the opinion of Ayinde (2006) on how profit of an enterprise can be improved. Furthermore, increases in cost cannot be passed on fully to the customers especially if the demand for the product or service is perfectly elastic and a portion of the cost is borne by the manufacturer. Hence, it is not always possible to improve profit by increasing the sale price. Cost reduction which target costing technique seeks to achieve is generally the alternative for improving the profitability of a product. The implication of this is that cost, an amount of expenditure incurred or attributable to a specified thing or activity, has a significant effect on profitability of SMEs in Ogun industrial metropolis.

Target costing focuses on organization's customers' requirements and competitive threats (IMA 1998). As a proactive cost-management tool, it requires continuous market research where price considerations and trend change are closely monitored in order to understand the perceived quality and functionality of target customers as well as the price they are willing to pay for demanded features. It shows the relationships among competitive offerings, customers' requirements and technical attributes together through a matrix. The target cost is determined before the product is designed and once the target cost is determined the costs of production are compared with target costs. Zengin and Ada (2010) are of the opinion that customers benefit from the availability of higher quality products in the market at lower prices. The visible consequences of market driven production and operation is the great variety of products on the market due to the availability and applicability of appropriate cost management technique such as target costing technique. Cooper (1995) affirmed that since price is market driven, and quality and functionality is customers driven, a most suitable operation strategy for manufacturers should be designed around balancing cost quality-functionality which is defined as survival tripod.

Target costing model is used to determine target cost for the product and target selling price. Hence, it is important to determine customers' input, market conditions and product attributes, cost, quality function information through the survey sent to customers and interviews with experts working on the stage of product cycle in other to implement strategies obtained from competitors target costing technique. Maqbool-ur-Rehma (2011) asserted that several studies have been carried out in many advanced countries to study the effective implementation of target costing techniques employed by firms to enhance turnover. The study concluded that most of the enterprises used sales as a measure of profitability index to determine the level of expansion or contraction in businesses activities.

The result of the study showed that implementation of target costing has significantly improved the liquidity position and profitability level of the enterprises investigated. This outcome was in agreement with the opinion of Horngren (2006) that the utmost success of cost management is to understand how much it will cost to complete a project and track the progress against the budget; also that cost control and cost reduction is about managing the business costs proactively and keeping a strategic view of the costs drivers. The finding also conforms to opinion of Maqbool-ur-Rehma (2011) and Birnberg (1998) who emphasized the significance of exploring the variables cost management techniques and effects of organizational culture to enhance business profitability and survival. The result of the study was in tandem with the opinion of Hibberts, Albright and Funk (2003) who asserted that some of the advantages of target costing could be explored to cope with business dynamic environment of small and medium scale enterprises in developing economy for improved profitability.

The implication of this weak relationship could be attributed to other determinants of profitability which are exogenous variables to target costing technique which is supported by Harrison (1986). Harrison positioned that the impact of business environment on the survival and profitability can be described in any form which can be termed positive or negative business environment.

Oni (2004) asserted that the operating environment may be negative if there are inflationary rates, government policy on taxes and increased cost of production or overhead costs. Oni concluded that the business environment determines the survival and profitability of small and medium scale enterprises in Nigeria. It is important to note that to make enough profit and continue in business is also contingent upon the skills, capabilities and business acumen of the managers and entrepreneurs to innovate and take the right and quick business decisions in the face of difficulties. This is in consonance with the assertion of Olaniyan (2005) that the ultimate success of any business is contingent on the skills capabilities and abilities of entrepreneurs to innovate and take risks in the face of various uncertainties. Also, Ogundele (2004) identified the following indirect action elements in the environment that affect profitability and survival to include socio-cultural, technological, economic, political, legal and international environment.

5.0 Conclusion and Recommendations

The study concludes that there is a statistically significant relationship between target costing and sales and profitability of small and medium scale enterprises in Ogun industrial metropolis. The implementation of target costing technique to business operations had tracked down the cost drivers and led to cost reduction. This implied that the implementation of target costing technique had significantly improved the sales turnover of the enterprises investigated. Equally important is that the introduction of target costing technique had also improved the profitability of small and medium scale enterprises in Ogun industrial metropolis. The results of the study showed that in order to enhance turnover of a business, implementation of target cost technique implementation provides a good market research strategy which is essential for competitive cost goals for pricing, which in turn is very important for setting cost goals for dynamic cost reduction and improved market share.

Target costing should be seen as functional level strategic tools concurrently supporting other cost management techniques to achieve a cost leadership strategy which is a business level strategy to enhance business performance and survival. Existing literature proposes that cultural values of the users of accounting techniques influence the success or failure of those techniques. Enterprises should therefore, strive to implement target costing to keep track records of profit so as to determine the worthwhile or otherwise of producing and selling a product. Therefore, improved business performance activities should not be undertaken only as a reactive measure to external pressures. Enhancing business performance should be seen and considered as part of ongoing strategy and certainly not a core growth strategy. Those enterprises that have made that switch in mindset from reactive performance project to continuously enhance their performance are those likely to succeed in both downturns and upturns of the economy.

Target costing is implemented to determine the desired quality specifications and functionality, where customer requirements are integrated into the process. The results of the analysis in the study had shown that the adoption of appropriate cost management techniques by the surveyed enterprises business activities had improved the market share of enterprises' products and services. This would improve market share and also lead to increased wealth of stakeholder of those enterprises. Target costing is essential for gathering market and price information from customers to determine product specifications and the target selling price.

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Table 3.1.2: Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	TCT[b]	.	Enter

a. Dependent Variable: AAP

b. All requested variables entered.

Table 3.1.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.987[a]	.973	.964	983613.18106

a. Predictors: (Constant), TCT

Table 3.1.4: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105588246591684.170	1	105588246591684.170	109.136	.002[b]
	Residual	2902484669836.659	3	967494889945.553		
	Total	108490731261520.830	4			

a. Dependent Variable: AAP
b. Predictors: (Constant), TCT

Table 3.1.5: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-3939669.728	1742118.986		-2.261	.109					
	TCT	936893.622	89682.320	.987	10.447	.002	.987	.987	.987	1.000	1.000

a. Dependent Variable: AAP

Table 3.1.6:Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	TCT
1	1	1.968	1.000	.02	.02
	2	.032	7.792	.98	.98

a. Dependent Variable: AAP

Table 3.1.7:Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7874559.0000	21047284.0000	13670182.8000	5137807.08551	5
Std. Predicted Value	-1.128	1.436	.000	1.000	5
Standard Error of Predicted Value	440621.938	831960.875	604586.967	163831.297	5
Adjusted Predicted Value	7383155.5000	20821306.0000	13551520.9445	5169725.89532	5
Residual	-1334151.62500	939366.43750	.00000	851834.00229	5
Std. Residual	-1.356	.955	.000	.866	5
Stud. Residual	-1.517	1.091	.045	.999	5
Deleted Residual	-1669088.37500	1225878.37500	118661.85549	1147762.77203	5
Stud. Deleted Residual	-2.567	1.147	-.169	1.428	5
Mahal. Distance	.003	2.062	.800	.861	5
Cook's Distance	.009	.289	.151	.124	5
Centered Leverage Value	.001	.515	.200	.215	5

a. Dependent Variable: AAP

Analysis Of Variance (Anova)

Table 3.1.8: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105588246591684.170	1	105588246591684.170	109.136	.002[b]
	Residual	2902484669836.659	3	967494889945.553		
	Total	108490731261520.830	4			

a. Dependent Variable: AAP
b. Predictors: (Constant), TCT

Table 3.2.1: Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	TCT[b]	.	Enter

a. Dependent Variable: AAT
b. All requested variables entered.

Table 3.2.2: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.985[a]	.970	.960	1039893.32026

a. Predictors: (Constant), TCT
b. Dependent Variable: AAT

Table 3.2.3: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105246596908970.200	1	105246596908970.200	97.326	.002[b]
	Residual	3244134352550.533	3	1081378117516.844		
	Total	108490731261520.830	4			

a. Dependent Variable: AAT
b. Predictors: (Constant), TCT

Table 3.2.4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-3286620.971	1780616.583		-1.846	.162					
	TCT	.203	.021	.985	9.865	.002	.985	.985	.985	1.000	1.000

a. Dependent Variable: AAT

Table 3.2.5:Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	TCT
1	1	1.965	1.000	.02	.02
	2	.035	7.525	.98	.98

a. Dependent Variable: AAT

Table 3.2.6: Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7222134.0000	20416370.0000	13670182.8000	5129488.20325	5
Std. Predicted Value	-1.257	1.315	.000	1.000	5
Standard Error of Predicted Value	465320.813	826975.375	641395.038	162648.595	5
Adjusted Predicted Value	5591863.0000	19176212.0000	13216476.3256	5268481.77085	5
Residual	-912767.81250	1109464.87500	.00000	900574.03257	5
Std. Residual	-.878	1.067	.000	.866	5
Stud. Residual	-.981	1.677	.158	1.206	5
Deleted Residual	-1141286.62500	2739736.00000	453706.47442	1798291.54652	5
Stud. Deleted Residual	-.973	5.452	.947	2.671	5
Mahal. Distance	.001	1.730	.800	.795	5
Cook's Distance	.003	2.065	.697	.886	5
Centered Leverage Value	.000	.432	.200	.199	5

a. Dependent Variable: AAT