

# Assessment of Accounting Procedures in the Oil and Gas Sector of Nigeria Economy

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**Abstract-** The paper examined a critical assessment of accounting procedures in the oil and gas sector of Nigerian economy taking NNPC and some selected oil companies in Lagos metropolis of Nigeria. The paper also determined the effectiveness and efficiency of the accounting system of this industry which is assumed will reduce the incidence of tax avoidance by oil companies. The researcher employed ex-post facto design since the data collected were already available without any manipulation to test three hypotheses. Chi-square analysis was used to analyze the data collected for the study. Findings revealed that there is a significant relationship between the effectiveness of accounting procedure in enhancing performance, accuracy and reliability of accounting records in the industry. Also, the effectiveness of the accounting system will not reduce the incidence of tax avoidance by oil companies. It was also found that making the accounting procedures of this industry a major part of training curriculum will increase the standard and performance of accountants in the industry. Recommendation was therefore made that the NASB in conjunction with stakeholders in the oil and gas sector of the economy and accounting professional bodies should come together and come up with a uniform standard of accounting for this sector of the economy.

## I. INTRODUCTION

There is no aspect of life that accounting cannot be applied, and oil and gas is not an exception. Apart from the petroleum product in itself, there are numerous by-products such as gasoline, diesel, kerosene, jet fuel, lubricants asphalt, bitumen, petrochemicals such as pesticide and others, which necessitate serious development of accounting techniques to cater for it accountability.

The Nigeria economy, up to the 21<sup>st</sup> century has remained and oil economy, as it forms well over 60% of our Gross Domestic Product (GDP). Until recently, when the Nigeria government, under sectors of the economy, such as agriculture (which had been the mainstay of the economy before the discovery of oil and gas), solid mineral and industries. It is the economy under which other economic activities revolve. The Nigeria economy, one could conclude without missing words, that it is an oil-push economy, at present (Labaran, 2011).

The Nigeria Oil and Gas industry has been described as the most dynamic sector of the Nigeria economy and the development of oil resources as the most significant sector of the economic in recent years. Similar remarks which dominate the press and literature have created certain euphoria of optimistic expectations around the oil and gas industry. It is most

appropriate, thereof that a thorough assessment be made of the accounting procedures in this sector of the economy. (Aderiye, 1991).

Petroleum is a compound word which in Latin language is called Petra (meaning ROCK) and Oleum (meaning Oil), by this, one will not be wrong if petroleum is referred to as Rock Oil. Petroleum could also be formed from debris of forest fossil and it is also not wrong to call this Oil formation as offshore oil, while the rock oil can be called on-shore oil. The petroleum is as old as man itself over 5000 years of discovery. The early use of petroleum and gas was in China. The first commercial drillings were undertaken by a retired soldiers Col. Edwin L. Dake and later Captain Anthony Lucas in Titusville and Texas in USA respectively.

The Oil and gas operation has two major activities, which encompasses the umbrella of major activities from searching of the oil final consuming. These are:

1. Upstream activities and
2. Downstream activities

Upstream activities involved the acquisition of mineral interest in properties, exploration (including prospecting), developing and production of crude oil and gas. The activities are:

- a. **Exploration and Appraisal:** Exploration is the initial activities with a view to discovering oil place.  
**Appraisal** is the evaluation of the discovered oil site to determine whether it is of commercial value and quantity
- b. **Acquisition:** This is the entire process of obtaining the drilling right, which is made up of
  - i. Drilling rights
  - ii. Other activities imperative to oil and gas production
- c. **Development:** This is the preparation of ground for the oil and gas production after discovery. It entails
  - i. Drilling well and installing facilities necessary to obtain access to proven reserves and to efficiently and economically deplete the field.
- d. **Production:** This is the removal of oil from ground. This continues until it is uneconomical to continue production, then it will be abandoned.

A downstream activity involves transporting, refining and distribution and marketing of oil, gas and derivatives. The activities are:

- (a) Transportation: This is the movement of oil and gas from production site to:
  - i. Refinery
  - ii. Point of Sale
  - iii. From refinery to distribution point it is the link between upstream and downstream activities.
- (b) **Refining (Manufacturing):** This is the treatment of crude oil in order to form finished products.
- (c) **Distribution and Marketing:** This entails getting the refined petroleum product to the final users.

The cost incurred by the oil companies usually are classified as: minerals rights acquisition costs, exploration and drilling cost, development costs, production costs, support equipment and facilities costs and general costs.

The discovery of crude oil in commercial quantity is not always the result of all drilling and explorations. Therefore, the amortization of these costs will depend on the accounting system adopted by the company involved, two methods of accounting system prescribed by SAS 14 are:

- i. Full Cost Method
- ii. Successful Effort Method

Under the **full cost method**, costs incurred on mineral rights acquisition, exploration, appraisal and development activities should be capitalized. While, cost incurred on mineral rights acquisition, exploration, appraisal and development activities under the successful effort method should be capitalized on the basis of wells field or exploration cost centers, pending determination. Cost incurred prior to acquisition of mineral rights and other exploration cost centers, pending determination. Cost incurred prior to acquisition of mineral rights and other exploration activities not specifically directed to an identifiable structure should be expanded in the period they are incurred. (Aderiye, 1991).

Using **successful effort method**, costs incurred prior to acquisition of mineral rights and other exploration activities not specifically directed to an identifiable structure should be written-off in the period they are incurred. All costs incurred on mineral rights acquisition, exploration, appraisal and development activities should be capitalized initially on the basis of wells field or exploration cost centers pending determination such costs should be written off when it is determined that the well is dry mineral right acquisition costs that have not been allocated should be amortized over the remaining life of the license, amortization of exploration and drilling costs, incurred costs, incurred on each well, field or property should be on a unit of production basis, using proven developed reserves, the use of ceiling test is not mandatory under this method.

According to A. Adekunle Owojori and C.S Ola (2002), "both FC and SE are methods of accounting principles" the fundamental difference between FC and SE is the size of the cost center used in taking capital or expenses decision for exploration costs. Under FC all cost of finding oil and gas reserves would be capitalized regardless of whether a specific local effort is successful. While in SE, the smallest possible cost center is the property, reservoir or field, all costs on any of this will be expended. Here, only the exploration cost that results in

producing well are capitalized and those that resulted in dry holes extended immediately.

A company may use either the full cost method or the successful efforts method. The method used should be consistently applied and disclosed.

Companies in the downstream sector of the industry are also expected to state in their financial statement all significant accounting policies adopted in the preparation of those statements, these policies should be prominently disclosed under one caption rather than as note to individual items in the financial statements.

The Oil Industry is sensitive and complicated industry; enormous sums of money are incurred in exploration for which no revenue may be generated for quite a while. Multi-national companies are engaged in Oil production with the Federal Government participating under Joint Venture arrangement; all these had over years made accountancy witness a gathering momentum in the imposition of requirements and regulations concerning presentation, disclosure and measurement of accounting information. Ayo, M. Oni (1990) in his introductory speech to Mark ICAN's 25<sup>th</sup> Anniversary Lamented that "Oil companies solve their accounting problems in different ways which makes comparison and understanding considerably difficult. Therefore a statement of recommended accounting practice for the Oil industry should be developed.

The purpose of this section is to give a general and precise rules and regulations which currently govern the accounting profession and its practitioners. The work produces a result that will be in the interest of the users of accounting information and the firms in the oil and gas sector of the economy.

## II. PURPOSE OF THE STUDY

The purpose of this study was to determine if:

- (i) To find out whether effective accounting procedures enhance performance, accuracy and reliability of accounting record in the industry.
- (ii) To find out whether the effectiveness and efficiency of the accounting system of this industry will reduce the incidence of tax avoidance by oil companies.
- (iii) To find out whether making the accounting procedures of this industry a major part of training institution's curriculum will increase the standard and performance of accountants in the industry.

## III. RESEARCH QUESTIONS

- (iv) How does an effective accounting procedure enhance performance, accuracy and reliability of accounting record in this industry?
- (v) How does effectiveness and efficiency of the accounting system of this industry will reduce the incidence of tax avoidance by oil companies?
- (vi) Is there any significant contribution in making the accounting procedures of this industry a major part of training institution's curriculum to increase the standard and performance of accountants in the industry?

#### IV. HYPOTHESES

1. Effective accounting procedures do not enhance performance accuracy and reliability of accounting record in the industry.
2. The effectiveness and efficiency of the accounting system of this industry will not reduce the incidence of tax avoidance by oil companies.
3. Making the accounting procedures of the industry a major part of training curriculum will not increase the standard and performance of accountants in the industry

#### V. METHODOLOGY

In writing this paper, the researcher used ex-post facto design and the data were results of the members of staff of NNPC and some selected oil Companies in Lagos metropolis. The respondents were basically managers and middle level accounting officers in the selected companies based on simple random sampling technique. The research used both primary and secondary instruments for the data collected because the topic involved the study population that spread over the companies in the oil and gas sector whatever information gathered from all the samples randomly selected is believed to be the same in all the companies in the sector.

The null hypotheses were tested using Chi-square method to analysis and interpret the data collected, being a method that tests the frequency of a differed object to the expected theoretical assumptions. It is also used to draw inferences about the various distribution determined by the degree of freedom.

$$X^2 = \frac{E (f_o - f_e)^2}{f_e}$$

Where  $f_o$  = observed frequency

$f_e$  = Expected frequency

E = Summation

#### VI. RESULTS

##### ANALYSIS OF DATA

Before data can be analyzed the researcher calculated the expected values.

The expected values are calculated in the following order:

$$\begin{array}{cccc} C_{11}, C_{12}, - & - & - & C_{14} \\ C_{21}, C_{22}, - & - & - & C_{24} \\ C_{31}, C_{32}, - & - & - & C_{34} \end{array}$$

Where  $C_{11}$  = Expected value of row, column 1 and so on.

**Hypothesis I**

$$C_{11} = \frac{20 \times 48}{100} = 9.6$$

$$C_{12} = \frac{20 \times 44}{100} = 8.8$$

$$C_{13} = \frac{2 \times 8}{100} = 1.6$$

$$C_{14} = \frac{20 \times 0}{100} = 0$$

**Hypothesis 2**

$$C_{11} = \frac{20 \times 48}{100} = 9.6$$

$$C_{12} = \frac{20 \times 36}{100} = 7.2$$

$$C_{13} = \frac{20 \times 16}{100} = 3.2$$

$$C_{21} = \frac{20 \times 48}{100} = 9.6$$

$$C_{22} = \frac{20 \times 36}{100} = 7.2$$

$$C_{23} = \frac{20 \times 16}{100} = 3.2$$

$$C_{24} = \frac{20 \times 0}{100} = 0$$

**Hypothesis 3**

$$C_{11} = \frac{20 \times 52}{100} = 10.4$$

$$C_{12} = \frac{20 \times 40}{100} = 8$$

$$C_{13} = \frac{20 \times 8}{100} = 1.6$$

$$C_{14} = \frac{20 \times 0}{100} = 0$$

$$C_{21} = \frac{20 \times 52}{100} = 10.4$$

$$C_{22} = \frac{20 \times 40}{100} = 8$$

$$C_{23} = \frac{20 \times 8}{100} = 1.6$$

$$C_{24} = \frac{20 \times 0}{100} = 0$$

All expected value calculated are shown as a subscript to the observed value in the table below.

### Hypothesis I

**Table 1: Effective accounting procedures do not enhances performances accuracy and reliability of accounting records in the industry**

QUESTIONS	HIGHLY RELIABLE	RELIABLE	JUST RELIABLE	NOT RELIABLE	TOTAL
1	8(9.6)	12 (8.8)	0(1.6)	0(0)	20
2	8(9.6)	12 (8.8)	0(1.6)	0(0)	20
3	8(9.6)	8 (8.8)	4(1.6)	0(0)	20
4	12(9.6)	4 (8.8)	4(1.6)	0(0)	20
5	12(9.6)	8 (8.8)	0(1.6)	0(0)	20
<b>TOTAL</b>	<b>48</b>	<b>44</b>	<b>8</b>	<b>0</b>	<b>100</b>

Source: Researcher survey, 2014

### Hypothesis 2

**Table 2: The Effective and efficiency of the accounting system of this industry will not reduce the incidence of tax avoidance by oil companies.**

QUESTIONS	YES	NO	I DON'T KNOW	TOTAL
6	16(9.6)	0(7.2)	4(3.2)	20
7	0(9.6)	16(7.2)	4(3.2)	20
8	16(9.6)	0 (7.2)	4(3.2)	20
9	4(9.6)	12(7.2)	4(3.2)	20
10	12(9.6)	8 (7.2)	-(-3.2)	20
<b>TOTAL</b>	<b>48</b>	<b>44</b>	<b>8</b>	<b>100</b>

Source: Researcher survey, 2014

### Hypothesis 3

**Table 3: Making the accounting procedures of this industry a major part of training curriculum will not increase the standard and performance of accountants in the industry.**

QUESTIONS	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	TOTAL
11	8(10.4)	8(8)	4(1.6)	0(0)	20
12	16(10.4)	4(8)	0(1.6)	0(0)	20
13	8(10.4)	8(8)	4(1.6)	0(0)	20
14	8(10.4)	12(8)	-(-1.6)	0(0)	20
15	12(10.4)	8(8)	-(-1.6)	0(0)	20
<b>TOTAL</b>	<b>52</b>	<b>40</b>	<b>8</b>	<b>0</b>	<b>100</b>

Source: Researcher survey, 2014

To get out  $\chi^2$  Cal., apply the formula.

$$X^2 = \frac{f_o - f_e}{f_e}^2$$

fe

Where:- fo = Observed Frequency

Fe = Expected Frequency

and E = Summation.

### HYPOTHESIS I

$$\chi^2 \text{ Cal} = (8 - 9.6)^2 + (12 - 8.8)^2 + (0 - 1.6)^2 + (0 - 0)^2 + (8 - 9.6)^2 \\ 9.6 \quad 8.8 \quad 1.6 \quad 0 \quad 9.6$$

$$(12 - 8.8)^2 + (0 - 1.6)^2 + (0 - 0)^2 + (8 - 9.6)^2 + (8 - 8.8)^2 \\ 8.8 \quad 1.6 \quad 0 \quad 9.6 \quad 8.8 \\ (0 - 0)^2 + (12 - 9.6)^2 + (8 - 8.8)^2 + (0 - 1.6)^2 + (0 - 0)^2 \\ 0 \quad 9.6 \quad 8.8 \quad 1.6 \quad 0$$

$$\begin{aligned} X^2 \text{ Cal} &= 0.27 + 1.16 + 1.6 + 0 + 0.27 + 1.16 + 1.6 + 0 - 02.7 + 0.07 + 3.6 \\ &\quad + 0 + 0.6 + 2.62 + 3.6 + 0 + 0.6 + 0.07 + 1.6 + 0 \\ X^2 \text{ Cal} &= 19.09 \end{aligned}$$

To get  $\chi^2$  tab., check the degree of freedom:

$$\text{Degree of freedom (d.f)} = (R - I)(C - I)$$

Where:- R = Number of Rows

C = Number of Columns

$$\begin{aligned} (5 - 1)(4 - 1) &= 4 \times 3 \\ &= 12 \end{aligned}$$

$$\text{The significant level} = 0.05$$

Since it is a two tailed test, the significant level will be divided into two.

$$0.052 = 0.025$$

$$X^2 \text{ tab} = 23.34$$

Decision Rule:

If  $X^2 \text{ cal} < X^2 \text{ tab}$ , accept  $H_0$  and if  $X^2 \text{ cal} > X^2 \text{ tab}$  reject  $H_0$ .

## VII. INTERPRETATION OF DATA

According to chi-square decision rule if the  $X^2$  cal is less than the critical  $X^2$ , that is the  $X^2$  tab. The null hypothesis is accepted, otherwise it is rejected. Going by this rule result of the data analyzed will be interpreted as follows:

### Hypothesis I

Effective accounting procedures do not enhance performance, accuracy and reliability of accounting records in this industry.

Since the  $X^2$  cal (19.09) is less' than the  $X^2$  tab (23.34) and the decision rules states that if the  $X^2$  calculated is less than  $X^2$  tab, we accept  $H_0$  and reject  $H_1$ .

Therefore, we concluded that "there is a significant relationship between the effectiveness of accounting procedure in enhancing performance, accuracy and reliability of accounting records in this industry",

### Hypothesis 2

The effectiveness and efficiency of the accounting system of this industry will not reduce the incidence of tax avoidance by oil companies.

Here, the  $X^2$  cal = (54.46) while the  $X^2$  tab = (17.54). Since the  $X^2$  calculated is greater than  $X^2$  tab, we therefore concluded that "the effectiveness and efficiency of the accounting system of this industry will not reduce the incidence of tax avoidance by Oil companies

### Hypothesis 3

Making the accounting procedures of the industry a major part of training curriculum will not increase the standard and performance of accountants in the industry.

In this case, the  $X^2$  Calculated is less than the  $X^2$  tab, the null hypothesis will be accepted and the alternative hypothesis rejected. Therefore, it will be concluded that "Making the accounting procedures of the industry a major part of training curriculum will increase the standard and performance of accountants in the industry".

## VIII. CONCLUSION

This research work has practically highlighted the various accounting procedures as related to the oil and gas sector of the economy. This research was able to identify the role of effective accounting procedure as a means of enhancing performances, accuracy and reliability of accounting records in the sector, it also display the relationship between effective and efficient accounting procedures and tax avoidance, which was concluded as not to be having any relationship.

The important of the introduction of oil and gas accounting systems into the training curriculum of training institution was also emphasized.

The research cannot however claim to have fully exhausted all the problems associated with the accounting procedures of oil and gas sector of the economy, but it can also be said that justice has been done to the prevailing problems, which are relevant to the areas focused.

It is therefore stated that this research work will be of assistance to accounts, companies in the oil and gas sector of the economy, accounting training institutions and other researchers who may want to carry out further research on this topic. The ticking of the Nigerian economy today depends largely on the success of the oil industry, and the complexity and lack of uniformity in preparation of accounts currently exists in the industry, these makes comparison difficult and a call for urgent attention need to be made to find a lasting solution to these problems.

It will also be of immense benefit to the relevant tax authority, as some of the attention will be focused on what the adoption of a uniform and efficient accounting procedures will do in the reduction of incidence of tax avoidance. Training institutions, students and the research department of oil companies can also benefit from this study as attention is given to the effect of training in getting an effective accounting system.

## IX. RECOMMENDATION

Based on the above findings, the following recommendations were made:

- (1) The NASB in conjunction with stakeholders in the oil and gas sector of the economy and accounting professional bodies should come together and come up with a uniform standard of accounting for this sector of the economy.
- (2) The NASB and other professional bodies should also organize seminars and symposia of finance and accounting in the oil and gas sector of the economy and ensure that all methods of calculation are fair.
- (3) Accountants in the oil and gas sector also aspire to know more about the technical detail of the refinery and petroleum chemical operations.
- (4) Companies in the industry can also embark on the training and development of their manpower, since this is the greatest asset.
- (5) ICAN and other training institutions should design and introduce oil and gas accounting as a major part of their training curriculum of ensure the availability of qualified accountants in this sector of the economy.

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## APPENDICES

## Appendix 1

## List of Abbreviation:

- NNPC – Nigerian National Petroleum Corporation  
GDP – Gross Domestic Product  
FC – Full Cost  
SE – Success full Effort  
ICAN – Institute of Chartered Accountants of Nigeria  
NASB – Nigerian Accounting Standard Board

## Appendix 2

### Hypotheses Questions

1. How will you access the design and maintenance of an effective accounting procedure for routine operations in oil and gas producing industry?
2. How will you access the design of accounting procedures for securing the accuracy and reliability of accounting records?
3. What is your comment on the accounting procedures introducing by Nigeria Accounting concepts and convention recording procedures in the industry?
4. How will you assess the verification of accounting documents before recoding?
5. Do you have any believe in the soundness of the Petroleum Profit Tax Act (PPTA).
6. Can you say the Petroleum Profit Tax Act (PPTA) is too weak for the oil Companies?
7. Can you say the accounting procedure of oil Companies encourage compliance with the Petroleum Profit Tax Act?
8. Is it true that accountants encourage Tax avoidance through false information, alteration of documents, aiding and abetting etc. in order to obtain a reduced tax for management?
9. Can an effective and efficient accounting procedure eradicate tax avoidance?
10. Introduction of accounting procedures of oil and gas industry into the curriculum of training institutions will improve the performances of accountants in the sector?
11. Introduction of Training Programmes for Accountants in the oil Companies with improves their performance?
12. The accounting procedure of oil and gas is major part of the Curriculum Accounting Training Institutions?
13. Introduction of Training Programme for Accountants in this Sector will only serve a wastw of resources?
14. The major requirements for the effective performance of Accountants can be acquired during training?

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