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Determinants of the preference of accounting method of oil and gas companies in Nigeria

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Abstract
The focus of this study was to examine the determinants of the preference of accounting method of oil and gas companies in Nigeria. Specifically, the study examines the significance of Securities underwriting, Debt covenants, Political cost and Managerial compensation in the preference of accounting methods. the Using the survey research design and the spearman ranked correlation analysis, the study finds that putting these factors in perspective; Securities underwriting, Debt covenants, Political cost and except for Managerial compensation, the Full cost method appears to have a stronger correlation than the successful cost method. This may imply that in the determination of the choice of accounting methods to be used by oil and gas companies, these factors may present full cost method as more preferable. However, caution is suggested in drawing too much inferences from the results as other more sophisticated techniques like discriminant analysis and logistic regression may be needed to substantiate these findings.

Keywords: Full cost method, successful cost method, political cost, debt covenants and managerial compensation. Jel classification; M4, M41

1. Introduction

Oil revenue has been and is still the main stay of the Nigerian economy and is likely to remain so for some time to come. Total annual revenue from Oil runs into several billions and the importance of ensuring that effective machinery exists when collating this massive source of wealth cannot be over emphasized (Okoye and Mbonu 2005) [20]. Methods and procedures followed by oil companies in accounting for explorations and development costs diverge significantly. Two basic accounting methods that are in common use are the full cost and the successful efforts methods. Both methods are widely followed and each of them has a valid conceptual justification. The past few decades has witnessed in a greater momentum the emergence of a major controversy in accounting practice and debate concerning two equally reputable techniques of Accounting in the oil and gas industry. There has been a long history of diversity in the application of accounting methods in the oil and gas industry. Although the debate over choice of accounting methods in the oil and gas sector in the face of alternatives between Full Cost and Successful Effort method dates back to the mid-20th century and is unlikely to abate soon (Umobong, 2015) [23].

The main difference between the two methods is capitalization versus expensing of unsuccessful activities costs. The successful effort method capitalizes only the costs of successful activities, whereas the costs of unsuccessful activities are expensed under this method. On the other hand, the full cost method capitalizes not only the costs of successful activities, but also the costs of unsuccessful activities (Abushaiba and Eldanfour, 2014) [1]. Oil and Gas companies are faced with the dilemma of choosing between these two acclaimed methods of accounting for oil and gas companies.

One of the major arguments advanced by Critics of Successful Effort method is that it causes earnings variability as earnings change from period to period in addition to asset minimization. Critics of Full Cost method on the other hand argues that earnings are inflated because unsuccessful operational costs in search for reserves are capitalized. The adverse effect is that the financial statement gives inaccurate information to investors who cannot rely on the reported earnings to make decisions. In particular, the existence of multiple accounting methods in the oil and gas sector may reduce the value relevance of accounting information. Companies whose primary business is exploration, development, and production of oil and gas, are faced with the dilemma of choosing between two competing accounting methods; either the full-cost method (FC) or the successful-efforts method (SE). However the full cost and successful efforts methods usually produce markedly different results. Full cost always yields higher book asset values than successful efforts. Net income is higher under full cost when drilling and exploration costs are sufficiently large relative to production, and are lower when this is not the case (Malmquist 1990) [19]. When faced with such a dilemma, certain factors are bound to have an effect on the accounting choice made by oil and gas companies.

The debate is further fueled by the inability of regulators to choose one method over the other leaving the decision to the whims and caprices of the firm who may choose one method over the other to mask their real intentions. According to Umobong (2015) [23] any of the methods adopted represents a historical perspective that is not reflective of the economic reality and the raging arguments reveals the possibility of manipulation of earnings by oil firms depending on intentions through choice of accounting method. Due to the impact of choice of accounting methods on reported earnings, accountants and researchers are interested on the factors that may actually influence the choice of method of reporting in the oil and gas industry. In Nigeria, oil revenue accounts for more than 70 percent of earnings. The heavy dependence of the Nigerian economy on oil and the further exacerbates the need for researches into oil and gas accounting issues.

2. Literature Review

2.1 Accounting Methods in Oil and Gas Companies

Financial statements of oil and gas companies prepared in accordance with generally accepted accounting principles (GAAP) may utilize either successful efforts or full cost accounting for oil and gas reserves (Howard and Harp 2009) [16]. These methods differ in the treatment of specific operating expenses relating to exploration costs (as opposed to acquisition or development costs, which are capitalized in both methods). In the field of accounting regulation of oil exploration and production activities, the debate over which accounting model best captures economic transactions in the oil industry dates back to the 1960s and 1970s. Even in the U.S., which has been a pioneer in the development of the theoretical and normative frameworks of accounting in the oil industry, both the Securities and Exchange Commission (SEC) and Financial Accounting Standards Board (FASB) have disagreed with each other about the appropriate standards for the oil industry; as a result, two conflicting accounting methods have been allowed to coexist; the "successful efforts" method and the "full cost" method (Cortese, Irvine, & Kaidonis, 2009) [10].

2.1.1 Full Cost Method

The full cost (FC) method, allows all operating expenses relating to locating new oil and gas reserves - regardless of the outcome - to be treated as an asset (capitalization) in the financial statement. It allows for capitalization and amortization (systematic write off) of the assets over the useful or economic life time of the asset. The full cost method includes all the costs related to crude oil and gas reserves exploration and development regardless of the success or failure of this activity. The costs are collected on “cost pools”, and the expenditure is divided among these cost pools depending on the income resulting from the valorization of the reserves associated to each cost pool. The cost pool is used by the full cost method as basic unit for amortization, evaluation and development costs collection and for depreciation test performance. The cash flows generated by the cost pools may be allocated depending on the same factors. The cost pools have certain common characteristics determined by the: geological area, infrastructure interdependence, common economic environment, common markets development. These cost pools are usually oil wells or oil fields (Leontina 2013) [18]. The view represented by the Full Cost method holds that, in general, the dominant activity of an oil and gas company is simply the exploration and development of oil and gas reserves. This implies that all costs incurred in pursuit of that activity should first be recognized, capitalized and then amortized over the course of a full operating cycle or economic useful life of the asset.

Under the full cost method, all costs incurred in exploring, acquiring, and developing oil and gas reserves in a cost center are capitalized; Geological and geophysical (G & G) studies, successful and unsuccessful, are capitalized for book and financial purposes. For tax purposes, successful G & G costs are capitalized and unsuccessful G & G costs are expensed. An adjustment is required for the amount of unsuccessful G & G costs expensed; Delay rental costs are capitalized for book and financial purposes; exploratory dry hole costs are capitalized for book and financial purposes. For tax purposes, all dry hole costs (exploratory or developmental) are capitalized unless the taxpayer elects to expense them. Since most taxpayers expense these costs for tax purposes, an adjustment is required; impaired or abandoned property costs remain capitalized in the cost center for book and financial purposes. For tax purposes, no deduction is allowed unless a property is totally worthless. An adjustment is required only when abandonment is claimed for tax purposes; General and administrative costs which are not associated with acquisition, exploration, and development activities are expensed. However, overhead that can be associated with acquisition, exploration, and development activities is capitalized. The costs are handled the same way for tax purposes; Depletion usually will require an adjustment. In many instances, taxpayers may be able to claim a larger percentage depletion deduction in lieu of cost depletion. Even where cost depletion is claimed for book and financial purposes because of the different capitalization rules, the amount of cost depletion allowable will vary.

2.1.2 Successful Effort Method

The successful efforts method only takes into account the exploration costs which are directly related to commercial crude oil and gas reserves strike and development, and which are recorded in the books and amortized during the operation of these assets. The success or failure of each exploration effort is analyzed for each particular field, depending on the identified and tested reserves. A field is an area that has one or several reserves grouped together or connected by the same individuals and/or layered geological structure (Leontina 2013) [18]. The Financial Accounting Standards Board (FASB) has issued FASB Statement No.19 dealing with the successful efforts method. Under the SE method, costs incurred in searching for, acquiring and developing oil and gas reserves are capitalized if they directly result in producing reserves. Costs which are attributable to activities that do not result in finding, acquiring, or developing specific reserves are charged to expense. The cost center for the SE method is a lease, field, or reservoir. The successful efforts (SE) method allows a company to recognize as assets (capitalize) only those expenses related to successful discovery of new oil and natural gas reserves. For unsuccessful (or dry hole) outcomes, the associated operating costs (expenses) are immediately charged against revenues for that period in line with the matching concept. A drilling effort is classified as successful if it results in the extraction of economically recoverable oil and gas and classified as unsuccessful if it results in a dry hole. According to the view behind the Successful Effort method, the ultimate objective of an oil and gas company is to produce the oil or natural gas from reserves it locates and develops so that only those costs relating to successful efforts should be capitalized. Conversely, because there is no change in productive assets with unsuccessful results, costs incurred with that effort should be expensed.

2.2 Conceptual Differences between the Accounting Methods

The main difference between the full cost method and the successful efforts method (which are the most common methods employed in the oil and gas industry) consists of the actual recording of these costs in the financial statements. Thus, the successful efforts method immediately reflects the failure of the exploration activity in the profit and loss

account, whereas the full cost method reflects these costs in the profit and loss account at a later time, namely when these costs are amortized (Leontina 2013) [18]. The impact of exchanging the full cost method for the successful efforts method consists of net initial assets diminution and, consequently, of reducing the acknowledged amount in the profit and loss account, by reducing the amortization

Under the full cost concept, all costs incurred in acquiring, exploring, and developing properties within a relatively large geopolitical (as opposed to geological) cost center (such as a country) are capitalized when incurred and are amortized as mineral reserves in the cost center are produced, subject to a limitation that the capitalized costs not exceed the value of those reserves.

Both full cost and successful effort methods of accounting in the oil and gas industry are allowed under generally accepted accounting principles. According to Okoye and Mbonu (2005) [20] the fundamental difference between full and successful effort is the size of the cost center used in the capitalize/expense decision for exploration costs. Under full cost, the largest possible cost center is the country or even a continent, and all costs of finding oil and gas reserves would be capitalized regardless of whether a specific local effort is successful. Under successful effort, the smallest possible cost center is the property (lease), reservoir, or field (most SE companies use the field), and all costs of that well would be expensed unless oil and gas reserves are found. Establishing a direct cause-and-effect relationship between costs incurred and reserves discovered is not relevant to recording the costs as assets under full cost, while such a relationship must exist to record the costs as assets under successful effort. Both methods eventually will produce the same accounting results because the same costs are incurred and the same discoveries made. The timing of those results, however, may vary significantly. Dyckman and Smith (1979) [26] notice that successful effort embodies finite uniformity: if exploration is unsuccessful, exploration costs are expensed; however, when successful exploration occurs, costs are capitalized.

2.3 Determinants of Accounting Method Adopted By Oil and Gas Companies

2.3.1 Securities underwriting

The activities of securities underwriters have been identified as having influence on the costing option adopted by oil and gas companies. When these companies need to access funds through equity financing, they usually engage the services of underwriters who secure the financing process. In the event of future bankruptcy, the underwriter might be held legally responsible and the effect of negative publicity on the value of his brand name of the underwriting institution is challenged. As a result, underwriters can be somewhat loathe to bring companies with negative book value to the market. Hence they prefer that the underlying assets net of liabilities be positive. Thus, while it may not be possible to fool the market with differences in book values deriving entirely from choice of accounting method.

The choice of method will not affect the likelihood of bankruptcy and should not affect the aftermarket price performance, as these depend on firm value and cash flows. Nevertheless, should either poor aftermarket price performance or bankruptcy occur, and the underwriter finds himself faced with shareholder suits, the lower book values and higher variability of reported results for a small drilling and exploration firm under successful efforts could conceivably make it more difficult for a court to make the link between the offering price and the underlying financial statements which accompanied the prospectus, particularly if the book values presented in the prospectus are negative. Therefore, if all firms had to use successful efforts, as was proposed by the FASB in 1979, then the costs associated with the increase in legal expenses and potential loss of brand name faced by underwriters would have to be passed on to issuers and might result in some issues not coming to market at all.

2.3.2 Debt Covenants

Besides the issue of negative equity, the active monitoring of debt covenants can be problematic for both the lender and the borrower if the accounting values being monitored contain large components of 'white noise' variation relative to variation in the underlying values of these phenomena. False signals of financial distress can cause unnecessary default and costly renegotiation proceedings that are better avoided, not only from the standpoint of bankers but from the standpoint of management, bondholders, and shareholder as well. Therefore, value-maximizing managers have incentives to choose the accounting method that produces the least white noise. Generally, full cost produces less variance in the debt-equity ratio; however, for the larger firms a full cost based measure of the variance in the debt-equity ratio may be unrealistically low. These arguments presuppose that covenants in the oil and gas industry are in fact written in terms of accounting data. It has been argued elsewhere that this may not be the case. Foster (1980) [13], for example, suggests that the use of covenants based on reserve valuation estimates of geological engineers are common in the industry.

2.3.3 Managerial Compensation

Accounting-based managerial compensation schemes create additional incentives to choose an accounting method that provides accurate signaling of corporate financial condition and performance. According to Coase (1937) [9], Jensen and Meckling (1976) [17], long-run firm survival and value maximization demand that agency costs are mitigated through efficient contracting. Therefore, whatever may be the personal desires of individual managers for more lucrative and less volatile compensation packages, bondholders, shareholders, and other residual claimants (as well as other managers who view their personal fortunes as more closely tied to prosperity of the firm) prefer a system that rewards managers according to readily available information that accurately reflect the contribution of those managers. Additionally, managers should prefer an accounting method that reflects their performance accurately. That is, they prefer a high degree of information content relative to pure randomness in the accounting criteria used to compensate them, or a high signal-to-noise ratio. When management's compensation is tied to reported earnings they bear additional risk (in comparison with a straight salary without bonuses). Managers have to be compensated for bearing this additional risk. This is the usual trade-off facing a firm in compensating management. Thus, by aligning their incentives, they are caused to bear more risk. Alignment of incentives should raise firm income, while raising managers' total compensation will have the opposite effect. Tying managers' compensation to a noisy signal creates

inefficient risk-bearing arrangements which, in turn, impose real costs upon the firm. Therefore, both shareholders and bondholders have incentives to remove noise from the monitoring process.

According to Malmquist (1990) [19] rational value-maximizing managers will choose accounting methods that facilitate efficient contracting. This logic can also be applied to the design of the managerial compensation plan, including its degree of dependence upon accounting numbers vs. equity market performance. Some researchers have suggested that it is relatively easy to modify bonus compensation packages when there is a change in accounting method (Watts and Zimmerman, 1978) [24]. This suggests that the choice of managerial compensation plan may be endogenous to the system determining choice of accounting method

2.3.4 Political Cost

Several writers argue that larger firms are more politically sensitive and because of their large size they are more likely to draw the attention of bureaucrats and politicians than are smaller firms. As a result, large firms are more likely to employ accounting methods that will defer current earnings to future time periods. This is especially true of oil and gas firms. Consider, for example, the 1970s when oil prices increased substantially and oil companies' profits soared. Since there was also a considerable amount of drilling going on at that time, large firms employing successful efforts were able to expense their dry hole costs, thus keeping reported earnings from going still higher. For such firms, successful efforts have the added advantage in the political arena of valuing proved reserves at only a small fraction of their market value.

It is well acknowledged that large oil and gas companies usually use the successful-efforts method, while small companies choose the full-cost method (Sunder, 1976; Deakin, 1979; Dhaliwal, 1980; Bryant, 2003) [22, 11, 12, 8]. The difference in the choices taken by large and small oil and gas companies are usually explained by arguing that small firms cannot afford the earnings volatility induced by the successful-efforts method, and it would be hard for small firms to obtain capital if they expense their unsuccessful exploration costs. Advocators of the full cost method believe that the method is attractive for investors especially for small companies looking for more investors and to avoid losing the current investors. The FC method helps these companies by reporting financial statements which give a more favourable view of their income and financial position. Whereas, if they use successful effort method, there will be peaks and valleys in earnings over time (Baker, 1976; Al Jabr & Spear, 2004; Brooks, 2005) [3, 2, 7].

3. Methodology

The research design for this study is the exploratory research design. The exploratory design advocated by Petty (1991) relies on observing phenomena in their natural setting and deriving theories that fit the analysis of the data. It is employed when the researcher is concerned with surveying responses from a sample of the population without any control on the elements of the sample and as such it is used extensively to collect information on numerous subjects of research (Nachmias and Nachmias, 2009). The population of the study comprises of staffs of oil companies in Nigeria operating both at the upstream and downstream sectors. A sample of 143 respondents was selected for the study. Primary data was used as the data source while the chi-square statistical technique was employed as the data estimation technique. The Cronbach's alpha is used to test the reliability of scales used in this study while the spearman ranked correlation analysis was adopted for the data analysis.

4. Presentation and Analysis of Result

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
0.882	0.899	12

Source: Researcher's computation (2015).

The table above examines the properties of measurement scales and the items that compose the scales. Ideally, the Cronbach alpha coefficient should be about 0.7 (Pallant, 2001). The Cronbach coefficient for the study performs very well with a value of. 882 and this indicates that the scales and the items of the research instrument show a high measure of internal consistency.

Table 2: The Correlation Analysis

	FC	SC	SEC	DBTC	PCOST	MCOM
FCM	1					
SCM	.122*	1				
Sig	0.036	.				
SEC	0.503	0.077	1			
Sig.	0.04*	0.187	.			
DBTC	0.468	0.005	0.01	1		
	0.039	0.927	0.862	.		
PCOST	0.045*	0.056	0.039	.431**	1	
	0.001	0.34	0.499	0	.	
MCOM	0.521**	.118*	-0.01	.306**	.496**	1
	0.005	0.042	0.913	0	0	.

Source: Researchers computation (2015) * sig @ 5%, ** sig @10%.

Where; FCM= Full cost method
SCM= Successful cost method
SEC= Securities underwriting
DBTC= Debt covenants
PCOST = Political cost
MCOM= Managerial compensation

From table 4.2 0 above, the correlation coefficients of the variables are examined. However of particular interest to the study is the correlation between both cost methods (FCM, SCM) and the other firm characteristics. As observed, a positive correlation exists between FCM and SEC (r= 0.503) and the relationship is also significant at 5% level (p=0.000). The result suggests that the concerns of securities underwriters could be associated with the decision to adopt full cost method. A positive correlation exists between FCM and DBTC (r= 0.468) and the relationship is also significant at 5% level (p=0.039). The result suggests that the debt contracts have a significant association with the decision to adopt FCM. This is because the method according to foster (1980) [13] produces the least white noise and less variance in the debt-equity ratio. A positive correlation exists between FCM and PCOST (r= 0.045) and the relationship is significant at 5% level (p=0.01). Several writers argue that larger firms are more politically sensitive and because of their large size they are more likely to draw the attention of bureaucrats and politicians

than are smaller firms. As a result, large firms are more likely to employ accounting methods that will defer current earnings to future time periods (Bryant, 2003) [8]. The FCM method helps these companies by reporting financial statements which give a more favourable view of their income and financial position (Al Jabr & Spear, 2004; Brooks, 2005) [2, 7]. A positive correlation exists between FCM and MCOMP (r= 0.521) and the relationship is also significant at 1% level (p=0.005). Evaluating the relationships between SCM and the other explanatory factors, we observed that SCM is positively correlated with SEC (r= 0.077), DBTC (r= 0.005), PCOST (r= 0.056) and MCOMP (r= 0.118). The correlation coefficient appear significant only for MCOM. The results suggest that putting these factors in perspective; Securities underwriting, Debt covenants, Political cost and except for Managerial compensation, the Full cost method appears to have a stronger correlation than the successful cost method. This may imply that in the determination of the choice of accounting methods to be used by oil and gas companies, these factors may present full cost method as more preferable. However, caution is suggested in drawing too much inferences from the results as other more sophisticated techniques like discriminant analysis and logistic regression may be needed to substantiate these findings.

5. Conclusion

Methods and procedures followed by oil companies in accounting for explorations and development costs diverge significantly. Two basic accounting methods that are in common use are the full cost and the successful efforts methods. Both methods are widely followed and each of them has a valid conceptual justification. The past few decades has witnessed in a greater momentum the emergence of a major controversy in accounting practice and debate concerning two equally reputable techniques of Accounting in the oil and gas industry. There has been a long history of diversity in the application of accounting methods in the oil and gas industry. Although the debate over choice of accounting methods in the oil and gas sector in the face of alternatives between Full Cost and Successful Effort method dates back to the mid-20th century and is unlikely to abate soon. The main difference between the two methods is capitalization versus expensing of unsuccessful activities costs. The successful effort method capitalizes only the costs of successful activities, whereas the costs of unsuccessful activities are expensed under this method. On the other hand, the full cost method capitalizes not only the costs of successful activities, but also the costs of unsuccessful activities. Oil and Gas companies are faced with the dilemma of choosing between these two acclaimed methods of accounting for oil and gas companies. Using the survey research design and the spearman ranked correlation analysis, the study finds that putting these factors in perspective; Securities underwriting, Debt covenants, Political cost and except for Managerial compensation, the Full cost method appears to have a stronger correlation than the successful cost method. This may imply that in the determination of the choice of accounting methods to be used by oil and gas companies, these factors may present full cost method as more preferable. However, caution is suggested in drawing too much inferences from the results as other more sophisticated techniques like discriminant analysis and logistic regression may be needed to substantiate these findings.

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