Decision to investigate a Variance (DTIAV), its Emerging Trend in Determination of Organizational Performance: Accountant's View

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abstract

Purpose: The purpose of this study is to establish basic criteria in which a business entity can institute an investigation to unveil the causes of variances as it occur and to compared to the established standard stipulation of the management to actual performance efficiency. To establish further how useful the decision theory can be successfully applied to variance investigation decisions.

Methodology/Approach: An empirical survey based on data analysis based on historical and primary sources. The historical data is obtained through literature review, while the primary information is obtained through dissemination of structured questionnaires to five (5) sample selected companies, being representative in number. One hundred and five (105) questionnaires were projected and used for this purpose. On average, twenty one (21) questionnaires were administered in each of the selected companies.

Findings: Variance analysis and decision to investigate the variance is an exercise which involves efforts to isolate the causes of variances in order to report to management those situations which can be corrected and controlled by timely action. To investigate a variance, the possible states involved are the existence of correctable cause (out of control) and uncorrectable cause in control).

RESEARCH LIMITATIONS/IMPLICATIONS:

- The financial constraint virtually re-defined the need to expand the scope of coverage, limiting the investigation to limited number of companies.
- In an illusionary economy, every meaningful effort is marred by insider notion. Insider notion is the bed rock of fraudulent manipulation of original budgeted plan in order to suit the fraud manager's desire.
- The dichotomy of idea between the researcher's notion and the respondents from the company under consideration also marred the useful end result of the researcher.

Originality/Value: Decision to investigate a variance is of prime importance to any meaningful organization that is cost effective and cost control, both in short – term and long-term assessment. This paper should energize/stimulate the idea of variance analysis and decision to investigate the variance, in order to establish the causes. This will help the company to control, if not eliminate the art of the insider notion of fraud managers.

Keywords: Insider notion, fraudulent manipulation, fraud managers, variance, correctable cause, uncorrectable cause, investigation, isolate, bed – rock, illusionary – economy.

Introduction: Decision to investigate a variance in the decision theory analysis can be successfully applied to variance investigation decisions. The possible actions are:

❖   To investigate or
❖   Not to investigate and the possible states involved is the existence of:
❖   Correctable cause (out of control).
❖   Uncorrectable cause (in control).

The following variables are added:

C   =   Cost to inspect/investigate.

M   =   Cost to correct, if cause is discovered.

This is presented in a variance investigation chart.

Fig 1: Chart Showing Correctable and Uncorrectable Causes

State or action	Correctable cause (out of control)	Uncorrectable cause (in control)
Investigate	Yes	No

Not to investigate	No	Yes

It is assumed that:

L   =   Loss, if cause exist and remain uncorrected or saving, if

cause exist and is corrected.

P   =   Probability that cost of control state exists

Literature Review: Variance analysis is an exercise, which involves efforts to isolate the causes of variances in order to report to management those situations which can be corrected and controlled by timely action (Saxena V.K and Vashist C.D. 1994). 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 information, as the variances occur.

In variance analysis, a point is reached where incremental information is not worth its incremental cost. (Jain P.K and Khan M.Y 203). This point indicates the limit of variance analysis and this point is determined by judgment in the light of individual circumstances. Variance analysis must be devised to suit the conditions prevailing within a particular enterprise.

The CIMA Terminology defines revision variance as "the difference between the original and a revised standard cost. It arises when an interim adjustment of a standard cost is made without adjusting the budget and is revised 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.

Causes of Variances: A large number of reasons are at play in causing variances. The measurement of variances is a mechanical application that has no importance in itself.

The value of variances comes from an analysis of significant variances, the identification of their causes and the correction of these causes. Therefore, the purpose of variance analysis will be defected, if the causes of deviations are not promptly communicated to management. The delay in reporting these causes render the variance analysis useless, because by the time the reports are made, it may be too late to take the remedial measures.

Disposition of Variances: A wide divergence of opinion exists between the accountants regarding disposition of variances. It is very difficult to lay down hard and fast rules to be followed for this purpose. It is commonly recognized that disposition of variance is a very important decision area, which affects both inventory valuation and measurement of income. The choice of disposal method depends on the following points:

❖   Type of variances ie material, labour and overhead variances.
❖   Size of variances.
❖   Past experience of using standard costing system.
❖   Causes of variances.
❖   Timing of variances ie unusual variance can be caused by seasonal variations.

METHODS OF DISPOSITION OF VARIANCES:

❖   Transfer to profit and loss account.

❖   Prorating over cost of sales and closing inventory of WIP (Work-in-progress) and finished goods.

❖ Write off the controllable variances to profit and loss account and uncontrollable variances to be prorated over cost of sales and closing inventory of work-in-progress and finished goods.

Transfer to Profit and Loss Account: When this method is used, all variances are written off against income for the period. Cost of sales and closing inventory of (WIP) and finished goods are all stated at standard cost.

Unfavourable variances (debit) are deducted from gross profit, calculated at standard cost. Favourable variances (credit) are added to gross profit determined at standard cost. All variances shown in P & L account are supported by variance analysis report. No variance is treated as an increase or decrease in manufacturing cost. On the other hand, variances are taken as deviations from standard cost due to inactivity, inefficiency, extravagance, or other changes in business conditions. If this method is followed, inventories are valued at standard cost and therefore, financial statements can be prepared at any point in time. If there are reasons to believe that variances are from efficiency factor that could have been controlled, transferring the variances to profit and loss account will appear to be most feasible practice because:

❖ Standard cost represents the normal cost of production. Variance from standard cost represents changes which should not form part of product cost.
❖ If inventories are valued at standard cost, the loss of time at final account closing is reduced
❖ When variances are transferred to P & L account with complete details, the variance analysis will attract managerial attention.

Prorating Variances over Cost of Sales and Closing Inventories: When this method is adopted, cost variances are distributed to cost of sales and inventories of WIP and finished goods. The proportion may be attempted on any reasonable basis like units or values e.t.c. Under this method, cost of goods sold and inventories are all shown at actual cost, because:

❖ Actual cost is a fact and it is logical that actual cost should be used in financial statements irrespective of their effects.
❖ For ascertaining income for the year, the auditors are generally interested in actual profits, rather than standard profits.
❖ If variances are transferred to P & L account, it will distort the figure of profit. Therefore, it seems logical that variances should be distributed between sales and inventories of WIP and finished goods.
❖ The value of inventories will not be truly depicted, if appropriate share of variances are not assigned.

This method is logical because, if price changes beyond the control of management, should be depicted in inventories and cost of sales.

Writing off Controllable Variances to P & L Account and Uncontrollable Variances Prorated over Cost of Sales and Closing Inventories: When this method is adopted, controllable variances are written off to P & L account and uncontrollable variances are prorated over cost of sales and inventories of WIP and finished goods. This method presents a compromise between the two extremes referred to above. If variances arise due to efficiency factors within the control of management, they should be closed to P & L account. On the other hand, if variances are due to reasons beyond the control of management, these should form part of cost of sales and inventories.

Setting up Reserves: Some accountants are of the view that variances should be set up as reserves till they are set-off. When this method is adopted, variances debit or credit balances will be carried forward until they are mutually set off. The variance balance, which may be either debit or credit due to inefficiency or efficiency, is shown in the P & L account.

The foregoing discussion reveals that disposition of variances is an area in which accountants are not entirely in agreement. The common view is that variances resulting from incorrect standards or

conditions beyond the control of management ie increase in wage rate due to an award of some wage Tribunal and price rise etc should be distributed to cost of sales and inventories of finished goods and WIP (work-in-progress).

On the other hand, variances due to efficiency or inefficiency factors, which might have been influenced by management, should be transferred to P & L account (profit and loss account).

Reporting Variances: Variances are not ends in themselves. They communicate signals for further analysis, investigation and action. Variance analysis will lose its utility and objective, if they are not promptly made to appropriate level of management. The report on variance analysis should be made assuming three levels of management ie Top management, middle management and operational management. "Variance – report should be made keeping in view the ultimate use of the report and the periodicity of reports, which must highlight:

*   Essential cost deviations.
*   Possibilities for improvement.

Reporting Variances through Ratio Analysis: Cost control efforts can be aided using ratio analysis technique. The rational behind ratio analysis is that management take greater interest in relative term as opposed to absolute figures in order to control costs. A number of ratios pertaining to liquidity, profitability and capital structure etc can be computed which are only concerned with operating cost ratio. Variances expressed in terms of absolute figures do not convey the true picture very effectively. Absolute figures of variances are also not very useful when comparison of two different periods is made. Variance ratios help in making comparison over different periods, thereby highlighting the abnormal situations which are of interest to management.

*   Efficiency Ratio: Efficiency ratio summaries the relationship between output expressed in terms of standard hours and the actual hours spent for the output.

Efficiency Ratio = $\dfrac{\text{output expressed in terms of standard hours}}{\text{Actual hours spent for producing the output}}$ x 100

Efficiency ratio reveals the input – out relationship. Input is available in terms of hours worked. Output is converted into standard hours to determine the relationship of input and output. It is a very important ratio and it reveals the extent of efficiency or inefficiency of production during the related period. It is referred to as a hypothetical hour which measures the amount of work which is performed in one hour according to standard.

➢   **Activity Ratio:** This ratio refers to the relationship between output expressed in terms of standard hours and the budgeted standard hours. Three steps involved in determining this ratio are:

* Actual output in expressed in terms of standard hours (dot i)
* Budgeted Output is expressed in standard hours (dot ii).
* Percentage (%) relationship of (dot i) and (dot ii) is expressed.

This ratio highlights the actual level of activity in comparison to budgeted activity level. This ratio reveals how effectively or ineffectively actual efforts were made in comparison to budgeted estimates. This ratio is expressed:

Activity Ratio = $\dfrac{\text{Actual output in standard hours}}{\text{Budgeted output in standard hours}}$ x 100

➢   **Calendar Ratio:** This is referred to as the relationship between actual number of working days in a period and the number of working days in the related budget period.

Calendar Ratio = <u>Actual No. of working days in a period</u> x 100

No. of working days in related budgeted period

➢ **Actual Capacity Usage Ratio:** This ratio refers to the relationship between actual number of working hours and the maximum possible number of working hours in a period as per budget.

Actual Capacity Usage Ratio = <u>Actual hours worked</u> x 100

Maximum possible working hours

➢ Standard Capacity Usage Ratio: This ratio refers to the relationship between budgeted hours and maximum possible working hours in a budget period.

Standard Capacity Usage Ratio = <u>Budgeted Hours</u> x 100

Max. Possible no. of working hours

Decision to Investigate Variances: Variances focus attention on deviations, but all deviations cannot be taken as "Out-of-control" situations. Therefore, a cost accountant is often faced with a problem of determining "Out-of-control" situations, which are significant enough to warrant management's attention and further investigative efforts. The investigative efforts is directed towards a particular "Out-of-control" Situation, when incremental benefits promise to increase the incremental costs. This means that there exists reason to determine tolerance limits or range. If any Variance falls within this range, it can be considered acceptable or normal. If the Variance falls beyond "tolerance limits", an investigation should be instituted provided the benefits of investigation justify the cost. Variances falling beyond these boundaries are assumed to be abnormal or significant. These deviations call for thorough investigation.

As long as the data relating to Variances fall within the control limits, Variances will not be taken as significant. The data falling beyond the lower and upper control limits demand special managerial attention and extra investigative efforts.

₦

Upper Control Limit

- -

Upper   Tolerance

Limit

Standard ··

- -
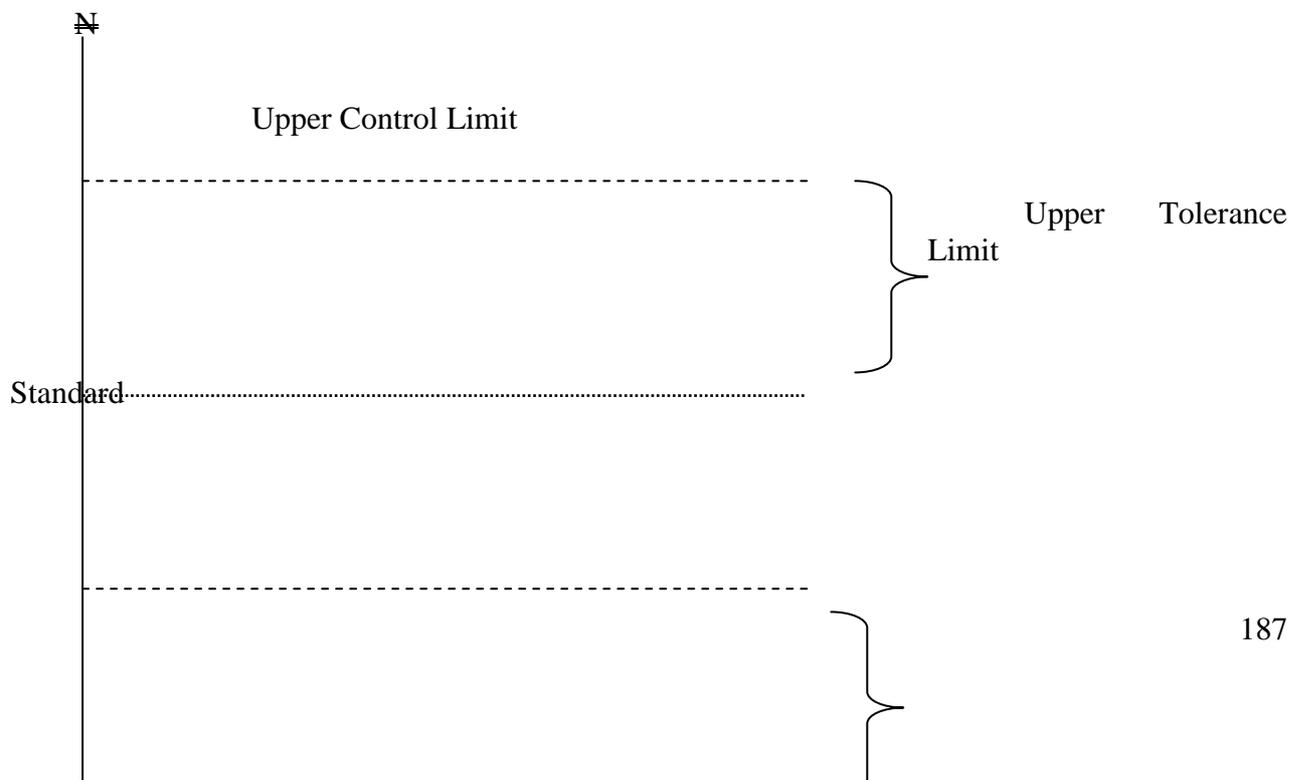
Lower Control Limit   Lower Tolerance
                                                                Limit

Fig II: Control chart showing upper and lower tolerance limits of Variance investigation decision.

Accounting Application: Three methods of accounting for standard cost are commonly in place:

➢ Partial plan or output plan.
➢ Single plan.
➢ Dual plan.

Partial Plan or Output Plan: It is called output plan method. The features of partial plan are:

• WIP account is debited with actual cost of material, actual cost of labour and actual overhead.

• WIP account is credited with standard cost of finished goods.

• At the end of accounting period, WIP account is credited with standard cost of unfinished goods.

• After entering (the 3 dots in WIP account), debit and credit sides of WIP account is compared and the difference is transferred to cost Variance, which is further analyzed for reporting to management on the basis of additional information not recorded in the accounts.

Single Plan: The features of single plan are:

• WIP account is debited with standard cost.
• WIP account is credited with actual cost.
• Inventory is valued by standard cost.
• All Variances are compared at any stage before debiting WIP account.

Dual Plan: Under this method all cost ledgers are maintained at actual cost. Standard cost is used in subsidiary records to give statistical information to management for purpose of control.

Mathematical Application: To investigate a Variance, using the EMV (Expected Monetary Value) approach, the expected cost to investigate can be expressed as:

$$E \text{ (investigate)} = P (C + M) + (I - P) C.$$

$$= \quad PC + Pm + C - PC$$
$$= \quad PM + C$$

This means that any time a decision is made to investigate a variance, the cost to inspect 'C" is incurred and in addition with probability 'P', the cost to correct 'M' will be incurred in those cases where a correctable cause is discovered.

NOT TO INVESTIGATE A VARIANCE

The cost not to investigate a variance is expressed as:

E (not to investigate) = PI

This means that when no investigation occurs, there will be no cost to investigate or correct a Variance. But with the probability 'P', the Opportunity cost of not investigating will be incurred in those causes where a correctable cause does exist.

DECISION RULE

On the basis to investigate or not to investigate a Variance, the decision rule is:

*   E (to investigate)   =   PI > PM + C
*   E (Not to investigate) =   PI < PM + C

INDIFFERENCE PROBABILITY

For a given value of C, L and M, (see page 3 introduction) an indifference condition can be determined in terms of Px, the probability of process being out of control. Px is also called indifference probability. When the expected cost of not to investigate is equal to the expected cost to investigate, the following condition holds:

E (Not to investigate) =   E (to investigate)

$$P^x L \qquad\qquad = \quad P^x M + C$$

$$P^x L \quad\_\quad P^x M \qquad = \quad C$$

$$P^x (L - M) \qquad = \quad C$$

$$P^x \qquad\qquad = \quad \frac{C}{L + M}$$

If the value of P (the probability that the process is out of control) is greater than P^x (ie P P^x), the process should be investigated. On the other hand, if the probability P is less than P^x (ie P > P^x), the process should not be investigated.

TEST OF VALIDITY: 1

The management of Texlon Nig Plc, (under the research investigation) has determined that there is 95%m probability that one of the production processes is in control.

The company estimates that when correctable variances occur, if the process continues out of control until the next investigation, the extra cost will be ₦ 50,000. It will cost ₦1500 to inspect the process at the investigation point and if a correctable cause is discovered, it will cost ₦ 10,000 to make the necessary adjustments. The management is on dilemma to investigate the variance. The company's accountant is consulted in this matter.

Accountant's View: 1

- E (investigate) = PM + C
  - = (0.05) (₦ 10,000) + ₦ 1,500
  - = ₦ 500 + ₦ 1,500
  - = ₦ 2000

- E (not to investigate) = PL
  - = (0.05) (₦ 50,000)
  - = ₦ 2,500

Comment: Based on decision rule:

E (not to investigate), PL > PM + C is higher than E (investigate), the variance should be investigated.

- **Indifference Probability:** If the value of P (the probability that the process is out of control) is greater than P^X (ie $P > P^X$), the process should be investigated. But, if the probability P is less than P^X (ie $P < P^X$), the process should not be investigated.

  Where P^X = $\dfrac{C}{L + M}$

  $$= \frac{₦1,500}{₦ 50,000 - ₦ 10,000}$$

  = 0.0375

Hence: $P(0.05) > P^x (0.0375)$

The process should be investigated. This decision is consistent with the decision to investigate based on the previous comparison between the expected costs of investigating and not investigating.

TEST OF VALIDITY II

The management of subsidiary of Texlon Plc estimates that cost to investigate a variance at ₦ 70,000, the cost to correct the cause of a controllable variance at ₦ 20,000 and the probability that any variance (regardless of size) is due to correctable cause as 25%. The management estimates further that the loss due to not discovering a correctable cause of a variance is 80% of the size of the variance. For example, the loss from failure to discover a correctable ₦ 50,000 variance would be ₦ 40,000, loss from a correctable ₦ 90,000 variance would be ₦ 72,000 and so forth. The accountant was asked to determine the minimum size of a variance that justified investigation.

Accountant's View II:

The question indicates that the company has indifferent attitude towards investigating and not investigating a variance when:

$$P^X = \frac{C}{L + M}$$

Where: P^x = Probability that variance is due to correctable cause.

C = Cost to inspect.

M = Cost to correct, if cause is discovered.

L = Loss, if cause exists and remains uncorrected.

$$0.25 = \frac{N70,000}{L - N20,000}$$

0.25(L – N20,000)	=	N70,000
0.025L – N5,000	=	N70,000
0.025L	=	N75,000
L	=	N300,000

Texlon Plc subsidiary will investigate a variance when the loss from the failure to discover a correctable variance exceeds N300,000. In the question above, it is stated that the loss is estimated to be 80% of the size of the variance.

Hence:

L = 08(size of variance)

Substituting the value for loss that triggers the investigation:

N300,000 = 0.8 (size of variance)

Size of variance = N375,000

Comment: The Texlon Plc subsidiary will investigate only variances that exceed N 375,000.

CONCLUSION

Analysis of Variance must be followed by intelligent and factual interpretation, classification, computation, reporting and investigation which are the vital features of standard costing. Variance analysis and the decision to investigate a Variance is a continuous process for the following reasons:

* Labour rates, salary levels etc changes due to union negotiations, policy decisions or changes in composition of the work-force.

* Change in selling prices.

* In a multi-product company, product mix changes and different lines have different margins, the overall profit position will change.

*   Change in level of efforts of operators, supervisions, management and clerical staff can affect the existing cost levels.

*   Improvement in system can bring about reduction in costs.

*   Investment in new capital equipment and scrapping of old equipment/process/methods can affect the operating cost levels (ie direct labour cost and indirect material cost). These decisions, which are frequently taken in an organization, can affect overhead items such as depreciation charges and insurance premium.

*   The prices of bought-out material may vary.

*   Changes in product design may change cost – inputs.

*   Policy decisions of various kinds, for example, changes in organizational structure, may affect cost levels.

*   The amount of idle – time may change due to holdups, sticks, lockouts and power failure which are commonly seen in an illusionary economics.

References

Brown J.L and Owler L.W.(1978) Wheldon`s Cost Accounting& Cost Methods. 14th Edition, Macdonald and Evans Ltd, Estover, Plymouth p16-7pz.

Gupta R.K (1987): Cost Accounting. 3rd Edition. Agra book store, Educational publishers, 1/25 pactikuin Agra.

Jain P.K and Khan M. Y(2003): Cost Accounting & Financial Management, Tata me grew- Hill Publishing Co. Ltd, New –Delhi India

Jain P.K and Khan M. Y (2007):Management Accounting, 4th Edition, Tata me grew- Hill Publishing Co. Ltd, New –Delhi India

Sexena V.K and Vashist C.D (1985): Advanced Cost & Management Accounting, 1st Edition, Sultan Chand and Sons, New Delhi- India

Sexena V.K and Vashist C.D (1989): Advance Cost & Management Accounting 2nd Edition, Sultan Chand and Sons, New- Delhi India

Sexena V.K and Vashist C.D (1993): Advance Cost & Management Accounting 4th Edition, Sultan Chand and Sons, New- Delhi India

Shearing & Taylor (1998): 4th   Edition, Financial & Cost Accounting for Management. Macdonald and Evans Ltd, Estover, Plymouth p16-7pz.