

# ***Detecting Causes of Variances In Operational Outputs of Manufacturing Organizations: A Forensic Accounting Investigation Approach.***

By

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## ABSTRACT

With the introduction of the International Standard on Auditing number 240 (ISA240) there has been a paradigm shift in auditing as auditors are now required to identify and assess the risks of material misstatements due to fraud at the financial statement level and to evaluate the sufficiency, implementation and the effectiveness of the controls related to those assessed prone to fraud. This, of course, implies that statutory audit must now take the garb of forensic investigations. The problem with the present system of forensic investigation is that it is focused more on financial transactions than on the totality of the entity's operations and often time neglects areas where there have been constant leakages of other organizational resources that are of financial consequences but which are not easily detected with a normal analysis of the financial statement. This paper attempts to offer suggestions using real case problem on how to apply forensic accounting in investigating variances and suspected fraudulent activities in manufacturing processes. It employs both empirical and supervised experimental modules integrated with the normal audit tools in unearthing fraudulent acts perpetrated over many accounting periods.

**Keywords:** Audit, Forensic Accounting, Investigations, Financial Statements, Internal Control, Fraud, Procedure

## **Introduction**

Fraud and general impropriety in the management of organizations have become a global problem of late, judging from recent events at both local and international realms.

Stealing, pilferage and unauthorized diversion of cash and material resources are among the major forms of fraudulent behaviors associated with organizational failure in Nigeria.

Nwaze (2008) quoting the Holy Bible asserts that fraud has been around since the beginning of time and would continue to be an issue till the end of time. He went further to mention some which include the impersonation of Esau by Jacob and the woman who exchanged her dead baby for a living one. In addition to others too numerous to mention, fraudulent activities in Nigeria also include the passing off of property titles in order to dupe potential buyers. Sometimes it is difficult to differentiate between an error and a fraud as some errors, though unintentional, may confer some undue and sometimes irreversible advantage on the wrong party while others may be made with the full intention to defraud. Venables & Impey (1985) as cited in Nwaze (2008) classified fraud into the following:

- i. Theft: The unauthorized taking of another's possession;
- ii. Forgery: The falsification of documents; and
- iii. Manipulation of accounting records or entries.

They went further to summarize the principal circumstances that can foster fraud using the acronym COMAS translated as follows:

*C*oncealment : the chance of remaining undetected;

*O*pportunity : the right place and right time for the fraudster;

*M*otivation : a personal need or greed;

*A*ttraction : a desirable target; and

*S*uccess : the chance of avoiding prosecution.

Whilst management and owners in the private sector are making concerted efforts at eliminating or reducing the fraud scourge, the public sector seem not to have made any serious attempt at proffering credible solutions towards this image eating monster.

It is true that the major reason for instituting internal control measures such as internal checks and internal audit is to prevent and or discourage fraud (Arens, Elder & Beasley, 2006:270). But we must also know that external or statutory audits are also undertaken to ensure that the internally instituted fraud control mechanisms are adequate in scope, effective in application and complied with. However, it is rather unfortunate to note that the complexity of the human brain and the dynamic method of reasoning have tremendously diversified present day scams away from the hitherto known modes of fraudulent activities that now render true corporate governance ideals almost unworkable. This is more so since the advent of globalization and the unrestricted use of the internet and computers in the allocation and control of organizational resources. Though the applications of computers are meant to provide more reliable controls than would be possible with human effort, they are programmed and operated by humans and therefore may be subject to unauthorized human control which can inadvertently lead to fraudulent manipulations. A recent case where a system's administrator in one of the banks in Nigeria colluded with an unscrupulous customer to dupe the bank of N50 million through the manipulation of the computer operations system which credited the customer's account with transfers from other customers' accounts using fictitious codes to simulate real transaction authorization codes, is a confirmation that fraudulent manipulations can only be as sophisticated as the system under the contemplation of such intending manipulators and not less.

Fraud is real and has so many branches now that modern day fraudulent activities go undetected for most of the time and or until it is too late. Forensic accounting is the new

branch in accounting/auditing which has the sole aim of unearthing fraudulent activities within and outside an organization so far as the third party's action is in any way reflective on the activities of that organization.

However, the current scope of forensic investigation still leaves much to be desired in the area of assisting in ensuring a true and complete corporate governance effectiveness in an organization. Going by the words of Crumbley (2007)

*...forensic accounting is the accounting that is appropriate for legal review, offering the highest level of assurance, and including the now generally accepted connotation of having been arrived at in a scientific fashion. That is, forensic accounting is sufficiently thorough and complete so that an accountant, in his/her considered independent professional judgement, can deliver a finding, as to the accounts, inventories, or the presentation thereof that is of such quality that it would be sustainable in some adversarial legal proceeding, or within some judicial or administrative review.*

As a forerunner to the above view, Manning (2002) also defines forensic accounting as “*the application of financial accounting and investigative skills to a standard acceptable by the courts to address issues in dispute in the context of civil and criminal litigation*”.

While this study agrees that financial scandals in business organization have raised the awareness that accountants should be alert to potential fraud and other illegal activities while performing their duties, they can also be made to provide significant assistance in preventing, investigating and resolving such issues. Forensic accounting is another aspect of accounting which tends to further highlight the natural relationship existing between accounting and law just as auditing.

### **Problem Statement**

Investigative audit has always been there, it is only the techniques involved that has been changing in line with sophistication of the financial fraud involved (Krancher, 2006). What is necessary at this juncture is the need to stress that all normal statutory audit should contain some element of forensic enquiry. After all, evidence of fraud or fraudulent

activities can easily be sniffed if a thorough evaluation of the adequacy and compliance of the internal control mechanism is made.

In addition, extensive analysis of variances from operational data can also help to point out areas that need proper/deeper analytical investigation. Fraud emanating from operational controls especially in a manufacturing out fit or construction firms are much more difficult to detect than prevent. This is because stock and working materials are more the subject of theft here than cash or other form of expendable/portable resources. Most organizations can prevent such frauds effectively with the use of a good security apparatus. But in an environment where security men are known to have strong collaborations with officials who pilfer organizational materials and sometimes with robbers outside the organization, there still exist high probability for fraudulent activities even with such high level of security. Asein (2007) in his comments on the provisions of the recently issued International Standard on Auditing No. 240 (ISA 240) which has its local equivalence in the Nigerian Standard on Auditing No. 5 (NSA 5) stated that sampling as an audit technique will no longer suffice. The ISA 240 in like manner requires the auditor to identify and assess the risks of material misstatements due to fraud at financial statement level; and for those assessed risks that could result in a material misstatement due to fraud, he should evaluate the design of the entity's related controls, including relevant control activities, and to determine whether they have been implemented. The implication of the above as stated by Asein (2007) is that it is now the responsibility of the auditor not only to prevent but also to detect fraud. This of course, now necessitates treating every audit exercise as a fresh assignment and disregarding any previous confidence on the integrity of the management.

## **Objective of the Paper**

In view of the aforegoing, the objective of this paper is to highlight other methods and procedures that can be adopted in investigating variances and suspected fraudulent activities concealed in a financial statement in line with the requirements of ISA 124 in a manufacturing environment using the empirical and experimental approach to forensic investigation. This study was based on the forensic investigation carried out on the activities of a chemical manufacturing company located at Onitsha, Anambra State, Nigeria between the period 1<sup>st</sup> June 2007 and 12<sup>th</sup> August 2007.

## **Methodology**

The investigation which began as a normal year end audit, at first took the form an empirical review comparing the accounts presented for auditing for the year ended 31 March 2007 with that of the previous year as well as the budgeted figures for the same year. As is usual the normal audit plan was mapped out to produce the audit programme which was followed and modified in process as the needs arise. The comparative analysis with the previous year showed some seeming consistency, while a variance analysis performed on the budgeted figures using standard estimates of material mix and yield formulae revealed differences that put the study on further enquiry. This became the basis for conducting production experiments as narrated below.

With the permission of the company's chief executive officer, the production manager was asked to make 5 production runs of equal material measurements using the budgeted standard figures under the close observation of the researcher. This was carried out with stunning but consistent results. The researcher asked for the sixth production run using the double of the materials used for each of the first five. The result also gave expected volume of output.

## Results from Experimental Productions

As stated earlier, the results from the 5 test runs of equal material measurements gave almost the same volume of output while that of the sixth run gave the double of the output from the average of the five outputs. The observation is tabulated as follows:

**Table 1: Experimental Production Trial Results**

Run	Standard Input kg	Actual Input kg	Expected yield (sheet)	Actual Yield (Sheet)	Variance	% Change
1	247	247	52	51.8	(0.2)	-0.4%
2	247	247	52	52	-	
3	247	247	52	52.5	0.5	+0.96%
4	247	247	52	52	-	
5	247	247	52	52	-	
6	494	494	104	105	1	+0.96%
<b>Total</b>	<b>1,729</b>	<b>1,729</b>	<b>364</b>	<b>365.3</b>	<b>1.3</b>	<b>+0.36%</b>

### Notes:

1. The material input consists of chemicals like polyol, tdi and other chemicals used for foam making.
2. The outputs are foam sheets for making mattresses and cushions or upholstery chairs cut from blocks formed when the chemicals are mixed and poured into a special chamber.

## Issues From The Experimental Results

The almost 100% consistency of outputs from inputs confirmed our initial hunch on the likelihood of fraud when the comparative analysis was done because the variances from the analysis were huge and adverse in contrast with our experimental findings. The

analysis of the company's records revealed that a total of 497,952 kilograms of materials were used to get a total of 75,481 sheets of foam products as against the expected output of 104,832 sheets. This invariably means that either 29,351 finished products or 139,417.25 kilograms of materials cannot be accounted for. If this is so, then what happened?

To answer the above question in the context our investigation, we need to address the following issues:

- a) Were there production damages during the accounting period?
- b) Were the stock issuance records correctly entered?
- c) Were the goods received notes correctly entered?
- d) Were the records of outputs correctly stated in the production inputs log book?
- e) Were the records of outputs correctly stated in the production outputs log book?
- f) Were the goods received notes correctly checked against supplies on arrival at the security post?
- g) Were there stock returns to suppliers?
- h) Were there criminal collaborations between the production, stores and the security?
- i) Is it possible to have fictitious transactions?

### **Addressing the Issues Raised**

Some of the issues raised above were put as audit queries to the concerned officials while the researcher embarked on forensic audit to resolve the issues on production damages, criminal collaborations and fictitious transactions.

On the issue of production damages, a thorough analysis of the production and maintenance log books was carried out and there was no evidence to support the assertion



that there is either a machine breakdown or that there were production damages that could have accounted for all or some of the adverse production volume variance of 29,351 sheets of foam during the period. This hint became the first confirmation that something suspicious has been going on all along. For how long? At what magnitude? With what style? These are further questions we must find answer to before we can arrive at a conclusion meaningful enough to serve as a forensic accounting investigations report.

After studying the various replies to our audit queries on the issues bothering on stock recording, security checks, issuance to input stocks and receipts of both finished goods from production and raw materials from the suppliers, the next attempt must naturally be to establish criminal collaboration between the suspects. But this became a Herculean task that seemed unattainable at first as most of our verbal enquiries were simply rebuffed and or dismissed by both the management and other operational staff. However, these negative attitudes towards our efforts could not deter us because we already have a lead and we were ever determined to follow this lead to the end. But in any case, and as strong as our suspicions were, we have concluded before hand that it will be impossible to establish criminal collaboration unless we are able to establish a proof that there were fictitious transactions.

The first clue that pointed towards the suggestion of the existence of fictitious transactions was spotted during the analysis of the yearly comparative figures. While the reported financial data seemed to follow the same pattern for the last 4 years, the variance analysis of input/output relationship fluctuated between 20% and 30% within the same periods without any significant justification. Now, if profit elements seemed to follow the same pattern while budgets differ only in production outputs from the recorded actual performance, should it be feasible to rely on the assumed “credibility” of the financial

reports presented by the directors through the Chief Accountant? Not likely. Something seems to be wrong somewhere and that is what we must investigate.

To further confirm our suspicion or to confound it on the other hand we subjected the reported profits for a period of four years to another comparative analysis using the periods projected figures adjusted for the volume of production inputs used. The differences obtained from this analysis were further subjected to price change analysis for both inputs and resultant outputs using the standard projected data as base figures and adjusting up or down as the case may be. This exercise facilitated the translation of all transaction data into a common measurement unit for all the periods under the comparative analysis.

The result revealed adverse variances which ranged between 21.5% and 30.6% for the 4 years period, just almost the same pattern with the results of the variance analysis of input/output relationship as aforementioned. A careful study of the financial statements for the four years to 2007 showed that the management of the company has been very meticulous about their finances, hence, no trace of physical financial leakage was found. The only possible way through which any fraud could have been perpetrated would be on materials handling; and this can only happen either in the form of input stock diversion or output stock pilferage. However, the output stock control system in place and which we have tested and found to be highly effective made the option of output stock theft unviable. Thus, the only option left was to investigate the possibility of input stock pilferage or diversion.

### **Investigating Input Chains**

To enhance the credibility and ease of flow of the input stock investigation as decided, we modified our programme to include a visit to each of the origin of the various stock items in the investigation schedule. The company uses three main suppliers of raw materials but

these suppliers deliver goods to the company vehicles only at the suppliers' own warehouses. This is an arrangement agreed to between our client and one other company which acts as a central procurement company for all members of the group which our client belongs. Since the suppliers and the procurement company are external to the company, we need to obtain special permission from their management through the management of our client company to enable us extract data relating to our client from their records. The aim of this exercise is simply to obtain stock purchased data with which to compare with the stock received data as recorded by the security department and stock records and books at our client's factory premises. This was done and the exercise turned out to be the master stroke as it revealed so many discrepancies between what were purportedly ordered and what were eventually supplied.

The analysis of findings from this exercise is as tabulated below:

**Table 2: Analysis of Materials Ordered and Materials Supplied**

<b>Year</b>	<b>Volume of Materials ordered by client</b>	<b>Content of order sent to supplier</b>	<b>Shortfall on original order</b>	<b>Average cost per kilo</b>	<b>Estimated cost of short falls</b>
	kg	kg	kg	₦	₦
2003/2004	489,540	386,740	102,800	211	21,690,800
2004/2005	472,550	372,840	99,710	206	20,540,260
2005/2006	422,600	316,950	105,650	225	23,771,250
2006/2007	498,000	358,750	139,250	240	33,420,000
<b>TOTAL</b>	<b>1,882,690</b>	<b>1,435,280</b>	<b>447,410</b>	<b>222</b>	<b>99,422,310</b>

Few questions thrown at the Chief Buyer on the above discrepancies revealed that the discrepancies were meticulously planned, skillfully executed and carefully concealed.

The existence of this chain of fraudulent practices was made possible by the unorthodox method of material procurement adopted by the company. This company as earlier mentioned is a member of a group comprising 12 other companies engaged in manufacturing, distribution, service and engineering construction under a common holding company that make most of the central decisions. The group's procurement matter is vested on a company, a member of the group specifically formed for that purpose. This company accepts orders from other group members, process the orders and source the materials required for the needy company. Payment is made directly to the procuring company which acts as the intermediary between the supplier and the buyer. The procuring company issues its own orders and make payments from its own funds to the supplier. This arrangement according to the group chairman, was supposed to be a fool proof and fraud preventive one. It was indeed so until the managing director of the procuring company found out that collaborating with other sister company staff could easily enrich and benefit the pockets of all concerned. This idea was muted to the Chief buyer of our client company who bought the idea hook, line and sinker, contacted and enlisted the support of the production manager and the chief security officer with whom the deliberation and decision to put it into practice was made.

This singular step gave birth to a highly and carefully planned organized fraudulent practices with a tripartite coalition and collusion between the Chief Buyer the Production Manager and the Chief Security Officer at the home front and with the Managing Director of the procurement company at the other end. The Chief buyer carefully duplicated blank invoices and dispatch notes of the three major suppliers to the company from which he issues fake purchase invoices and fake dispatch notes which he uses to replace the authentic documents collected from the suppliers. When stock requisitions are made, the chief buyer will send the full requisition list to the management for approval. On approval,

he will send for the processing of the required fund needed for the payments. As usual, the payment for the original authentic order will be made to the procuring company which will in turn issue its own purchase orders to the suppliers of the goods but on the basis of a new order, lower in quantity from those originally issued by our client. It is with this revised order that payments are made to the final suppliers. So, to these suppliers, nothing happened; it would just be a normal order processing backed with the correct equivalent payment. The equivalent payment for the shortfall from the original order is then withdrawn from the accounts of the procuring company and shared among the collaborators including the Managing Director of the procuring company. This withdrawal is then taken care of in the books of the procuring company as cash purchases supported with the fake invoices issued by the Chief buyer. With this arrangement, it became difficult for the normal yearly audit to detect the fraud. This was enhanced by the fact that the shortfall from the original stock order is always recorded as having been supplied to the production which would in like manner acknowledge receipt and proceed to record same as part of material input into production in the production log book. This, of course, is with the collaboration of the security department which counter signs the receipt acknowledgements to fool nose internal auditors. The researchers were able to get details of these fraudulent activities through the confessional statements made by some staff of the buying department in the course of the investigation.

### **Discussions**

The difference between forensic investigations and normal auditing is that the former must look beyond the figures in the financial records and deal directly with the business reality of the situation at hand. In the opinion of Zysman (2007), the specialty known as forensic accounting was formed by integrating accounting, auditing and other investigative skills, which is capable of providing an accounting analysis that is suitable to

the court for the purpose of dispute resolution. It encompasses both litigation support and investigative accounting. In order to fully comprehend the role of forensic accounting the Encarta Dictionary further defines it as “auditing to find fraud” and “auditing practice carried out to detect possible criminal activity concealed in financial accounts”. Forensic accounting investigation exercises can be very tasking but at the same time very interesting for a discerning investigator. The direction and depth of investigation will depend first on the outcome of the preliminary and other connected intermediate investigations as well as largely on the personal intuition of the investigators. No one method may seem perfect for all situations as different cases require different methods as well as different approaches especially when circumstance, environment and place of incidence under scrutiny differ as they always do in most cases. The various techniques applied so far for the case under contemplation were not stereotyped as it is usual with normal statutory audits; hence, this approach tends to supports the above view.

Going by the words of Zysman (2007) as quoted earlier, we have been able to apply a combination of simple auditing techniques of internal control evaluation tests on randomly selected significant transactions, simple accounting ratio analysis and simple variance analysis used in cost accounting to arrive at clues which pointed out the true direction that our investigation must follow to be able to uncover the series of criminal activities that were concealed on incremental basis over the past four years in the company’s financial statements. The instance of forensic investigation as highlighted above was able to provide an accounting analysis that almost revealed the whole extent to which fraudulent activities in the buying and production division affected the company’s fortunes over the stated periods. The main points of the analysis became the main evidence with which the police was able to arrest and prosecute the perpetrators of the fraud, the outcome of which was an out of court settlement between the company and those accused.

## **Conclusion**

Fraud and official corruption globally have taken monumental strides and so also have been efforts to curb them. Forensic investigations and accounting as seen from the curriculum of the few institutions offering them as a course or part of a course have been mostly characterized by investigations into money laundering cases, tracking of illegal money flow, detection of financial frauds in financial institutions, prevention of insider abuse and many more. Less emphasis has been laid on the detection and prevention of operational process frauds such as sometimes witnessed within a manufacturing environment. The urge to make extra money and get rich at all costs has rendered the word “trust” almost meaningless in some circles. Applying forensic methods in the investigation of manufacturing process frauds may not follow a single direction but must include some or all of the elements of the following procedure to succeed:

- a) Apply the normal audit approach to obtain preliminary indications that further/detailed investigation is necessary.
- b) Make detailed and varied analyses (financial, materials, assets, personnel’s, etc) on areas where exceptions seem to exist. This can best be done using a combination of normal audit tests and management accounting techniques particularly variance analysis.
- c) Obtain the permissions needed to extend your investigation when it is reasonable to conclude that you have been put “on enquiry”. You are put on enquiry when you seem to notice a suspicious transaction or trend or extra-ordinary event that is out of budgetary limitations or that has never occurred before.
- d) Investigate the origin, manner and effects of the suspicious item on the affairs, movement or behaviour of the resultant events, effects or actions (cause and effect relationship).

- e) Make necessary enquiries (in most cases using audit query style for full documentation of the answers) on areas where explanation of those in-charge of the process is required.
- f) For enquiries outside the four walls of the entity, obtain the required permission and necessary letter of introduction to visit the offices/premises of the third parties concerned.
- g) Document your findings and the supporting evidence and make the necessary report to the appropriate authority.

As can be learned from the methodology adopted for this investigation, a number of techniques were used, first was the comparative analysis between prior and present financial year, then followed by the variance analysis between the budgeted standards and the attained levels. This produced the first major clue that put our team on enquiry due to the exceptional nature of the variances. This then led us to experiment with the production process in order to find out whether the variances were caused by damages or production inefficiency. The answers from these experiments were negative and that made our investigation to look out for other possible cause(s) of the huge variance, hence, our probe into the material procurement machinery.

In summary forensic accounting as a discipline is an interesting one and can be highly rewarding to both the society and the investigator. However, it is pertinent to note here that only persons of impeccable character and capable of resisting temptation at any level that can be successful in the process of forensic investigation.



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