

“Non-Conventional Variance Analysis [Ncva], Its Adaptability In Managerial Decisions”

Dr. Omah, I
(B.Sc, M.Sc, M.PHIL, PhD. Accounting)
Dept of Accounting & Finance
Faculty of mgt. Sciences.
Lagos State University.
Ojo, Nigeria.
E-mail: Omahishmeal@yahoo.com

Ojo – Agbodu A.A
(B.Sc, M.SC FCA – Chartered Account)
Dept of Accounting & Finance
Faculty of Mgt. Sciences
Lagos State University.
Ojo, Nigeria.
E-mail: Ojoagbodu@yahoo.com

Dr. Kehinde J.S.
(B.Sc, M.Sc, PhD. Financial Mgt)
Dept of Accounting & Finance
Faculty of Mgt. Sciences
Lagos state university
Ojo- Nigeria
E-mail: pastor Kehindebox@yahoo.com

Abstract

Purpose: The aim of this paper is to highlight the advantage(s) of non-conventional – variance analysis in comparison to conventional / Traditional –variance – analysis, when environmental factors changes, mere routine comparison of actual performance with standard stipulation will not reflect the desired result.

Methodology / Approach:

An empirical survey – based on historical data collection and primary data from some specified functional / corporate organizations in Lagos State Metropolis. Data analysis is tailored to achieve a dependable outcome, as non – conventional – variance analysis is a complex approach.

Findings:

Non – Conventional – Variance – analysis tends to establish the distinctions between the original Budget (ex-ante budget) and reversed Budget (ex-post budget) which represents the planning variance. This enables the management to appraise the efficiency of its planning methods with a view to improve future planning processes. Operating and planning variances are subsets of material variance replacing conventional usage and price variances. These variances are used to isolate variances caused by unforeseen circumstances (planning variance) and operational variance, which reflects non-standard performance.

Research Limitations / Implications:

- (i) When environmental factors changes, mere routine comparison of actual performance with standard stipulation will not reflect the desired outcome, (i.e. analysis which takes into consideration charges in original plan).
- (ii) The extent to which the causes of variances are established depends upon the amount of time, effort and money a company is willing to spend in data collection as the variances occur.
- (iii) In variance analysis, a point is reached where incremental cost of data procurement does not commensurate its incremental income. This point indicates the limit of variance analysis and this point may be determined by individual judgment.

Practical Implication: This paper tries to establish the validity of non – conventional – variance – analysis as means of appraisal of management. Performance in a strategic management oriented enterprise. Variance analysis must be devised to suit the conditions prevailing within the organization.

Originality / Value: This paper highlights both the practical and the theoretical adaptability of non-conventional –variance-analysis as a measure of management strategic planning mechanism.

Keywords: Planning – Variance, Operational _Variance, Standard stipulation, Actual performance, Environmental factors, Non-conventional – Variance, ex-post budget, routine comparison, highlight.

Introduction: A comparison of actual performance with standard stipulation reveals the variance. A variance represents a deviation of the actual result from the standard result. Therefore, there can be cost variance, profit variance, sales value variance, sales margin variance, operational variance and planning variance. Whether a variance is favourable or Adverse is ultimately determined with reference to its impact on profit. For example, a cost variance will be adverse if the actual cost exceeds standard stipulation or vice-versa.

Variance analysis is an exercise, which involves efforts to isolate the causes of variances in order to report to the management those situations which can be corrected and controlled by timely action.

Conventional – variance analysis suffers from some recognized disadvantages. When environmental factors changes, mere routine comparison of actual performance with standard stipulation will not reflect the desired result. For this reason, there should be ex-post variance analysis, analysis which takes into consideration changes in original plan.

The extent to which the causes of variances are established depends upon the amount of time, effort and money that a company is willing to spend in accumulating data, as the variances occur. In variance analysis, a point is reached where incremental cost of information procurement does not commensurate its incremental income. This point indicates the limit of variance analysis and this point is determined by judgement in the light of individual circumstances. Variance analysis must be devised to suit the conditions prevailing within a particular organization. Analysis of variances must be followed by intelligent and factual interpretation.

Adaptability

The basic concept of non-conventional – variance – analysis is to analyse variances due to operational factors (hence controllable) and variances due to planning errors (some of which might be avoidable and some entirely unavoidable i.e. unforeseeable price changes). The difference between the original budget (ex-ante budget) and reversed (ex-post budget) represents the planning variances.

It is analyzed into avoidable and unavoidable elements. This enables the management to appraise the efficiency of its planning methods with a view to improve future planning. According to chartered Institution of Management Accountant, London (CIMA), operating and planning variances are subsets of material total variance replacing traditional usage and price variances. These variances are used to isolate variances caused by:

- Unforeseen circumstances i.e. planning variance and,
- Operational variance, which reflects non-standard performance.

Precisely, these variances can be stated as:

- **Operational/Planning Variance:** Subsets of direct material total variance replacing traditional usage and price variances, used to isolate variance caused by unforeseen circumstances (planning variance) leaving operational variances that better reflect cost of non-standard performance. This can also apply to labour and overhead.
- **Operational Price Variance (OPV):** (Actual materials used or purchased at reversed standard price) less (Actual materials used for purchased at actual price).
- **Operational Usage Variance (OUV):** (Standard materials used at reversed standard price) less (Actual materials used at reversed standard price).
- **Planning Price Variance (PPV):** (Reversed standard material cost). The reversed standard is an efficient buying price, determined at the end of the period. An example will illustrate this concept more precisely:

CASE 1: Suppose ABC Co. has set the standard price of material at N2 per kg before the start of the period. During the period:

- Standard quality of material specified for the output in the period 20,000kg.
- Actual material purchased and used 21,000kg.
- Actual purchase price paid N2.80, due to unforeseen occurrence which led to a material shortage. At the end of the period, a price of N3.00 was agreed to have been an efficient

buying price in the period. The standard costing system shows a direct material total variance of N18,800 made up of:

Material usage variance N2000 (Adverse)

Material price variance N16, 800 (Adverse)

- Management wishes to distinguish between controllable and uncontrollable effects on performance.

Model Steps:

- Actual cost of purchase (21000 x N2.80) = N58, 800
- Material actually purchased and used at reversed standard cost (21000 x N3.00) = N63,000.
- Reversed standard cost (20,000 x N3.00) = N60,000
- Standard cost (20,000 x N2.00) = N40,000

Analysis:

- Operational Price variance (OPV) less controllable (a-b)
= N58, 800 – N63,000 = N4200 (favourable)
- Operational Usage Variance (OUV) less controllable (b-c)
= N63,000 – N60,000 = N3000 (Adverse)
- Planning Price Variance (PPV) less controllable (c-d)
= N60,000 – N40,000 = N20,000 (Adverse).

Direct Material Total Variance (DMTV) is:

Planning Variance (+) operational Variances

$$\begin{aligned} \text{DMTV} &= \text{PPV} &+& \text{OUV} &+& \text{OPV} \\ &= \text{N20, 000(A)} &+& \text{N3000 (A)} &+& \text{N4200 (F)} \\ &= \text{N18, 800 (A)}. \end{aligned}$$

CASE II: The management committee of RIV. Corporation Ltd feels that standard costing and variance analysis has little to offer in the reporting of some the activities of the company. According to the accountant, although we produce a range of fairly standardized products, “prices of many of the raw materials are apt to change suddenly and comparison of actual prices with a predetermined, and often unrealistic, standard price is of little use. For some of our products we can utilize one of several equally suitable raw materials and we always plan to utilize the raw material which will in our opinion, lead to the cheapest total production costs. However, we are frequently caught out by price changes and the material actually used often proves, after the event, to have been more expensive than the alternative which was originally rejected.

For example, considering the experience over the last accounting period of two of our products, ‘X’ and ‘Y’. To produce a unit of ‘X’ we can use either 5kg of ‘A’ or 5kg of ‘B’. We planned to use ‘A’ as it appeared to be cheaper of the two and our plans were based on a cost of ‘A’ of N3 per kg. Due to market movements, the actual prices changed and if we have to purchase efficiently the costs should be:

A = N4.50/kg

B = N4.00/kg

Production of ‘X’ was 2000 units and usage of ‘A’ amounted to 10,800kg at a total cost of N51, 840.

Product ‘Y’ uses one raw material ‘C’, but again the price of this can change rapidly. It was thought that ‘C’ would cost N30 per tone but we paid N25/tonne and if we had purchased correctly, the cost would

have been less as it was freely available at N23/tonne. It usually takes 1.5 tonnes of 'E' to produce one (1) tonne of 'Y' but our production of 500 tonnes of 'Y' used only 700 tonnes of 'E'.

Analysis:

A. (i) **Conventional Variance** (Actual Vs Original budget)

X:

$$\begin{aligned} \text{Usage Variance} &= (\text{AQ}-\text{SQ}) \text{SR} \\ &= (10,800\text{kg} - 10,000\text{kg}) \text{N3} = \text{N2400 (A)} \end{aligned}$$

$$\begin{aligned} \text{Price Variance} &= (\text{AR}-\text{SR}) \text{AQ} \\ &= (\text{N4.80} - \text{N3.00}) 10,800\text{kg} = \text{N19,44 (A)} \\ &\quad \underline{\text{N21,840 (A)}} \end{aligned}$$

Y:

$$\begin{aligned} \text{Usage Variance} &= (\text{AQ}-\text{SQ}) \text{SR} \\ &= (700 \text{ tonnes} - 750 \text{ tonnes}) \text{N30} = \text{N1500 (F)} \end{aligned}$$

$$\begin{aligned} \text{Price Variance} &= (\text{AR}-\text{SR}) \text{AQ} \\ &= (\text{N25}-\text{N30}) 700 \text{ tonnes} = \underline{\text{N3500 (F)}} \\ &\quad \underline{\text{N5000 (F)}} \end{aligned}$$

Non-conventional Variance Analysis:

(ii) **Operational Variance** = (Actual Vs Reversed Budget)

X:

$$\begin{aligned} \text{Usage} &= (10,800\text{kg} - 10,000\text{kg}) \text{N4.50} && = \text{N3600 (A)} \\ \text{Price} &= (\text{N4.80} - \text{N4.50}) 10,800 \text{ kg} && = \underline{\text{N3200 (A)}} \\ &&& \underline{\text{N6800 (A)}} \end{aligned}$$

Y:

$$\begin{aligned} \text{Usage} &= (700 \text{ tonnes} - 750 \text{ tonnes}) \text{N23} && = \text{N1150 (F)} \\ \text{Price} &= (\text{N25} - \text{N23}) 700 \text{ tonnes} && = \underline{\text{N1400 (A)}} \\ &&& \underline{\text{N250 (A)}} \end{aligned}$$

Planning Variances: (Reversed Vs Original Budgets)

X:

$$\begin{aligned} \text{Controllable Variance} &= (\text{N4.50} - \text{N4.00}) 10,000\text{kg} = \text{N5000 (A)} \\ &\quad \text{(Could have planned a cheaper material - 'B')} \\ \text{Uncontrollable Variance} &= (\text{N3} - \text{N4}) 10,000\text{kg} && = \underline{\text{N10,000 (A)}} \\ &&& \underline{\text{N15,000 (A)}} \end{aligned}$$

Y:

$$\text{Uncontrollable Variance} = (\text{N23} - \text{N30}) 750 \text{ tonnes} = \text{N5250 (F)}$$

X:

$$\begin{aligned} \text{Conventional} &= \text{Operational (+) Planning} \\ \text{N21,840(A)} &= \text{N6,840(A)} + \text{N15,000 (A)} \end{aligned}$$

$$\text{N5000 (F)} = \text{N250 (A)} + \text{N5250 (F)}$$

- (B) (i) Planning Variances test management's forecasting ability by comparing the original standard (ex-ante) and the reversed standard based on known factors (ex-post)
- (ii) Operation variances indicate management's current level of operating efficiency by comparing actual with an up-to-date standard (reversed standard)

Utility of Non-Conventional-Variance-Analysis

- In times of inflation, when there are rapid price level changes, those variances due to inflation can be distinguished from others.
- It distinguishes between controllable and non-controllable variances.
- It shares the effect of setting unrealistic targets.

Difficulties In Non-Conventional Variance Analysis

- The resistance to change from the conventional approach to non-conventional approach, as the latter is more easily exposes controllable errors.
- The difficulty in obtaining accurate information about what the reversed standard should be.
- The assumption that the alternatives are (ASU AT SCPU) – (BSU AT SCPU). Perfect substitutes for the materials actually used, e.g. can 'B' be used instead 'A'.

Overview of non-conventional-variance-analysis.

Non-conventional-Variance-Analysis should include:

- **Quality-Cost-Variance (QCV):** It represents the difference between actual quality cost and the standard/budgeted quality cost. In the era of technological changes and acute competition, this variance attracts extra attention. It may be segmented to reflect cost classification of prevention, appraisal and failure. It is not a part of pyramid of inter-related variance, because quality cost is incurred within various functions.

$$\text{QCV} = (\text{AQC} - \text{SQC})$$

- **Market-Share-Variance (MSV):** It represents the difference between actual sales units at standard contribution per unit and sales units representing the budgeted share of actual market at standard contribution per unit. It is a subset of sales volume contribution variance. It is applicable when actual size of a product or product group is known. It indicates how well market share has been maintained.

$$\text{MSV} = (\text{ASU at SCPU}) - (\text{BSU at SCPU})$$

- **Market-Size-Variance (MS₁V):** It represents the difference between sales units representing the budgeted share of actual market at standard contribution per unit and budgeted contribution. It should be noted that step(b) in preceding variance becomes step(a) in the variance and this represents the difference between the two.

$$\text{MS}_1\text{V} = (\text{BSC at SCPU}) - (\text{BC})$$

- **Market-Cost-Variance (MCV):** It represents the difference between actual marketing cost and budgeted marketing cost. Where marketing cost is variable and fixed, approach can be adopted accordingly:

$$\text{MCV} = (\text{AMC} - \text{BMC})$$

Factors Responsible for Revision of Non-Conventional-Variance-Analysis.

It is a common experience that the standard becomes out dated very quickly. Mostly, it is due to change in circumstances and inflation is the main factor contributing to this need. Other factors, which invalidate the existing standard may include:

- Technological changes such as changes in production methods, changes in design of products and changes in office equipment.
- Organizational changes such as different sales mix, changes in warehousing and distribution methods, changes in management, new agreements, changes in remuneration methods, new health and safety provision.
- Changes in fiscal policy.
- Changes in economic environment.
- Exchange rate variation e.t.c.

Revision of variance is the difference between the original and the reversed standard cost. It arises when an interim adjustment of a standard cost is made without adjusting the budget and is reversed to allow full analysis of the difference between budgeted and actual profit. The variance can be further analyzed to reflect revisions due to price of materials, labour and overhead rates and changes in methods.

For a complete analysis, a statement can be prepared reconciling actual and budgeted profit for a particular period, incorporating revision variance where appropriate.

The main objective in computing revision variance is to eliminate known factors from analysis. Thus, letting areas that needs investigation and remedial action get highlighted.

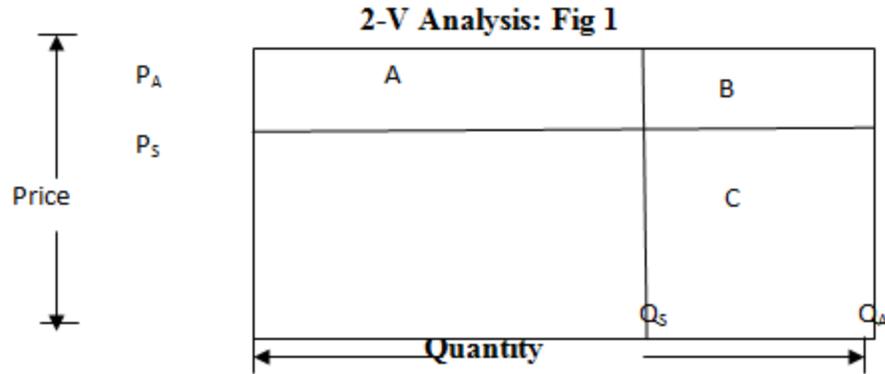
Relevant Cost Approach To Variance Analysis

Conventional approach to variance analysis is to compute variances based on acquisition cost and standard prices for the acquisition of the resources. This is misleading, when scarce resources exist. Failure to use scarce resource efficiently leads not only to increased acquisition cost but also to a lost contribution. Therefore, meaningful approach is to incorporate the lost contribution in variance analysis. For example, if scarce material is used excessively, it will cause material costs to be high and in addition there will be lost contribution, which should be attached to material usage variance. When this approach is used, price or expenditure variances are not affected. Quantity variance is affected by how efficiently scarce resource is being used.

Two - variance, three - variance, and four - variance analysis.

“two variance” (2-v)

The term “Two-Variance” (2-V)”, Three-Variance (3-V)”, and “Four-Variance (4-V)” analysis are not separate methods of variance analysis. These terms simply indicate the extent to which variances can be analyzed in a particular organization. The term “Two-Variance (2-V) indicates that analysis is being confined to highlight the interplay of two factors, i.e. price and quantity. Graphically, this can be presented through chart.



Where:

P_A = Actual Price

Q_A = Actual Quantity.

P_S = Standard Price

Q_S = Standard Quantity.

Actual Cost = $P_A Q_A$

Standard Cost = $P_S Q_S$

Total Cost = $P_A Q_A - P_S Q_S$

If “2-V” approach is adopted, MPV and MQV can be determined.

“THREE VARIANCE” (3-V)

This approach takes variance a little further and total material cost variance (TMCV), i.e. $P_A Q_A - P_S Q_S$ is taken to be equal to $A + B + C$ in fig 1. In 3-V analysis with regard to MCV, following variances can be attempted: MPV, MMV and MQV.

“FOUR VARIANCE” (4-V)

The “4-V” approach takes the analysis still further. The area represented by $A + B + C$ in fig 1 is divided according to causes under following heads: MPV, MMV, MSUV and MEV. The terms: “Two-Variance” (2-V), “Three-Variance” (3-V), and “Four-Variance” (4-V) only indicate the extent to which variances are being analyzed in an organization. It is difficult to lay down hard and fast rules in this connection. An organization has to decide the extent of variance analysis to suit to its specific requirements.

SELECTED REFERENCES

- Brown J.L. & Oowler L.W.** (1978) 14th Edn, Wheldon's Cost Accounting & Costing Methods. Macdonald & Evans Ltd, Estover, Plymouth Pl 6-7 pz.
- Gupta R.K.** (1987): 3rd Edn, Cost Accounting, Agra book store, Educational publishers, 1/125 Pachkuian Agra.
- Jain P.K. & Khan M.Y.** (2003): 1st Edn, Cost Accounting & Financial Mgt. Tata Mc Graw-Hill publishing Company Ltd, New Delhi-INDIA.
- Jain P.K. & Khan M.Y.** (2007): 4th Edn, Mgt. Accounting, Tata Mc Graw-Hill publishing company Ltd, New Delhi-INDIA.
- Saxena V.K. & Vashist C.D.** (1985): 1st Edn, Advanced Cost and Mgt. Accounting. Sultan Chand & Sons, New Delhi-INDIA.
- Saxena V.K. & Vashist C.D.** (1989): 2nd Edn, Rev. Edn Advanced Cost and Mgt. Accounting Sultan Chand & Sons, New Delhi-INDIA.
- Saxena V.K. & Vashist C.D.** (1993): 4th Edn, Advanced Cost and Mgt. Accounting. Sultan Chand & Sons, New Delhi-INDIA.
- Shearing & Taylor** (1998): 4th Edn, Financial and Cost Accounting for Management Macdonald & Evans, Ltd. Estover Plymouth Pl6-7pz.