

**COST VOLUME PROFIT ANALYSIS APPLICATION IN MANAGEMENT DECISION OF  
MANUFACTURING COMPANIES IN NIGERIA: A COMPARATIVE STUDY.**

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**ABSTRACT**

*The study examined the Application of Cost Volume Profit Analysis in Management Decisions of Manufacturing Organization. Using comparative survey design, primary sources of data and questionnaire as instrument of data collection with a sample size of 255 derived from population size of 700 with the use of Taro Yamane formula and data's analysis using regression method of data analysis; the findings of the study showed that cost volume profit analysis is important in decision making of any given production firm. The findings further indicates that unit variable cost and marginal cost etc which forms chain of production affect manufacturing organization and such manufacturing firms should apply the knowledge of cost volume profit analysis in their managerial decision. Therefore, it is recommended that Manufacturing effectively look at their chain of production, analyse it effectively before embarking on managerial decision in order to attain effective profit margin and results obtained from cost volumes analysis of a firm should be implemented in order to ensure that the firm do not lose in their cost of production.*

**Key Words:** Cost Volume Analysis and Managerial Decision

**1.0 Statement of the Problem**

In many manufacturing corporations, finding the right structure to support their decision making and execution of the company targets is a great challenge (Bartlett & Ghoshal, 1990). The complexity of the businesses causes great challenges for decision making and structures of corporations. The complexity in business leads to complex structures, which may result in role ambiguity and lack of accountability in decision making. Matrix structures are often burdened by these challenges (e.g. Sy & D'Annunzio, 2005). Since many manufacturing corporations are dealing with increasingly complex and competitive business environments and need to leverage vast

amount of resources with the lightest possible personnel. The best possible means of taking appropriate decision often times becomes a great problem if the cost of production is not properly analysed since organizational structures are relevant challenges for all multinational manufacturing corporations (Sy & D'Annunzio, 2005). Moreover according to various scholars (Salonen, 2011); Oliva & Kallenberg,(2003); Galbraith (2002) the commoditization and declining margins of the manufacturing business is a problem which is adding pressure to many of the multinational manufacturing companies to develop service transition strategies. These strategies are developed to support the weakening core manufacturing business in order to sustain competitive advantage of the firm (Salonen, 2011). All in all, the global competitive environment is a challenge to manufacturing organization which is forcing companies to make most out of scarce resources and to be able to adapt fast to new circumstances around them. In today's world flexibility and ability to be responsive to changes have-become ever more important (Galbraith, 2002).

According to Sy & D' Annunzio (2005), the small and task oriented units of manufacturing, need to be leveraged to increase the efficiency of the organization. In a case where multinational manufacturing company, has adapted cross functional organizational structure and is managing its businesses in a matrix organization as projects to increase efficiency. However ,the complexity of the matrix structure is currently causing challenges resulting in role ambiguity, lack of accountability, silo focus and lack of adequate profit margin. In addition to requirements for flexibility,an organization is under strategic transformation. Successful transformation requires re-evaluation of the current corporate structure, decision making culture processes which is made much easier when a company analyses its manufacturing cost through volume cost profit analysis process. Due to this challenges which has become a serious problem in manufacturing sectors, this study will examine the comparative study of volume cost profit analysis in management decisions of manufacturing organization.

### **1.1 Objectives of the Study**

In order to give direction and meaning to this study, the main objective of this study is to investigate the application of cost volume profit analysis in management decisions of manufacturing organization. Other specific objectives are to:

1. Investigate the extent total cost analysis affect managerial decision of an organization.
2. Examine the extent unit variable cost of a manufacturing organization affect managerial decision of a firm.
3. Determine the extent marginal cost affect the profit margin of a manufacturing organization and their managerial decision.
4. Ascertain the ways total revenue generated by organization affect its managerial decision.

### **1.2 Research Questions**

The following research questions posed was use as a guild to the examined in the study.

1. To what extent do total cost volume analysis aid a firm in its managerial decision?
2. To what extent do unit variable cost impact on manufacturing organization and their managerial decisions?
3. To what extent have marginal cost affect the profit margin of a manufacturing organization and their managerial decision?

4. In what ways do total revenue generated by organization affect its managerial decision?

### **1.3 Research Hypotheses**

The following hypotheses designed were formulated and tested for this study as follows.

H0<sub>1</sub>: Total cost analysis does not significantly affect managerial decision of an organization.

H0<sub>2</sub>: Unit variable cost of a manufacturing organization does not significantly affects managerial decisions of the firm.

H0<sub>3</sub>: Marginal cost of a firm does not significantly affects profit and manufacturing organization managerial decisions.

H0<sub>4</sub>: Total revenue generated by manufacturing organization does not significantly affects managerial decision of the firm.

## REVIEW OF RELATED LITERATURE

### 2.0 Concept of volume cost analysis

Cost-Volume-Profit (CVP) analysis is a managerial accounting technique that is concerned with the effect of sales volume and product costs on operating profit of a business. It deals with how operating profit is affected by changes in variable costs, fixed costs, selling price per unit and the sales mix of two or more different products.

According to Hilton,(2000), Cost-Volume-Profit analysis is a study of investigating the relationships among sales volume, expenses, revenue, and profit. This technique summarizes the effects of changes in an organization's volume of activity on its costs, revenue, and profit.

### 2.1 Conceptual Framework

Managers of profit seeking organizations study the effects of output volume on revenue (sales), expenses (costs), and net income (net profit). Therefore, the study of this variables are known as cost-volume-profit analysis (Horngren*et.al.*, 2002:47). With the help of cost-volume-profit analysis, management accountants are able to determine the effect of producing and selling one more unit on costs, revenue and profit. In addition, the effects of price and cost changes on profit can also be studied with the help of the cost-volume-profit (CVP) analysis.

### 2.2 Cost Analysis For Product Costing And Pricing Decisions

One area where cost analysis is used in managerial decision making is in setting product or services prices. Different pricing approaches are used by business organizations, which include cost-based pricing, market-based pricing, target pricing, and others. Also, business organizations are likely to adopt diverse pricing strategies. Noble and Gruca (1999) define pricing strategy as the means by which a pricing objective is to be achieved. Most pricing strategies imply a relative price level related to costs, competition, or customers. Determinants are the internal and external conditions that determine managers' choices of pricing strategies. Diamantopoulos (1994) refers to price sensitivity, product differentiation, and potential for economies of scale collectively as the "pricing environment" describing them as the elements that constitute the setting within which price decision-making takes place. Nagle and Holden (1995) state that when customers are insensitive to price and the products are highly differentiated; a firm can use a price skimming strategy to achieve its profit maximization objective. Nagle and Holden (1995), on the other hand, state that when a firm is faced with highly price sensitive customers can reduce its unit costs by spreading its fixed costs over a high volume of output to allow it to use penetration pricing strategy to achieve its profit maximization objective.

Noble and Gruca (1999) mentioned four pricing situations for industrial goods pricing, namely: new product, competitive, product line, and cost-based. They further identify pricing strategies adopted under each pricing situations. Consequently, they identified three pricing strategies most closely associated with new products, namely: skim pricing, penetration pricing, and experience curve pricing. Every one of these strategies shares the distinction of being appropriate in the early life of a product. Therefore, the age of the product being priced will determine whether a manager chooses one of the new product pricing strategies. Competitive pricing situation focuses on the price of the product relative to the price of one or more competitors. The stage of the product life cycle and ease of estimating demand will influence whether a manager will choose one of these competitive pricing strategies. Product line pricing situation focuses on the price of the focal product influenced by other related products or services from the same company.

Managers in firms which sell goods and services related to the focal product will choose one of the product line pricing strategies. Product costs are widely used as major inputs in product pricing decisions. Hall and Hitch (1939) state the general pattern of price setting to be cost-based. On the hand,Bonoma(1988) found that managers continue to use cost data and information as primary pricing

concern. According to Diamantopoulos (1991), cost-plus pricing is by far and away the most widely used pricing approach. Cost-plus pricing is an inward oriented strategy, involving company and product considerations, Cost-based pricing situation focuses on the internal costs of the firm including fixed and variable costs, contribution margins, and so on. Several pricing strategies, such as target-return pricing, markup pricing, rate of return pricing, contribution pricing, contingency pricing are included as part of cost-based pricing strategies. Lere (1986) presents three common product costs, namely variable costing, full absorption costing, and normal-overhead absorption costing. He mentioned that variable costing leads to the complete-analysis price for firms with linear cost curves where demand and cost curves are deterministic and the decision maker is risk-neutral. Thus, it can be said that reliable cost data and cost analysis has become a basic input in pricing decisions in both product manufacturing and service organizations.

### **2.3 Cost Analysis For Costs Management**

Managers face diverse problems in running their organizations, some internal and others external in nature. Selling prices tend to become inflexible, employees get organized and demand higher wages and other benefits, taxes increase, and governments impose new regulations. As a result of these and other factors, managers soon realize that costs must be controlled and reduced if continuous profits were to be earned. Furthermore, management begins to think of efficiency in company operations and lower costs. To accomplish these desired results, managers need cost and statistical records of current performance to compare with planned performance as a means of watching and controlling costs Crossman (1953).

Stanford (1948) defines cost control as the guidance and regulation of the internal operations of a business, by means of modern methods of costing, through which manufacturing and sales performances are measured. Jackson (1974) puts the purpose of cost control to be the discovery and correction of defects and weaknesses as these things consume resources of organizations unnecessarily and thereby increase its costs. Cost management refers to systems, method and practices employed by an organization to reduce costs of products and services without sacrificing quality.

Both cost control and cost management activities are important to assist management in its decisions and this is achieved through proper cost volume profit analysis. Current developments in cost and management accounting literature indicate the emergence of new concepts, which include value chain analysis, Activity-based Costing/Activity-based management (ABC/ABM), Target Costing, Life Cycle Costing (LCC), and Kaizen Costing. Consequently, the scope of cost analysis has been expanded to such areas as well. In ABC/ABM, activities consume resources (people, materials, equipment) and it becomes necessary to measure the consumption of these resources in financial terms. Cost analysis under ABC/ABM would then require the accumulation and reporting of costs by activities which then helps management to reduce costs by minimizing the cost of non-value added activities. Target costing as stated by Horvath (1993) is as a cost management concept which is built on a comprehensive set of cost planning, cost management and cost control instruments which are aimed primarily at the early stages of product and process design in order to influence product cost structures resulting from the market-derived requirements. The target costing process involves value chain analysis and requires coordination of all product related functions in order economize on cost at each stage of the value chain. Monden (1989) presents three necessary steps in total cost management and these areas are :

- (1) Planning a product that meets customers' demand for quality.
- (2) Determining a target cost under which customers' demand for quality is attainable using a blueprint based on value engineering, and
- (3) Determining which processes achieve the target cost in production performance.

In a series of three articles, Schnoebelen (1993) describes the design and implementation of an advanced cost management system (ACMS). To provide maximum benefit, these new cost management

concepts must be practically integrated into the business processes and operating systems. In conventional product costing methodologies only costs incurred in the manufacturing process are applied to products to determine the cost of manufacturing. The new thinking in cost management has forced accountants to break through the typical product costing barriers by applying all organizational costs in a more relevant and enlightening way.

## 2.4 Theoretical framework

Cost-volume-profit analysis provides a sweeping financial overview of the planning process. It handles questions of the “what if” theme and is built on simplifying assumptions about the pattern of behaviour of revenue and cost (Horngren, Foster and Datar, 1999). The study is anchored on [Adam Smith](#) classical economics theory propounded in late 18<sup>th</sup> to early 19<sup>th</sup> century. This theory post that firms in a perfect competition environment earn normal profit if their marginal revenue is equal to their marginal cost. The underlying assumption in such analysis is that managements goal is profit maximization where profit is the difference between total revenue and total cost. Therefore, managements job is to determine and take the most profitable course of action after analysing the cost of production. Generally, accountants do accept the classical economic theory. However, as noted by Mahar and Deakin (1994), they make two simplifying assumptions viz: (i) they assume linearity of total revenue and total cost curves which economists usually assume to be non-linear. However, the linearity simplifications are usually considered valid within some appropriate range of volume termed the relevant range. (ii) The opportunity cost of invested equity capital is usually excluded in the accountant cost measures, while it is included in the economist’s model. Accordingly, in economic terms, the accountant measurement of total cost is understated. Furthermore, Horngren, Foster and Datar (1999; 2002) while agreeing with the points above, detailed the assumptions on which CVP model is based in its common application to include:

- 1) Changes in the level of revenues and costs arise only because of changes in the number of product (or service) units produced and sold. In other words, output is the only revenue and cost driver.
- 2) The analysis either covers a single product or assumes that the sales mix when multiple products are sold will remain constant as the level of total units sold changes.
- 3) All revenues and costs can be added and compared without taking into account the time value of money.
- 4) Total cost can be divided into a fixed component and a component that is variable with respect to the level of output.
- 5) The unit selling price, variable costs and fixed costs are known and constant.
- 6) When graphed, the behaviour of total revenues and total costs are linear.

The use of this theory is appropriate since the aim of any profit making organization is to maximize profit which can be achieved by analysing the organization cost of production. Hence, this makes the use of this theory in this study to be appropriate.

## 2.5 Empirical Review

khartiket *al* (2011) using a descriptive statistics and correlation analysis, they found that profitability more or less depends upon the better utilization of resources and to manpower. According to them, it is worthwhile to increase production capacity and use advance technology to cut down cost of production and wage cost in order to increase profitability, not only against the investment, but also for investor’s return points of view and this is possible when the cost volume analysis is utilized to achieve the best decision that will enable the organization attain a better level of profit. their study and the present study are related in that both study is aimed at attaining best organizational decision which will earn

the organization a better profit level. But both their study and the present study differs in terms of the tool of data analysis. While their study adopted a correlation method of data analysis, the present study will be adopting a regression analysis.

Eljelly (2004) elucidate, that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability.

Vijayakumar and Venkatachalan (2003) In their study indicated a moderate trend in the financial position and the utilization of working capital, variations in working capital size should be avoided attempts should also be made to use funds more effectively, by keeping an optimum level of working capital. Because, keeping more current assets cause a reduction in profitability. Hence, efforts should be made to ensure a positive trend in the estimation and maintenance of the working capital.

Shine and Soemen (1998) using correlation analysis and a survey research design found that there is a strong negative relation between the cash conversion cycle and corporate profitability for a large sample of listed American companies form 1975-1994 periods due to poor management decision.

Saravanan (2001) and Marc Deloof (2003) made a study on working capital management in ten selected non-banking financial companies. For the study they employed several statistical tools such as regression and correlation on different ratio to examine the effective management of working capital. It was found that companies with large amount of cash invested in working capital and the way the manage their production cost will have a significant impact on the profitability of companies and the decision of the organization. Their study is also related to the present study in that both their study and the present study is focused on management decision making of a firm through effective cost volume analysis of a firm. Bothe study is also related in term regression analysis used both differs in the variables used for the study. While their study used working capital as their variable, this present study used cost of production as one of the variables adopted for the study.

Aubrylyimo, Dr.Reubenj.LmwamakimbullahkikoF.S.Hamza, (2010) using time series trend analysis found costs resulting from poles being rejected, reworked or down-graded to be the highest at the study mill. They noted that the cost of quality were so high and as a result they negatively affect the financial performance of the mill.-cost of quality and its effect on company's profitability. Their study too is related to the present study since both their study and the present study looked at cost as a variable being which can have effect on profit making of a firm. But their study differs from the present study in terms of tools used in analysing data collected. While they used time series trend analysis, this present study used regression analysis.

Vergauwen G. M. C. Philip and Kerckhoffs Christian (2005) using a correlation analysis and a survey method of research did a case study which showed Activity Based Costing (ABC) and throughput accounting (TA) as accounting tools to "structure" technical (process) insights in an accounting context. The case shows how working-floor insights and production process data can be used in the computation of income statements that are relevant managerial decision making.

Cadez Simon (2006) adopting a regression analysis, identified 17 Strategic management accounting (SMA) techniques reported data from 108 large Slovenian manufacturing companies. This study has revealed that there is a wide range of application rates for the techniques appraised: capital budgeting, quality costing and competitor performance appraisal are the most widely used; valuation of customers as assets, lifetime customer profitability analysis and life cycle costing are the least widely used. KhajaviShokrollah and Nazemi Amin (2006) in their study using time series analysis found that the world-class companies should use the newest and modern techniques in manufacturing. Flexibility in manufacturing, advanced information technology, programming and control, sketching and product

innovation, organization structure, financial controls, bench marking, long range strategic plans, comprehensive quality management, and personnel active partnership in business operation and business process are considered as the main characteristics of world-class companies. In continuation, a model will be presented, on the basis of which, management accounting system can help these companies. In order to establish this model, activity based costing techniques, target costing, theory of constraint, balanced scorecard, and manufacturing on time was adopted.

WegmannGrégory (2007) has analyzed the management accounting applications which try to improve the Activity-based Costing method. He also shows several proposals: Customer-driven ABC, Interorganizational Cost Management, Resource Consumption Accounting and Time-driven . Using regression and correlation analysis noted that the list accounting models can enable organization to analyse their cost of production and decide on what to do to achieve a better profit level.

Bidhan C. M. (2007) using factor analysis examined the status of use of management accounting techniques in the manufacturing enterprises of Bangladesh. He discovered that modern techniques like Activity-Based Costing, Target Costing, Just-in-Time (JIT), Total Quality Management (TQM), Process Reengineering and The Theory of Constraints (TOC) were not used in public and private sector manufacturing enterprises but a few Multinational Corporations (MNC) are using some of techniques like JIT and TQM. Also traditional techniques like ratio Analysis, Standard Costing, Cash Flow Analysis were found widely used.

Askarany Dr Davood and Yazdifar Hassan (2007) examined the level of association between attributes of innovation and the diffusion of activity based-costing. Using regression and a descriptive survey research method suggested that the relatively low implementation of ABC across firms implies that decision makers remain unconvinced that whether ABC's advantages over traditional accounting techniques are high enough to pursue them to implement ABC in practice based on two surveys. The results of the first survey, carried out in 1997 within the Plastics and Chemicals Industries Association (PACIA) in Nigeria proposed the perceived advantages and disadvantages of management accounting techniques as the most influential contextual factors influencing the implementation of accounting changes. The findings of the second survey carried out in 2002 within industries registered with CPA Australia as well as with PACIA highlight the significant impact of attributes (advantage/disadvantage) of innovation on decision to implement or not to implement management accounting innovations.

Hart F. J. De and Wet De Johannes (2008) using correlation analysis investigated that the existing management accounting and financial management techniques and noted that the technique can be adjusted to incorporate the EVA perspective. LamminmakiDawne (2008) conducted a study on the nature and antecedents of accounting systems involved in hotel outsourcing decision-making and control using survey research design method and regression analysis. They observed that it appears that accounting appraisal of outsourcing proposals rarely include long-term oriented sophisticated techniques such as the discounting of future cash flows. They further concluded that this may be because outsourcing decisions are not conducted in the context of the formal capital budgeting process.

BuddeJorg (2009) investigates the role of variance analysis procedures in aligning objectives under the condition of distorted performance measurement. A risk-neutral agency with linear contracts is analyzed, whereby the agent receives post-contract, pre-decision information on his productivity. If the performance measure is informative with respect to the agent's marginal product concerning the principal's objective, variance investigation can alleviate effort misallocation. These results carry over to a participative budgeting situation, but in this case the variance investigation procedures are less demanding. YeshminFarjana and Das Sumon (2009) using correlation analysis conducted a study on financial institutions in Bangladesh. Their finding revealed that managers of the financial institutions are very much satisfied in application of budgetary control analysis and variance analysis to measure their performance among the fourteen management accounting techniques. At the same time managers



were very much dissatisfied in application of segment reporting. YeshminFarjana and FowziaRehana (2010) have made a comparative analysis in a study where the result has focused on the variability of management accounting practice in manufacturing and service industries. Using a regression analysis, their study revealed that ratio analysis, budgetary control, CVP analysis, variance analysis and fund flow analysis are using frequently in managerial functions such as in managerial decisions.

Hoozee Sophie and Bruggeman Werner (2010) using correlation analysis conducted a study which shows how collective worker participation and leadership style influence the emergence of operational improvements during the design process of a time-driven *activity-based costing* (ABC) system in a case study setting. The case findings suggest that, for operational improvements to appear during the design process of a time-driven ABC system, collective worker participation and appropriate leadership styles are indispensable. On the other hand, Hansen Allan (2010) presents an analysis of the resolution of organizational externalities through the use of non-financial performance measures for planning. Using a comparative case study, correlation and regression analysis illustrates how centralized controllers choice of non-financial performance measures and target setting in two companies provides critical information to decentralized agents regarding how to balance their performance with the performance of other decentralized agents in their organization.

### **The gap in Literature**

There a lot of empirical literatures especially in Nigeria, on the application of accounting models used in analysing the cost of expenditure in organization and on which managerial decision can be derived. One aspect of accounting that is often emphasized is financial accounting which provides historical reports about the financial activities of an organization at the end of its financial year. The other aspect of accounting called cost and management accounting model such as CVP which provides continuous day-to-day reports for strategic and tactical decision making. Organizations need reports that are futuristic to enable them manoeuvre through the threats in their environment. Therefore, none of these literatures discussed how to apply CVP model to cover non-linear cost analysis and manoeuvre it to typical decision problems of profit organizations which is the central concern of this paper. Hence, this study aimed at closing this gap in knowledge.

## **METHODOLOGY**

### **3.0 Research Design**

A comparative survey design was adopted by the researcher in the course of the study. Primary source of data was used in the research and was collected from staffs of Dangote flour mill and Pepsi bottling company. The use of this method is appropriate since it allows the researcher to easily collect and compare data from the two quoted companies' used.

### **3.1 Area of the Study**

Lagos and Enugu in south west and south east Geo-political zone respectively was used as the areas of study. This area was used since the quoted manufacturing company used as the case study is located in this area.

### **3.2 Population of the Study**

The population of the study was made up of 700 (sourced from the organization used for the study) members of management board from the two organization which are saddled with the responsibility of making decision in the various organization used for the study.

### **3.3 Sample Size and Sample Techniques**

The researcher derived a sample size of 255 from a population of 700 which was statistically derived using Taro Yamane formula shown below.

$$n = \frac{N}{1+N(e)^2}$$

Where n = sample size

N = Population

e = Level of significant error(0.05)

$$n = \frac{700}{1+700(0.05)^2}$$

$$n = \frac{700}{1+700(0.0025)}$$

$$n = \frac{700}{1+1.75}$$

$$n = \frac{700}{2.75} = 254.5 \approx 255$$

### 3.5 Instrument of Data Collection

Questionnaire was the main data collection tool used in the collection of field data from the respondents. Questionnaire are most useful tool for data collection, especially when large number of respondents are to be reached in different geographical location. This gives credence to the use of this collection tool as a means of collecting field data. The questionnaire consisted of part A and B. Part A sought respondents personal data while part B sought respondent responses on the research questions posed. A purposive probability sampling techniques method was employed in distributing the questionnaire to the respondent. This is because the purpose of the research is to investigate the application of Cost volume profit analysis in management decisions. The researcher administered the questionnaire on face to face bases to the respondent. This was done in order to ensure that the researcher efficiently gather relevant information as regard the topic under investigation.

### 3.5 Method of Data Analysis

Field data that were collected from the respondents was presented in table and analyzed using multiple linear regression analysis using Minitab 17 to determine the significant role played by cost volume profit analysis in managerial decision

### Decision Rule

The research hypothesis was tested at 0.05% probability level and any value less than 0.05% was considered to be significant .

### 3.6 Reliability of the Instrument

The reliability of the instrument was established using test re-test method. Fifty copies of the questionnaire were administered to the respondents and was used for the reliability test. The copies of the questionnaire were administered to the respondent one week after main field data collection. Coefficient of reliability of their responses was tested using pearson product moment correlation coefficient analysis.

### 3.7 Measurable Variable (Operational Definition of Variables)

The measurable variable for this research were the independent variable and the dependent variables. The independent variable are fixed cost(FC), variable cost(VC), total revenue(TR) and total fixed cost(TFC) dependent variable was made up of managerial decision.

#### Regression model specification

$$Y = a_0 + FC + a_1 * TC + a_2 * VC + a_3 * FTC + a_4 * TR + E \text{-----} 1$$

Where

Y= dependent variable( Managerial Decision)

$a_0$  = constant

FC =fixed cost.

VC = variable cost.

TC =Total revenue.

TFC = Total fixed cost.

E=error-term

### 4.0 Data Presentation and Analysis

This chapter presents the data collected from the respondents and the analytic result of the data collected. Out of the 255 copies of the questionnaires distributed, 15 copies were not correctly filled while 5 copies were not returned to the researcher. Therefore the researcher was left with 235 copies of the questionnaires to work with.

**Table 1: Gender Distribution of Respondents**

Categories	Percentage Responses(%)
Male	64
Female	36
<b>Total</b>	<b>100</b>

From gender distribution table 1 above, result indicated that 64% are male respondents while 36% are female respondents. This implies that the research employed the responses of both male and female staff of both Dangote flour mill and Pepsi bottling company.

**Table 2: Age Distribution of Respondents**

Categories	Percentage Responses (%)
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18-30yrs	51
31-42yrs	38
43-60yrs	9
Below 70 yrs	5
<b>Total</b>	<b>100</b>

Table 2, depict that 51% of the respondents are in age category of 18-30yrs, 38% are in age bracket of 31-42yrs, 9% are in age range of 43-60yrs while 5% are below 70yrs of age. This response from the respondents is a clear indication that the respondents from which responses were sourced from are made up of various age groups.

**Table 3: Marital Distribution of Respondents**

<b>Marital Status</b>	<b>Percentage Responses (%)</b>
Single	60
Married	40
<b>Total</b>	<b>100</b>

Table 3, shows that 60% of the respondents are single while 40% are married. This implies that the research sort the view of both married persons and non marriedperson perception of the application of cost volume analysis in managerial decision in their firm.

**Table 4: Number of Respondent From Each Firm Used**

Categories	Percentage Responses (%)
Pepsi Company	40
Dangote Flour	60
<b>Total</b>	<b>100</b>

Table 4 indicated that from Pepsi Company 40% of responses to the questions posed while 60% who responded to the questions posed were from Dangote flour. It means that the research sort responses from firm which over time have been applying cost volume profit analysis in their managerial decisions.

**Table 5: Educational Qualification of Respondents**

Categories	Percentage Responses (%)
OND,NCE	3
HND,B.Sc,B.A	60
M.Sc.MPA	34
PhD	1
<b>Total</b>	<b>100</b>

Table 5 indicated that 3% of the respondents are OND and NCE holders,60% are HND,B.sc and B.A holders; 34% are M.sc,MPA while 1% are PhD holders. This means that research sort the views of different respondents with different level of qualification in various field of knowledge.

#### 4.1 ANALYSIS OF RESPONDENT RESPONSES FROM DANGOTE FLOUR

##### RESEARCH QUESTION 1: To What Extent do Total Cost Volume Analysis Aid A Firm In Its Managerial Decision?

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 1

**TABLE 1**

Categories	Percentage Responses (%)
High Extent	83
Low Extent	10
No Impact	7
<b>Total</b>	<b>100</b>

In responses to research question one, result in table 1 depict that 83% of the respondents agreed and responded that total cost volume analysis help a firm in its managerial decision to a high extent, 10% responded that it is to a low extent while 7% responded that it has no impact on managerial decision. The high responses of respondents who agreed and responded that cost volume analysis helps in managerial decision supersedes that of those that responded that it is to a low extent and that of those that said it has no impact. This means that those who responded that cost volume analysis is of very high benefit in managerial decision must have been benefiting from the use of cost volume analysis in their firm managerial decision.

### **RESEARCH QUESTION 2: To What Extent Do Unit Variable Cost Impact on Manufacturing Organization And Their Managerial Decisions?**

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 2

**TABLE 2**

<b>Categories</b>	<b>Percentage Responses (%)</b>
High Extent	72
Low Extent	35
No Impact	2
<b>Total</b>	<b>100</b>

In answer to research question 2, result in table 2 showed that 72% of the respondent responded that Unit variable cost affect manufacturing organization managerial decision to a high extent, 35% also responded that the effect is to a low extent while 2% responded that it has no effect. A close examination of the responses evidently shows that the responses of those who responded that Unit variable cost affect manufacturing organization managerial decision is more than the responses of the other respondent. Hence, it evidently indicated that the Dangote flour firm do experience the contribution of unit variable cost effect in their managerial decision.

### **RESEARCH QUESTION 3: To What Extent Have Marginal Cost Affect The Profit Margin Of A Manufacturing Organization And Their Managerial Decision?**

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 3

**TABLE 3**

<b>Categories</b>	<b>Percentage Responses (%)</b>
High Extent	61
Low Extent	30
No Effect	9
<b>Total</b>	<b>100</b>

Addressing the extent marginal cost affect the profit of a manufacturing organization and their managerial decision as posed in research question 3, result in table 3 evidently indicates that 61% of the respondent from Dangote flour mill agreed that to a high extent, marginal cost affect the profit making of a manufacturing organization. It was also noted that 30% responded that the effect of marginal cost on profit making of manufacturing organization is to a low extent while on the other hand, 9% responded that it has no effect. The high responses of those who responded that marginal cost affect the profit making to a high extent supersede the responses of those who said it ids to a low extent and others who said it has no effect. This is implies that when there is additional cost of producing a product by a manufacturing company, the level at which the organization makes more profit is affected and for such reason, the firm has to consider those cost in their managerial decision in other to enable the firm to keep producing such commodity.

#### RESEARCH QUESTION 4: In What Ways Do Total Revenue Generated By Organization Affect Its Managerial Decision?

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 4

**TABLE 4**

Categories	Percentage Responses (%)
Improves the level of managerial decision	70
Decreases the level of managerial decision	30
<b>Total</b>	<b>100</b>

Responding to research question 4, result in table 4 indicates that total revenue generated by organization affect extent of managerial decision by improving the level of managerial decision or decreasing the level of managerial decision as indicated by 70 and 30% responses of the respondents respectively. This implies that if the total revenue generated by an organization is high, the organization would improve in taking more positive decision in order to achieve more revenue but, if the total revenue generated is low it will reduce the kind of managerial decision taken by the firm in order to address the effect of low revenue generation.

#### 4.2 ANALYSIS OF RESPONDENT RESPONSES FROM PEPSI BOTTLING COMPANY

##### RESEARCH QUESTION 1: To What Extent do Total Cost Volume Analysis Aid A Firm In Its Managerial Decision?

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 1

**TABLE 1**

Categories	Percentage Responses (%)
High Extent	65
Low Extent	19
No Impact	16
<b>Total</b>	<b>100</b>

In responses to research question one, result in table 1 depict that 65% of the respondents agreed and responded that total cost volume analysis help a firm in its managerial decision to a high extent, 19% responded that it is to a low that it has no impact on managerial decision. The high responses of respondents who agreed and responded that cost volume analysis helps in managerial decision is more than that of those that responded that responded that it is to a low extent and that of those that said it has no impact. This means that those who responded that cost volume analysis is of very high benefit in managerial decision in pepsi company must have benefited from the use of cost volume analysis in their firm managerial decision.

##### RESEARCH QUESTION 2: To What Extent Do Unit Variable Cost Impact on Manufacturing Organization And Their Managerial Decisions?



DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED  
AND PRESENTED IN TABLE 2

**TABLE 2**

<b>Categories</b>	<b>Percentage Responses (%)</b>
High Extent	72
Low Extent	30
No Impact	18
<b>Total</b>	<b>100</b>

In answer to question 2, table 2 results indicates that 72% of the respondent responded that unit variable cost affect manufacturing organization managerial decision to a high extent, on the other hand,30% responded that the effect is to a low extent while 18% responded that it has no effect. An examination of the responses evidently shows that the responses of those who responded that unit variable cost affect manufacturing organization managerial decision is more than the responses of the other respondent. Hence, it evidently indicated that the Pepsicompany have noticed the usefulness and benefit of unit variable cost effect in their managerial decision.

### RESEARCH QUESTION 3: To What Extent Have Marginal Cost Affect The Profit MarginOf A Manufacturing Organization And Their Managerial Decision?

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 3

**TABLE 3**

Categories	Percentage Responses (%)
High Extent	60
Low Extent	30
No Effect	10
<b>Total</b>	<b>100</b>

In answer to the extent marginal cost affect the profit of a manufacturing organization and their managerial decision as posed in research question 3, result in table 3 indicates that 60% of the respondent from pepsi company agreed that to a high extent, marginal cost affect the profit margin of a manufacturing organization. It was also observed and noted that 30% responded that the effect of marginal cost on profit making of manufacturing organization is to a low extent while on the other hand, 10% responded that it has no effect. The high responses of those who responded that marginal cost affect the profit margin positively to a high extent is greater than the responses of those who said it is to a low extent and others who said it has no effect. This implies that when there is additional cost of producing a product by a manufacturing company, the level at which the organization makes more profit is affected and based on that, the firm has to consider those cost in their managerial decision in order to enable the firm to keep producing such commodity.

### RESEARCH QUESTION 4: In What Ways Do Total Revenue Generated By Organization Affect Its Managerial Decision?

DATA COLLECTED IN RESPECT TO ABOVE RESEARCH QUESTION ANALYSED AND PRESENTED IN TABLE 4

**TABLE 4**

Categories	Percentage Responses (%)
Improves the level of managerial decision	70
Decreases the level of managerial decision	30
<b>Total</b>	<b>100</b>

In respect to research question 4, result in table 4 showed that total revenue generated by organization affect extent of managerial decision by improving the extent of managerial decision or decreasing the level of managerial decision as indicated by 70% and 30% responses of the respondents respectively. This means that the more higher total revenue generated by an organization, the organization would improve in taking corresponding decision in order to achieve more revenue but, if the total revenue generated is low it will reduce the kind of managerial decision taken by the firm in order to address the effect of low revenue generation.

## Hypotheses Testing

**Hypotheses one(1):** Total cost analysis does not significantly affect managerial decision of an organization ( $H_{01}$ ).

In testing the hypotheses, at F-cal of 0.080 the P-cal is 0.02 as shown in appendix B. This implies that  $P < 0.05$ . The study is significant hence, null hypotheses stated is rejected at this level of significance. The value of F-cal(0.080) which above zero is an indication that the model specification of this study is significant and reliable for making inferences.

**Hypotheses Two (2):** Unit variable cost of a manufacturing organization does not significantly affect managerial decisions of the firm( $H_{02}$ ).

Testing this hypotheses, regression analysis result shown in Appendix B also indicates that at F-cal value of 13.8, P-cal value is less than 0.05 ( $P < 0.05$ ). At this level of significance ( $P < 0.05$ ), the stated null hypotheses is rejected. This means that Unit variable cost of manufacturing organization significantly affect managerial decision. The value of F-cal (13.8) is a clear indication that the stipulated model for this study is reliable for making inference.

**Hypotheses Three (3):** Marginal cost of a firm does not significantly affect profit margin and manufacturing organization managerial decisions ( $H_{03}$ ).

In testing hypotheses 3 as stated in research hypotheses 3, regression result in appendix B number 3, indicated that at F-cal value of 0.46; P-cal value is less than 0.05 ( $P < 0.05$ ). At  $P < 0.05$  level of significance, null hypotheses posed is rejected. This evidently means that managerial cost of a firm significantly affect manufacturing organization managerial decisions.

**Hypotheses Four (4):** Total revenue generated by manufacturing organization does not significantly affect managerial decision of the firm ( $H_{04}$ ).

Regression result shown in Appendix B number four, shows that at F-cal value of 24.54, P-cal value is less than 0.05 significant level. At this level of significance null hypotheses stated in research hypotheses four is rejected. Hence, total revenue generation of a manufacturing company significantly affect managerial decision.

## 5.0 Summary Of Finding, Conclusion And Recommendation

### 5.1 Summary Of Finding

The finding of the study showed that total cost volume analyses helps firms in their managerial decision. From the finding made from Dangote flour and pepsi bottling company, its evident that total cost volume analysis have really being of benefit to the two organization for a long period of time. This result may be due to the fact that volume cost analyses of these organizations have adequately enabled the organization to effectively manage their organization through effective managerial decision.

The findings of the study also showed that unit variable cost also affect the extent to which manufacturing organizations makes their decision. This finding evidently indicated that unit variable cost is effectively considered by manufacturing organizations before they embark on their managerial decision. This is due to the fact that these firms must have seen the need of unit variable cost in the growth of their organization and for such reason considers it to be very effective in when taking decisions on issues pertaining their manufacturing procedures. The study further showed that marginal cost which is another component of cost volume profit analysis to a high extent affect the level of managerial decisions of manufacturing organizations. This could be to the fact that marginal cost affect the profit making of manufacturing organization as a result of additional cost of producing a product by a manufacturing company. The findings is consistent and agreement to Dunne and Wolk (1977)

observation and statement. According to them modular contribution-margin income statement spotlights the behaviour of controllable costs and indicates each segments of contribution to profit by each fixed costs unit.

From the findings it was evidently clear that total revenue generated by manufacturing organization also affect the level of managerial decision. In that when the revenue generated is high, the firm embark on decisions on how to maintain such standard and improve the more. But when a firm revenue generation is low they also embark on decision to that will enable the firm increase their level of revenue generated. This finding agrees to what Sikidar and Gautam (1999) observed. According to them, for financial services organization to remain competitive; they must have the ability to measure profitability at any level-and that profitability analysis can be effective tool for identifying or confirming a distressed company's underlying problems. Hence, cost volume profit analysis will enable Industries that prosper have a strong customer focus in their decisions.

From the finding s it was evidently clear that total revenue generated by manufacturing organization also affect the level of managerial decision. In that when the revenue generated is high, the firm embark on decision on how to maintain such standard and improve more but when a firm revenue generation is low they also embark on decision to that will enable the firm increase their level of revenue generated.

The findings and observations from the study also agree to what Shank & Fisher (1999) warned. For them standard costing is a simple and a suitable method for actual cost follow-up, but may lead to inappropriate decisions when used incorrectly in future planning

The finding of the study also agrees to the finding of Crossman (1953). For him, management needs to think of efficiency in company operations and to lower costs. For them to accomplish these desired results, managers need cost and statistical records of current performance to compare with planned performance as a means of watching and controlling costs.

The finding further agrees to Nagle and Holden (1995) findings. According to them when a firm is faced with highly price sensitive customers; the firm can reduce its unit costs by spreading its fixed costs over a high volume of output to allow it to use penetration pricing strategy to achieve its profit maximization target.

## 5.2 Conclusion

Cost volume profit analysis is a useful tool used by manufacturing organization to gain detailed insight into their chain of production and ascertain the chain which has effect on the profit margin making of the organization. The study so far has shown that for adequate managerial decision, a firm have to carry out cost volume profit analysis since such analysis will enable manufacturing organizations to achieve effective profit and at the same time known area to adjust and improve. Hence, it can be concluded that the application of cost volume profit analysis is vital for managerial decisions of manufacturing organizations.

## 5.3 Recommendations

Based on the study the followings are recommended.

1. Manufacturing firms should effectively look at their chain of production, analyse it effectively before embarking on managerial decision in order to attain effective profit margin.
2. Results obtained from cost volumes analysis of a firm should be implemented in order to ensure that the firm do not lose in their cost of production.

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