

## Cost Management Practices and Firm's Performance of Manufacturing Organizations

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### Abstract

This study investigates the relationship that exists between cost management practices and firm's performance in the manufacturing organizations using data from 40 manufacturing companies listed on the Nigeria stock exchange during the period of 2003 to 2012. Four hypotheses were formulated for the study and tested using t-statistic. The study relied on secondary data extracted from the audited financial statement of the selected companies. Direct material cost, direct labour cost, production overhead cost and administrative overhead cost were taken as independent cost management variables while profitability (Operating profit) was taken as dependent variable representing the firm's performance. The result indicates that a positive significant relationship exists between cost management practices and firm's performance in the manufacturing organization. It is therefore recommended that a cost reduction strategy with emphasis on production overhead cost and administrative overhead cost should be embarked upon if their profit maximization and wealth creation objective must be achieved.

**Keywords:** cost management, firm performance, manufacturing organizations, direct material cost, direct labour, cost, production overhead cost, administrative overhead cost

### 1. Introduction

A business objective is the starting point for any business organization to thrive and it provides direction for action. It is also a way of measuring the effectiveness or otherwise of the actions taken by the management of the organization. The main goal or objective of any business organization according to Lucey (1993) is to make and maximize profit while other secondary objectives include going concern, growth, corporate social responsibility, benefits to employees and so on. Though other objectives are also considered very important as listed above, but profit maximization is usually the ultimate because it maximizes the shareholders wealth which is the ultimate aim of investing in a business. People will naturally prefer to invest in a highly profitable business (Charles, 1998). Therefore, in the long run only the profit maximizers survive in the business environment. However, for adequate profit to be recorded from a business there is a need for adequate control of cost. Robert (2007) stated that a company with adequate cost structure possess the higher chance of attaining its profit target.

Innes, John, Mitchell and Sinclair (2000) assert that the survival triplet today for any company is how to manage product/service cost, quality, and performance. The customers are continuously demanding high quality and better performance products/services and at the same time, they want the price to be reasonably low. The shareholders are also demanding a required rate of return on their investment from the company. Thus cost has become a residual. The challenge is being able to manufacture products or provide services within the acceptable cost framework. Innes, John, Mitchell and Sinclair (2000) concluded their study with a recommendation that cost management has to be an ongoing and continuous improvement activity within the company so as to enhance profitability and survival.

Primarily, the study aims at investigating the nature of relationship that exists between a company's production cost and its profitability using data from the manufacturing companies listed on the Nigeria stock exchange for a period of ten years between 2003 and 2012. *Other objectives of the study include* identifying the general pattern in the cost structure of manufacturing organization, examining the effect of cost reduction on the performance of manufacturing organizations, determining the effect of each component of the cost on the profit of

manufacturing organizations.

Although there have been substantial research efforts by different scholars in determining what seems to be the optimal cost reduction strategy for firms and the effect on the reported profit, yet there is no universally accepted theory. Hence, this study investigated what seems to be the relationship between each element of the cost structure and the firm performance. It is believed that this paper will contribute to the body of existing knowledge and as well make up for the paucity of scholarly paper in Nigeria on cost management and firm performance. Also, it will be of assistance to the company management in their cost reduction activities as well as management accounting students in their research. The rest of the paper is organized as follows. Section 2 highlights the previous relevant literatures on cost management practices and firm performance. Section 3 addressed the methodology employed in carrying out the study. Presentation of data and analysis was done in section 4. Discussion of findings occurred in section 5 while the study was concluded in section 6.

## 2. Literature Review

In this section, related literatures on the subject matter are briefly reviewed with a view to showing vividly the gap in knowledge and for easy interpretation of the research result.

### 2.1 Cost, Revenue and Profitability Behaviour

Cost behavior according to Asaolu and Nassar (2007) is the study of the ways in which costs vary or do not vary with the level of activity in an organization. They level of activity was described as the amount of work done or the number of events that have occurred. Drury (2005) on the other hand, also defines cost as expenses, which have been consumed in earning revenue. Profitability was however defined by Lucey (1997) as the excess of revenue and cost. In other word, profit is determined by deducting cost from revenue. This shows the linearity of profit and cost. The term “variable” and fixed cost otherwise known as indirect and direct expenses have been traditionally used in the management accounting literature to describe how costs react to changes in activity level. Short-term variable costs vary in direct proportion to the volume of activity that is, doubling the level of activity double the total variable costs. This was assumed by Fischer and Schmitz (1998) to lead to increase in profit. Consequently, total variable costs are linear and unit variable cost is constant (Adeniji, 2011).

In like manner, Horngren (2006), pointed out that a fixed costs remains unchanged in total for a given time period despite wide changes in the related level of total activity or volume. Furthermore, Horngren et al. (2009), added that costs are defined as variable or fixed with respect to a specific cost object and for a given time. Continuing this debate, Adeniji (2011), reported that over a sufficiently long period of time, virtually, all costs are variable. During such a long period of time, contraction in demand will be accompanied by reductions in virtually all categories of costs. For example, senior managers can be relieved of their jobs, machinery may not be replaced and buildings and land may be sold. Similarly, large expansions in activity will eventually cause all categories of costs being incurred by enterprise to increase. According to Olabisi et al. (2012) Step fixed costs are fixed within specific levels of activity within a given time period. Many items of cost are fixed costs in nature within certain levels of activity i.e. relevance range exists (Asaolu & Nassar, 2007). Step fixed costs are actually increased or decreased by a constant amount at various activity levels. Semi-variable costs include both fixed and variable components. The cost of maintenance is a semi-variable cost consisting of planned maintenance that is undertaken whatever the level of activity, and variable element that is directly related to the level of activity (Horngren, 2006).

### 2.2 Controllable and Non-Controllable Costs

Horngren (2006), defined a controllable cost as any cost that is primarily subject to the influence of a given responsibility center manager for a given time period. The allocation of costs to products is inappropriate for cost control, since the manufacture of a product may consist of different operations, all of which are the responsibility of different individual. The product cost will not therefore pinpoint costs to area of responsibility, to overcome this problem, Zengin and Ada (2010) suggested that costs and revenue must be traced to individual who are responsible for their incurrence. This system is known as ‘responsibility accounting’. The centers identified by Drury (2005) are: (a) a cost centre where managers are responsible for the expenses that are under their control, (b) a profit centre where managers are accountable for sales revenue and expenses e.g. selling and production department of a company, and (c) an investment centre where managers are normally accountable for sales, revenue and expenses, and also responsible for some capital investment decisions and able to influence the size of the investment.

Horngren (2006) asserted that the manager of the responsibility centre should classify costs and revenue allocated to responsibility centres according to whether or not they are controllable or non-controllable. Drury

(2005) asserted that all costs are controllable at some management level. For example, top management has authority to dispose of facilities and increase or decrease the number of managers employed. However, not all costs can be controlled at lower management levels, so there is need for costs to be classified into controllable and non-controllable categories in the performance reports that the accountant prepares for each responsibility centre. In like manner, Shah, Mali and Malik (2011) observed that if costs were not classified this way, it would be difficult to evaluate a manager's performance and In addition; managers may lose interest in cost control if they found that their performance was judged on items that were outside their control. Horngren (2006) argued that non-controllable costs may be controllable at a higher level of responsibility. For example, a responsibility centre manager may have no control over the number of supervisors employed in his department, but his superior may make this decision. Hence the supervision costs will be a non-controllable cost on the responsibility manager's performance report, but it will be a controllable cost on his superior performance report.

### 2.3 Theoretical Review

#### 2.3.1 Kaizen Costing System

Kaizen a term with Japanese origin (Sani & Allahverdizadeh, 2012), was launched by Masaaki Imai (Rof, 2012), the concept is a coinage of two Japanese words: KAI (Change) and ZEN (for better) (Rof, 2012). Thereafter, Yashuhiro Monden from Japan developed Kaizen Costing as the costing counterpart to the Kaizen approach (Industrial and Financial Systems, 2001). This concept refers to the process of 'continuous improvement' (Rof, 2012; Sani & Allahverdizadeh, 2012). The principle behind Kaizen Costing application is on achieving small, gradual but continuous improvements in the production process at minimal cost (Rof, 2012). Ellram (2000, cited in Modarress, Ansari, & Lockwod, 2004) observed that Kaizen Costing ensures that products meets or exceeds customer demands for 'quality, functionality, and prices' in order to sustain the product's competitiveness. This according to Rof (2012) can be achieved through a sequential elimination of all the processes that would increase the product's cost of production without a corresponding increase in value.

The philosophy emphasizes continuous improvement in our ways of life, social life and home life. This technique has made tremendous changes in management policies not only in Japan, but all over the world (Ogundele 2004). Blocher, Chen and Lin (1999), define Kaizen costing technique as the application of continuous improvement specifically to reduce costs; it focuses on making production and service delivery processes more efficient. Kaizen costing is used for making improvement to a process through small incremental amounts, rather than through large innovations. Unlike target costing, Kaizen costing is applied during the production stage of the product life cycle (Target cost is applied during the design stage).

Adeniji (2011), asserted that Kaizen costing is the process of continuous improvement, encouraging constant reductions by tightening the 'standard'. The cost reduction objective is to set for each process, and then adopt value analysis and Value engineering to achieve the set objective. With target costing, the focus is on the

product, and cost reductions are achieved primarily through product design.

### 3. Research Design and Methodology

By means of descriptive and inferential statistic, this study investigated the relationship between cost management practices and firm performance in manufacturing organizations. This method was considered appropriate by the researcher as it measures the type of relationship between two variables (dependent and independent variables). The study adopted the use of secondary data only which was extracted from the audited financial statement of the selected companies and the security and exchange commission fact book. 40 companies were selected for this analysis. The statistical methods used for this analysis includes the t-statistic and Pearson regression coefficient.

The general formula for the study model was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

Where;

Y = Profitability;

X<sub>1</sub> = Direct Material Cost;

X<sub>2</sub> = Direct Labour Cost;

X<sub>3</sub> = Factory Overhead Cost;

X<sub>4</sub> = Administrative Overhead Cost.

In the model,  $\beta_0$  = the constant term while the coefficient  $\beta_i = 1 \dots 4$  was used to measure the sensitivity of the

dependent variable (Y) to unit change in the predictor variables.  $\mu$  is the error term which captures the unexplained variations in the model.

#### 4. Presentation and Analysis of Data

Table 1. Descriptive statistic

	Mean	Std. Err	Median	Std. Dev.	Sam.Var.	Kurtosis	Skewness	Min.	Max.	Count
PT	10995	111	10943	703	494462	-0.572	0.7168	10147	12216	40
DM	32116	594	30250	3759	14133410	-1.7033	0.3033	27713	37201	40
DL	21677	352	20166	2229	4968596	-1.7826	0.4647	19725	24801	40
PO	6015	152	5829	964	928888	-0.3294	1.0203	5118	7771	40
AO	4920	125	4768	788	621844	-0.3281	1.0215	4188	6358	40

*Note.* The descriptive statistic for the study presented in table1 was from a sample of 40 companies listed on the Nigeria stock exchange for a period of ten years covering 2003 to 2012. In reference to the explanatory variables, DM refers to the direct materials which represent the mean of direct materials for the period under consideration. DL represent the direct labour while PO and AO were used to represent the production overhead and administrative overhead respectively.

Table 2. Model summary

Indicators	Coefficients
R	0.999983
R Square	0.999967
Adjusted R Square	0.999963
Standard Error of Estimate	4.269075
Observations	40

*Note.* In order to establish the statistical significance of the independent variables on the dependent variable (performance) regression analysis was employed. The results indicate that the independent variables; Direct materials, Direct labour, Production overhead and Administrative overhead are significant in explaining the performance of manufacturing organizations. This was supported by the R square 0.9999.

Table 3. ANOVA

Indicators	DF	SS	MS	F	Sig.
	4	19283374	4820844	264518.2	7.23E-78
	35	637.875	18.225		
	39	1928401			

*Note.* Analysis of variance from the regression output was presented in table 3.

Table 4. Regression coefficient

	Beta	Std.Error	t-stat.	P-value
Constant	6366.415	625.1709	10.18348	0.0205
Direct Material Cost	0.144138	0.019337	7.45385	0.0603
Direct Labour Cost	0.247432	0.031745	7.794284	0.0213
Production Overhead Cost	-0.606847	0.065707	-9.235896	0.0296
Administrative Overhead Cost	-0.742047	0.080217	-9.250514	0.0284

#### 5. Discussion and Interpretation of Findings

In this study, R-square value was found to be 0.999967. This implies that the combined effects of direct material cost, direct labour cost, production overhead cost and administrative overhead cost explained 99% of the variation in the profitability of manufacturing companies while the remaining 0.01 was due to the other variables not captured in this study.

Profitability was found to be negatively correlated with administrative overhead cost. This result supports the findings of Wadley and kuisi (1998) which suggests an inverse relationship between profit and non-variable cost.

It means that profitable manufacturing organizations maintained low administrative overhead cost. Also for this same relationship, the t-statistic was -9.2505 which falls into the rejection region of the critical table tested at 10% level of significance, thus our alternative hypothesis which predicts a significant relationship between profitability and indirect expenses was accepted.

Furthermore, the relationship between profitability and direct material cost was positive. This result was in disagreement with the postulation of Ayinde (2006) which affirmed that profit can be improved by cost reduction. This implies that an increase in independent variable direct material by one unit causes an increase in profitability by 0.1441. Furtherance to this, the t-statistic computed was 7.4539 while the critical value at 10% level of significance was 1.44, thus our alternative hypothesis which predicts a significant relationship between profitability and total cost is not rejected.

Similarly, it was found that profit increases as direct labour cost increases. This implies that an increase in direct labour leads to increase in production and revenue and thereby leads to increase in profitability. The findings of Forsaith et al (2003) which perceived a link between profitability and indirect cost was supported by this result.

Profitability was also perceived to be inversely related to the production overhead cost. Although, the relationship was statistically significant as supported by the t-value of 9.2357, it was not support by the existing literature such as Shal (2011), Mishra and Gupta (2010), thereby create avenue for further research.

## 6. Conclusion

The purpose of the present study was to investigate whether there is a significant relationship between manufacturing cost and firm performance of manufacturing organizations using data from the Nigeria stock exchange. 40 firms listed on the Nigeria stock exchange were selected for the period of 2003–2012. The study relied on secondary data extracted from the audited financial statements of the selected firm. Direct Material Cost, Direct Labour Cost, Production overhead Cost and Administrative overhead cost were considered as independent variables while profitability (operating profit) was taking as dependent variable representing firm performance. The results indicate a significant positive relationship between direct material cost, direct labour cost and firm performance. However, production overhead cost and administrative overhead cost were found to be negatively correlated with firm performance. It is therefore recommended that cost management strategies that focus on reduction of production overhead and administrative overhead should be embarked upon by the manufacturing organizations if their profit maximization and wealth creation objectives will be met.

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