

EXPLORATION COST AND PROFITABILITY IN OIL AND GAS INDUSTRY: A STRUCTURAL EQUATIONS MODEL APPROACH

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Abstract

The aim of the study is to examine the relationship between exploration cost and other oil and gas cost on profitability of oil and gas companies. The sample for the study covers 4 oil and gas companies in the upstream oil and gas industry in Nigeria. The study focuses on these number of oil and gas companies in the downstream sector because of the challenges of getting secondary data for exploration companies in the upstream sector even for the public entities. The study covers variables such exploration cost (EXPCT), acquisition cost (ACQST), Production cost (PRDCT), Environmental cost (ENVCT) and financial profitability of oil and gas companies measured using ROE, ROA, EPS and Profit margin (PM). The path analysis indicates the existence of a positive (0.1109) and significant ($p=0.001$) relationship between environmental cost (ENVCT) and ROE, a positive (0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and ROA, a negative (-0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS and a positive (0.2674) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS. The path analysis indicates the existence of a negative (-0.0395) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and ROE, a negative (-0.110) and insignificant ($p=0.065$) relationship between production cost (PRDCT) and ROA, a negative (-0.1183) and insignificant ($p=0.081$) relationship between production

cost (PRDCT) and EPS and a negative (-0.090) and insignificant ($p=0.154$) relationship between production cost (PRDCT)) and PM. The study recommends the need for proper cost planning, forecasting and management to aid profitability of oil and gas companies.

Introduction

The oil & gas industry has a peculiar business model that combines technology, political relationships, experienced personnel, environmental protection and economics (based on economies of scale) in the high-risk pursuit of a finite but vital commodity. This model imposes major challenges on profitability of companies in this industry. They must assure that newly discovered resources are used in economical and sustainable manner, where technology and cost efficiency are key aspects. Technology is also relevant in overcoming the fact that new supplies are getting located more and more distant from consuming markets. That's especially true for gas and offshore oil resources (Petrobras Annual Report 2007). The attention given to climate changes, the worldwide depletion of oil resources, the decreasing oil demand of developed economies and the huge variations of the oil price during last year have challenged the petroleum industry and companies, making it increasingly interesting to investigate the impact of all this on shareholders' returns.

The value chain in the oil and gas industry can be divided into three; upstream, downstream and the midstream. The terms upstream and downstream oil and gas production refer to an oil or Gas Company's location in the supply chain (Anowor and Ogbe, 2019). Some companies are considered to be "integrated" because they combine the functions of two or three of the groups. Upstream oil and gas production is conducted by companies who identify, extract, or

produce raw materials. Downstream oil and gas production companies are closer to the end user or consumer. Upstream oil and gas production and operations identify deposits, drill wells, and recover raw materials from underground. They are also often called exploration and production companies. This sector also includes related services such as rig operations, feasibility studies, machinery rental, and extraction of chemical supply (Anowor, Achukwu and Ezekwem, 2014). The closer an oil and gas company is to supplying consumers with petroleum products, the further downstream it is said to be in the industry. Downstream operations are oil and gas processes that occur after the production phase to the point of sale. They also engage in the marketing and distribution of crude oil and natural gas products (Onodugo, Ikpe and Anowor, 2013). Simply put, the downstream oil and gas market is anything that has to do with the post-production of crude oil and natural gas activities.

Oil and gas companies incur enormous cost in the value chain process especially those in the upstream and this has implications on the profitability of the oil and gas companies. Basically, there is the exploratory cost incurred for the collection and analysis of geophysical and seismic data involved in the initial examination of a targeted area and later used in the decision of whether to drill at that location. Other exploratory costs include those associated with drilling a well, which are further considered as being intangible or tangible. Intangible costs in general are those incurred to ready the site prior to the installation of the drilling equipment whereas tangible drilling costs are those incurred to install and operate that equipment (Onodugo et al, 2019). There is also Production Costs which refers to those costs incurred in extracting oil or natural gas from the reserves is known as production costs. Production costs are wages for workers and electricity for operating well pumps. Production costs are considered part of periodic operating expenses and are charged directly to the

statement of Comprehensive income statement both accounting methods. There is also, acquisition costs which are those cost incurred to obtain exploration rights for development and production of oil or natural gas. This includes expenses relating to either purchase or lease the right to extract the oil and gas from a property not belonging to the company (Anowor et al, 2013). Lease bonus payments paid to the property owner along with legal expenses, title search, broker commission and recording costs are also categorized as acquisition costs.

Hence, oil companies operate under relatively tight budget constraints. Essentially, this is driven by the well-known link between debt ratios (e.g., total debt/total assets) and interest rates paid on capital employed in the production process (see for example Merton (1974)). Because the activity of oil companies is traditionally capital intensive and exploration is subject to great uncertainty this link is particularly important in the oil and gas industry (Agbarakwe, Anowor and Ikue, 2018). Fact investors are very well aware of (Dumont, 2014). According to Rajesh and Sujit (2017) oil operations and markets view high capital investments by oil companies positively, as these investments represent value creation for oil and gas firms. Higher cash flows lead to greater value creation for energy firms, and they might lead to greater profitability and hence greater value creation.

The goal of this paper is to contribute to understanding the relationship between exploration cost and other associated cost on profitability of oil and gas companies. The global demand, vertical and horizontal linkages and price for crude provides incentives for continued investments in the oil industry.

Literature review

The oil and gas industry

The oil and gas industry encompasses a range of different activities and processes that jointly contribute to the transformation of

underlying petroleum resources into useable end-products. These different activities are inherently linked with each other (conceptually, contractually, and physically), within or across firms, and national boundaries. Understanding how value is created along the sector value chain is critical for the design of effective policies. Since the focus of the paper is the creation of social value at the country-level rather than private shareholders value, the industry value chain (national petroleum value system) is examined, and the contribution of individual firms to social value creation is considered. Some policies, such as industry participation, licensing and petroleum contracts, taxation, depletion of reserves, and policies designed to increase the economic and developmental impact of the petroleum sector, affect value creation more directly than other, and will be discussed in this chapter.

Value chain analysis, as popularized by Porter (1985), investigates the sequence of activities required to bring a product or service from conception and procurement through production and distribution to the final customer.¹ Such analysis can be done for individual firms, for clusters of firms whose value chains are interlinked—referred to as value systems by Porter and usually involving suppliers, distributors/sellers, and customers—or for selected industries (within or across national borders). In line with our focus on social value creation, we will consider the industry value chain for the petroleum sector, which includes development, production, processing, transportation and marketing of hydrocarbon

Individual companies can perform one or more activities along the value chain, implying a degree of vertical integration (“integrated” firms are engaged in successive activities, typically E&P and R&M). They can also seek to expand within a given activity, leading to horizontal consolidation (business scale). At the country level, horizontal integration in the upstream is limited by natural resource endowments and

downstream by the size of the domestic market and the country’s ability to export goods and services. Companies’ vertical and horizontal integration choices are affected by country-level industrial policies and the related legal and regulatory frameworks. For example, in some countries, such as South Africa, vertical integration in the petroleum sector is prohibited (Anowor et al 2022). Other countries, such as Brazil, limit the market share of industry participants.

Categorization of Costs for oil and gas Companies.

Oil and gas firms will incur costs that are identified and classified as belonging to one of four categories regardless of the method chosen.

Acquisition Costs

Acquisition costs are cost incurred to obtain exploration rights for development and production of oil or natural gas. This includes expenses relating to either purchase or lease the right to extract the oil and gas from a property not belonging to the company. Lease bonus payments paid to the property owner along with legal expenses, title search, broker commission and recording costs are also categorized as acquisition costs. All acquisition costs are recognized as assets under both methods.

Exploration Costs

These are Costs incurred for the collection and analysis of geophysical and seismic data involved in the initial examination of a targeted area and later used in the decision of whether to drill at that location. Other exploratory costs include those associated with drilling a well, which are further considered as being intangible or tangible. Intangible costs in general are those incurred to ready the site prior to the installation of the drilling equipment whereas tangible drilling costs are those incurred to install and operate that equipment. All intangible costs will be charged to the statement of comprehensive income as part of that period's operating expenses for a firm under the Successful

Effort method. All tangible drilling costs associated with the successful discovery of new reserves will be capitalized as non-current asset in the statement of financial position while those incurred in an unsuccessful effort are treated as expenses and added to operating expenses for that period in the statement of comprehensive income. In contrast to the treatment of Tangibles and Intangibles in Successful Effort method, in the Full cost method; all exploration costs whether tangible or intangible are capitalized and treated as Non-Current Assets in the statement of financial position of the firm.

Development Costs

Development costs involve the preparation of discovered reserves for production such as those incurred in the construction or improvement of roads to access the well site, with additional drilling or well completion work, and with installing other needed infrastructure to extract (e.g., pumps), gather (pipelines) and store (tanks) the oil or natural gas from the reserves. Both Successful Effort Method and Full Cost Method allow for the capitalization of all development costs and inclusion as Non-current assets in the statement of financial position

Production Costs

Costs incurred in extracting oil or natural gas from the reserves is known as production costs. Production costs are wages for workers and electricity for operating well pumps. Production costs are considered part of periodic operating expenses and are charged directly to the statement of Comprehensive income statement both accounting methods.

Environmental Cost

Environmental costs consist of environmental measures and environmental losses. They include clean-ups costs, costs of recycling materials or conserving energy, closure costs, capital expenditure and development expenditure. These costs are

incurred in preventing, reducing or repairing damage to the environment and conserving resources. However, environmental losses are costs, which bring no benefits to the business. Such as, fines, penalties, compensation, and disposal losses relating to assets which have to be scrapped or abandoned because they damage the environment (Wright & Noe, 2006). Environmental costs are the environmental damage, an entity costs to the environment and its users as a result of its operations. There is also the general concern that environmental cost reduces operating flexibility, slow productivity of companies. Accounting for environmental costs Though, the issues of environmental and social reporting are not explicitly provided for in the companies and allied matters act but has been catered for by both local and international standards like Global reporting Index (GR). Corporate performance is no longer seen simply as being equivalent to and consequently measurable in terms of profitability alone. Information on the accounting for environmental costs is now required. Each types of cost are to be considered as it arises so as to accord it the appropriate treatment in line with Generally

Equipment Costs

Equipment costs are further subdivided into tangible equipment costs such as floating platforms, sub-sea completion system, cost of transportation facilities (pipeline, tanker loading system cost of on-shore facilities such as treatment separation and stabilization plant, storage tanks and piping etc, intangible equipment costs such as hired on leased equipment contracted services, general overhead expenses, relating to development operation salaries and wages, insurance etc and interest expenses. It is generally accepted that cost falling into the first of these three categories should be capitalized, the cost centre for capitalization is usually the field, and all costs associated with the development, and hence the revenue earning capacity, if the field should be charge to that

costs centre (Homer-Dixon, 1999). Good oil practice demands that some cost incurred in a company's oil and gas producing activities do not always result in acquisition of an asset and therefore are usually charged to expenses. Examples include geological and geophysical costs, the cost of carrying and retaining undeveloped properties, and the cost of drilling those exploratory wells that do not result in proved reserves.

Accounting Standards for Oil and Gas Industry

The Nigerian Statement of Accounting Standards (SAS) or Nigerian GAAP, and IFRS are in many ways different in terms of guidance and application of the standards, although, some of these standards are similar or comparable in certain areas. This could be attributed to the strong interrelationships in terms of accounting education, oil and gas, business, finance, banking as well as the colonial relationship between the UK and Nigeria. The extractive industry is a specialized sector with lots of complications regarding the recognition, measurement, classification and treatment of assets in the books of Oil and Gas companies. Oil and Gas sector is characterized by heavy initial investment in terms of Exploration and Evaluation (E&E) operations. These activities require the use of high level and sophisticated technology for geological and geophysical (G&G) evaluation of the field to determine whether a commercially producible deposit of Oil and Gas is present. Despite the commitment of huge resources at the (E&E) stages, there is no guarantee that the well would produce a commercial quantity of Oil and Gas to pay for the investment. This unique nature of the extractive industry makes accounting for the Oil and Gas sector equally unique.

Nigerian-SAS Standards

In Nigeria, oil and gas accounting is regulated by the Financial Reporting Council (FRC) based on the adoption of the International Financial Reporting Standard (IFRS).

Agbude (2013) maintained that prior to adoption of the International Financial Reporting Standard, oil and gas companies in the upstream sector to prepare their financial statements in line with the Statement of Accounting Standard 14 (Accounting in the Petroleum Industry: Upstream Activities) and SAS 17 (Accounting in the Petroleum Industry – Downstream Activities) formulated by the former Nigerian Accounting Standard Board. In Nigeria however, SAS 14, accounting in the Petroleum industry - Upstream Activities and SAS 17, Accounting in the Petroleum Industry – Downstream Activities are the two standards that provide guidance for the treatment of all costs incurred in Oil and Gas exploration and production prior to IFRS adoption.

(i). SAS 14: Accounting in the Petroleum Industry (Upstream Activities).

This standard was first issued in 1993 by the NASB to enhance the comparability of financial statements prepared by companies operating in the upstream sector of the petroleum industry in Nigeria (Barde 2011). The standard basically deals with accounting and reporting for upstream activities which involve the acquisition of mineral interest in properties, exploration (including prospecting), development, and production of crude oil and gas.

(ii) SAS 17: Accounting in the Petroleum Industry (Downstream Activities).

IFRS's on Oil and Gas Accounting

(i) IFRS 6: Exploration for and Evaluation of Mineral Resources.

While the portion of E&E expenditures incurred by entities engaged in extractive activities is significant, these expenditures are excluded from the scope of IAS 38: Intangible Assets, and mineral rights and non-regenerative resources are not covered by the IAS 16: Property Plant and Equipment (IFRS Foundation, 2010). This has led to diverse accounting treatments of these

expenditures, which in turn has led to incomparable results reported by these entities. Therefore, the IASB issued the IFRS 6 to regulate and harmonize accounting practices for extractive industries. The main objectives of IFRS 6 are to specify financial reporting for the E&E of mineral resources (IFRS, 2018).

According to KPMG, (2005) & (2007) and Ernst & Young (2009) the requirements of IFRS 6 are seen to ally themselves more closely with the philosophy of the successful efforts method. This requirement, while providing for some consistency of accounting treatments of similar expenditures in the same entity and hence providing a base for horizontal comparison, does not provide consistency in recognizing, measuring and reporting E&E expenses across the extractive industries. A concern is raised about linking E&E expenditure to the commerciality of mineral resources. This is because while in some cases E&E expenditure can be linked directly to a successful discovery of mineral resources, which would then be capitalized, in other cases, E&E expenditure may not be easily linked to certain mineral resources, such as research and development expenditure, and therefore would be expensed. Such a subjective evaluation in terms of linking E&E expenditure to mineral resources aligns with the successful efforts method, which in turn may indicate a preference in IFRS 6 for successful efforts over the full cost method and, in fact, over other methods of accounting for extractive industries.

IFRS defines joint venture as a contractual agreement whereby two or more parties undertake an economic activity that is subject to joint control. This standard provides guidance on three types of joint venture, 1) jointly controlled entities, 2) jointly controlled assets and 3) Jointly controlled operation. The jointly controlled entity is a joint arrangement that is carried out through a separate legal entity (company or partnership). Companies are allowed an

accounting policy of either to account for their interest using the proportionate consolidation method or the equity method. KPMG survey of 2009 on the application of IFRS reported that over half of oil and gas companies in joint arrangements applied proportionate consolidation, with the remainder using the equity method. Jointly controlled assets and jointly controlled operations however, are joint ventures that are not separate legal entities, venturers therefore, recognise the assets and liabilities that they control and the costs incurred and income received in relation to the arrangement. The standard has been providing guidance to companies to account for these activities until the end of January 2012. A new standard IFRS 11, Joint arrangements and IFRS 12, Business combination issued in May 2011 by the IASB, with effective application periods beginning on or after 1st January 2013, have now superseded the IAS 31. IFRS 11 provides guidance on two categories of Joint arrangements, 1) Joint ventures and 2) Joint operations.

Accounting methods in Oil and Gas Companies

In accounting for investments in the extractive industries, oil and gas companies have the option to choose among a number of methods, but the most common are the successful efforts method and the full cost method (Cortese et al., 2009). These two methods differ as to which exploration and evaluation (E&E) expenditures are capitalized; in other words, the interpretation of the “tell it like it is” concept differs between these two accounting methods. This has historically led to a significant controversy in the accounting literature over which of the two commonly used methods captures the underlying economic transaction (Bryant, 2003). It is worth mentioning that both methods are allowed under the Nigerian GAAP:

Effects of Capitalization of Costs under Successful and Full Cost Methods

Sales promotion

Even with the heavy - weight multi - media advertising that heralded Legend, Nigerian Breweries knew that the battle ahead was enormous, consequently. Various sales promotion incentives were offered to the trade.

Integrated promotional strategy was adopted thus:

Wholesale Distributors:	Graduated
rebate Scheme of 5% - 7%	
25.00 Retailers:	Free gift of 2
cartons of Legend Breezer	
Barmen Incentive:	Fill the jar
	(Promotion)
	with Legend
	Crown Corks
	and for every
	cork get 50k
Top 10 Retailers:	Highest
Volume Seller of Legend Breezer gets a deep	
Freezer.	
Legend Hot Spots:	Weekly
	promotion
	held at
	chosen retail
	hot spot with
	resident lady
	promoter.
Consumer Promotion:	Sports bike,
	cash, T -
	Shirts, caps,
	Opener, Pens,
	Mugs and
	free drinks
	won raffle
	draws.-

The promotional strategy adopted was raffle draw for consumers, this method was not

effective as element of bias and its transparency was questionable, as consumers lack confidence in raffle draw ballots.

Hence, effect of promotion was poor, management equally failed because they wanted to follow old and established process of running promotions, rejecting information feedback form sales force that “Instant Win Approach” (IWA) where prices should be inscribed under crown cork and lucky winner collecting prices instantly .

With all the advertising and promotional efforts the result was disappointing.

Sales	In	1992
	355160 Cartons’	
“	“	1993
	245880 Cartons’	
“	“	1994
	259540 Cartons'	
“	“	1995
	199163 Cartons’	
“	“	2000
	769000 Cartons’	
“	“	2001
	1384000 Cartons’	
“	“	2002
	961000 Cartons’	
“	“	2003
	797000 Cartons'	

These figures revealed, that 7 months sales in the year of launch 1992, that more cartons were brought than in the 12 months of the succeeding 3 years hence referred to as “Fledging” brand.

Marketing - mix straitening

promotion

Chief among the strategies for remarketing is promotion. The need for promoting goods and services has been found to be very necessary for companies to survive in the market place. These companies often hire promotion agents to develop effective strategies; sales promotions specialists to design sales incentives programs and public relation firms to develop cooperate images. They train their people to be friendly helpful and persuasive.

All these are in line with the goal of promotion which according to Lamb (1994) is to inform, persuade and remained potential buyers of ^ products to influence an opinion or elicit a positive response.

Promotional activities are usually aimed at specific target audience and hence the message to be conveyed to these various target audience must communicate effectively.

Thus, marketing manager's have to ensure that the message must contain words and images that both the source (sender) and the audience (decoder) can understand since its necessary to identify and analyze their audience find out what they think, like, feel and believe.

The response sought from target market is adopted of the company's product. Before pursuing this objective however, consideration must be given to the steps involved in the adoption process by consumers. The AIDA model and the "hierarchy - of - effect model

Slow buyers passing through several distinct stages before reaching the adoption stage such as

- A - Awareness
- I - Interest
- D - Desire and
- A - Action

The hierarchy - of - effect model shows the buyer passing through Awareness, knowledge, liking, preference, conviction, and purchase. This means that the marketing manager must determine which stage his audience has already reached before he decides what and how to communicate.

A promotional campaign needs to be developed to move them to the next stage. The promotional - mix: advertising, public relations, sales promotion, and personal selling - consists of the communication tools that are used to move consumers through the adoption process. Because of the importance of what is communicated marketers are careful in designing their promotional programs. According to Kotler, (1990), companies do not leave what is communicated to chance. The information conveyed to the should show how the consumer stands to benefit from the use of the product. The source encodes this message and sends it, via a transmission channel -a voice, radio, newspaper, T.V., billboards and other communication medium to the receiver (S) for decoding. The sender, in turn receives feedback from the receiver (S) as to whether the message was understood.

Vivid information tends to attract and hold attention as well promote the receiver to use his or her imagination. As much as, they were more likely to be placed unto long - term memory and later recalled than more pallid information.

strategies used in promotion

Strategies are scheme, methods, maneuvers which the management hopes to deploy in order to move the organization from its present position to arrive at its target goal by the end of the specified period, recognizing that during the inter - viewing period a lot of changes are going to take place in the environment.

Strategies according to Moweni (1993) and Osaze (1991) involves formation of company mission statement, setting of objective for the

organization in the light of internal and external forces, formulating policies and strategies to achieve set objectives, and ensuring their implementation so that the basic purpose and objectives of the organization will be achieved.

Strategy is a chosen course of action for pursuing an objective. Porter (1996) defines strategy as “the creation of unique and valuable position involving a different set of activities”. A company can claim that it has a strategy when it performs different activities from rivals or performs similar activities in different ways.

Promotional strategist centers around persuasive communication transmitted directly or indirectly to potential buyers. It is a chosen course of action to achieve predetermined marketing or promotional objective. They are supposed to be unique and distinct from those of competitors if they are to be effective.

Dommermuth (1989) likened promotional strategist to architects since, according to him Architects combines general knowledge and principle with distinctive creative talents to produce an innovative result. A promotional strategist draws up a plan based on a thorough assessment of the environment and expertise in promotional principle. And reported that normally, competitors in soft drink industry tend to copy strategies and slightly modify them, while Ike (2000) added that they copy market leaders.

Competition often determines market shares and influence product form, price, promotion and distribution. The extent to which a market is competitive depends to a great extent on the difficulty of expanding or holding on to market share.

Porter (1996) claims that the purpose for any competitive strategy is to advance a sustainable competitive advantage, that is, buyers must continue to view the advantages as having value for them while there must be barriers to competitive limitation, it is

commonly acknowledged that a competitive advantage particularly a critical one is difficult to sustain, so firms are contented with moving from one temporary contestable advantage to another - O' shaughnessy (1992).

A firm under attack from competitors in the industry' should seek to identify the nature of the threat and undertake a vulnerability analysis to identify its weakness. In this way the firm decides on actions needed to eliminate or minimize its vulnerabilities.

Ideally, a firm in a competitive market will draw up a list of competitive options open to it and seek to identify counter strategies.

The strategies used by most companies are actually a blend or combination of promotional tools in particular mixes that enable the company achieve the objective set for a period. Certain factors determine the promotional strategy a firm adopts thus -

- (i) The nature of the product
- (ii) Stage in the product - life – cycle
- (iii) The nature of the product
- (iv) Types of buying
- (v) Availability of fund
- (vi) Buyers - readiness state
- (vii) Present state of demand

Many marketing strategies confine their promotion to advertising to keep the public aware of their products. Advertising and publicity can achieve long - term attention and benefit jointly.

Since a long-term approach to product publicity is especially well suited to longer commercial lives than individual, product, let's call it “Brand - Standing”. Promotes products by linking them to events, issues or ideas or inherent interest to consumers and public. Brand Standing established rapport between consumers and a product.

The promotion is capable of not only increasing sales of the product but also apparently generate a lasting link of goodwill

towards the product. Usually, usually, reason for “brand standing” involve the following factors according to Kotler, (2000) and Artsevens, (1991).

The event or issue linked to the product must invite publicity; there must be sufficient news worthiness or features story to ensure media coverage.

- The people attracted must be users or potential users of the product.
- There must be meaningful or necessary link between the product and the events.
- The link must be evident and not intrusive that is the product to the event.
- A current program of promotion is frequently used by Nigerian Breweries P/C,

An annual sponsored Top Music Concept for star, Awilo, Hip Hop Star Naughty by nature for legend Breezer, A.T.P. (Annual Tennis Tournament) playing competition by Heineken etc.

A common trend in promotional program aimed at specific ethnic group e.g community festival sponsorship by brands. Advertising message are developed by companies in local language and placed in the media in which the target audience is likely to be reached.

Influence of promotion on sales of products

Apart from these project works, many other people have done series of researches on the subject. “The influence of promotion on the sales of product: A few of these works was analyzed, findings summarized below by Ike (2000).

“East (1990) in his book changing consumer Behaviour quoted quite number of studies done in advertising. Advertising according to him may help consumers to accept the price of a brand. Broadbenti (1989) illustrate this with a case where improved advertising

increased the promotion of purchasers who were tolerant of the brand’s higher price levels. This shows that people tend to have upper and lower is a quality. Too low a price indicates poor quality and Gaber quoted several studies where higher price produced more sales.

The upper and lower limits of acceptable price may vary from brand to brand in a product field and it is likely that advertising will help brands to secure the higher range by assuring the consumers about brand quality. This process may also operate at store level. Gaber’s description of low consumer respond to price depends upon their ability to recall the price that they paid for the brands that they use. But even when the exact prices, are not recalled they may still use some internal reference price to judge the acceptability of a brand.

Often media advertising has no measurable effect when sales are influenced, the effect is spread over a long period than a sales promotion Robbert (1990), After a campaign has stopped there is a decay effect of sales, which fall back towards a base level, which may be different from the pre - campaign level. Thus, the sales effect of advertising splits into two components, the short - term effect covering the campaign period and the decay period following it and the long - term effect, if any, which is the base level. Braodbent (1989) states advertising can rarely be shown to be profitable in short - term profit comes from long - term effects but these are hard to measure.

The media/medium used during the campaign also influence the sales response. Broadbent (1984) states that the buildup of sales effect differs widely from medium to medium, product to product and campaign to campaign. Broadbent media are more effective in conveying imagery and symbolism but are not as effective as print in communicating detailed information.

As a result, T.V is more suitable for developing a mood of establishing a good

feeling about a product. It is the most effective means of delivery emotional appeals. Print is more effective in communicating information. It allows for a more traditional learning environment in which information can be absorbed and integrated.

Eastlack and Raw (1986) noted that a new creative approach has far more effective than an increase in advertising weight. One other relevant finding is that advertising variety may increase response. A study by Bumknant and Vnnava (19987) found that three different advertisements have more effect than the same advertisement presented three times.

In discussing sales response to advertisement exposure. One might think that an increase in weight would lead to more sales and reduction in weight would lead declining sales. The research on advertising reduction does not always confirm these expectations. A classic study of Budweiser beer advertising by Ackoff and Emshoff (1975) shows on increases in sales when advertising spending was reduced. There is also evidence that reduction in advertising may have no significant effect on sales - East, (1990) Frykac, et al (1984). Aaker and Carman (1982) reported no effect on sales, were found for six - products when their advertising budgets were reduced. An issue here is the long - term effect, usually studies do not follow the product long enough to see whether the sales start to declining eventually.

In Britain and America, more emphasis is now placed on sales promotion than media advertising. Schultz (1987) reported that many U.S. firms devote higher percentage of expenditure to sales promotion. Broadbent (1989) quotes trade sources showing that between 1976 and 1980 there was an increase in consumer sales promotion, and reduction in the proportion of media advertising. Unlike sales promotion, media advertising sustains and may build demand for a brand so that

retailer needs to stock it if they are to meet consumer needs.

Supporting the use of sale promotion is the unduly held view that money spent on sales promotion has more profit impact than the same amount, spent on advertising, even after allowing for the lower price of the brand on deal.

Sales promotions help managers to fine tune sales in the short - term and thus have considerable value in avoiding overstocking and layoffs.

Broadbent (1989) develops this issue which depends upon the long - term effects of both discount and advertising service price is associated with quality in the eyes of the consumer, there is danger that repeated price promotion will diminish the perceived value of the brand and eventually reduce market share, by contrast the long - term effect of advertising is thought to create added value and therefore to increase sales.

Sales promotion has become the devil's alternative in some companies. Most companies have products that have entered the late maturity or early declining stages and the alternative being market extension or new product development, which is both costly and difficult. The company cannot - hence sale promotions become the influence even when other strategies would have ameliorated the situation.

It is a fool's paradise for those who take pleasure in it because of its "ephemeral boast in sales". The findings of Totten and Block (1967) states that actual data show that competitive brands however, seldom have major sales declines during promotion periods of other brands on the contrary sometimes, competitive brands enjoy sales increase.

As the power of manufacture's advertising weakens owing to rising media cost, with increasing cluster and smaller audience, marketing managers are turning to PR. in a

survey of 287 U.S. marketing managers, three fourth reported that their companies were using marketing PR. They found it particularly effective in building awareness and brand knowledge for both new and established products.

In several cases, PR proved more cost effective than advertising. Nevertheless, it must be planned jointly with advertising. PR needs a larger budget than it used to, and the money might have to come from advertising.

Public relations and has great potentials for building preference in the market place - repositioning products and defining them. It should be noted that the old name of marketing PR is publicity.

Due to the cost of maintaining a sales force most companies only enjoy them when they realize they are absolutely necessary. Sales people are very effectives in achieving certain marketing objectives. The sales force objectives include prospecting, communicating, selling and servicing, information gathering and allocation. Many myths have arisen over the years about what traits that lead to success in selling.

A good sales person is supposed to be aggressive, an extrovert, articulate well - groomed and endowed with a great physique. Yet in actual fact many outstanding sales people have been somewhat inarticulate, carelessly dressed, many good sales people are of average or even small size.

Mc Mmurry (1961) a psychologist maintains that the sine - qua - non -qua - none of sales success is an intangible largely initiative sensitivity to people. Super sales people are in effect constant and habitual “wooters”. They have an inherent flair for running the acceptance of others.

In another study by Madubum and Onyeneke (1988) on consumer preference for the beer products of five breweries in Anambra State, they found that the taste is the most important attribute that determined consumer’s choice

of one brand over another. Also, they discovered that advertisement has no influence on consumer purchase pattern and finally they discovered that price has a considerable effect on consumer brand preference for beer.

The buyers choose between different offerings on the basis of which is perceived to deliver the most value.

Value can be seen primarily as a combination of quality service and price (Q S P) called “customer value triad”, value increase with quality and service and decreases with price.

Value = Benefit=Functional benefit + Emotional B.

Cost Monetary cost + Time + Energy C + Psyche cost

The market can increase the value of customers offering in several ways’

- (i) Raise benefit
- (ii) Reduce cost
- (iii) Raise benefit and reduce cost
- (iv) Raise benefit by more than the reduction costs

Much of brand strength depends on developing a superior product and packaging and backing it up with promotion and reliable service. Consumer marketers decides on the feature, quality level, distribution coverage and promotion expenditure that will help the brand achieve a number - one - or two positions in their target market Kotler, (2002).

Brand loyalty and consumer satisfaction

Usually, the relationship between a seller and a buyer seldom ends sales is made. Increasingly, the relationship intensified after the sales and helps determine the buyer’s choice next time around. The sale, then merely consummates the courtship, at which point the marriage begins. How good the marriage is depending on how well the seller

manages the relationship. The quality of the marriage determines whether there will be continued or expanded business or trouble and divorce. Companies can avoid such troubles by recognizing at the market stands or outlet the necessity of managing then relationships with their consumers.

According to theoretical source, when purchasing a product that the consumer makes production (forms expectations) concerning die future performance is below expectation, dissatisfaction will result. Tire general finding is that product, that meet or exceed expectations receive favorable rating on product performance, while those that perform below expectation receives less favorable rating.

Normally, the goal of marketers is to encourage brand loyalty, which is a result of a consumer satisfaction. This is because loyal cadre of consumers, provide the basic for a stable and/or growth in market share, and can be a major intangible asset reflected in a purchase price of a company.

Methods of Analysis

A research design is a kind of blueprint that guides the researcher in his or her investigation and analysis (Onwumere, 2005). The main types of research design include: survey, experiment and export factor.

We will use simple percentages to analyze the data collected and use the Chi-Square statistics to test the hypothesis.

The formular for Chi-Square:

$$X^2 = \sum \frac{(O - E)^2}{E}$$

Where: Σ = Sum of all

O = Observed Frequency

e = Expected Frequency

population size:

Onitsha North L.G. A Population = 472,272

Onitsha South L.G.A Population = 267, 233

Idemili North L.G. A Population = 280,144

Parts of Ogbaru L.G. A

(Okpoko and Oduakpu) = 233,625

Total Population= 1,253,244

Source: Federal office of statistic Report on projected population for 2003 (now National Bureau of Statistics)

However, 40% of the population is people between the ages of 18 years and below who are not eligible to take alcohol. 15% are over aged and people whom for health reasons do not take alcohol. Hence the actual study population= 563959 (45% of 5,012,972)

sample selection strategy

The sample selection strategy to be adopted is convenience Accidental sampling method.

Reasons

1. Random sampling method would been appropriate, but there is normal row from which random samples (ballot) where every element in the population will have equal chance of being selected.
2. The enormous cost of enumerating/census will be unimaginable considering the resources (money, material, man and Time) required/involved.

Presentation and analysis

Introduction

Out of the 175 questionnaires administered to respondents in various areas. 154 persons completed and returned theirs representing 8070. 29 out of 154 questionnaires returned,

due to improper completion. Thus, a total of 125 valid questionnaires were utilized for the analysis

Table 4.1: Allocation of Questionnaires

Areas	Allocated	Returned	Valid	%
Main market	15	13	11	73
Ose market	14	11	9	64
Wolowo	18	15	8	44
Odoakpu	22	20	18	82
Inland-town	16	14	10	62
Fegge	30	27	20	66
Okpoko	15	13	11	73
Awada	27	25	24	88
Nkpor	18	16	14	77
Total	175	154	125	71

The total response/returned valid questionnaires were 125 in number representing 71% as against expected 100%

Table 4.2: Distribution of questionnaire among trade channel members/response

Channel members	Questionnaires Allocated	Returned	Valid	%
Wholesalers	50	40	50	100
Retailer	50	40	66	132
Salesmen	15	14	12	80

Consumers	100	92	75	75
Total	175	154	125	71

The different questionnaires were distributed to the above trade channel members whose total responses and valid questionnaires were 125 representing 71%, against the expected percentage of 100%.

Consumers

Table 4.3: Income level of respondents and their consumption pattern per month

Income	No of respondents by consumption in crates per month				
	<1	1-5	6-10	> 11	Total
N5000-10000	12(16%)	2(3%)	-	-	14(19%)
10500-20000	10(13%)	8(11%)	1(1%)	-	19(25%)
21000-40000	15(20%)	10(13%)	3(4%)	-	28(37%)
41000-60000	5(6%)	2(3%)	1(1%)	-	8(11%)
61000 & above	4(5%)	1(1%)	1(1%)	-	6(8%)
TOTAL	46(16%)	23(31%)	6(8%)	-	75(100%)

From table 4.3 above, the people/respondents that consume the product most are those within the income bracket of N21, 000 = and below. Those people constitute both the potential and market of the company. The consumption pattern of Breezer drink is greatly determined by the income level of the respondents.

According to Cortese, Irvine and Kaidonis (2009), the effect of choosing one accounting method over another is apparent when periodic financial results involving the income and cash flow statement are compared with the effect of highlighting the way each method treats the individual costs falling into these four categories. The comparison discloses the impact to periodic results caused by differing levels of capitalized assets under the two accounting methods. Periodic charges of depreciation, depletion and amortization of costs relating to expenditures for the acquisition, exploration and development of new oil and natural gas reserves impacts the income and cash flows the same way it affects other business entities in distinct industries. For exploration and production firms, they include the depreciation of certain long-lived operating equipment; the depletion of costs relating to the acquisition of property or property mineral rights, and the amortization of tangible non-drilling costs incurred with developing the reserves. The periodic depreciation, depletion and amortization expense charged to the statement of comprehensive income is determined by the "units-of-production" method, in which the percent of total production for the period to total proven reserves at the beginning of the period is applied to the gross total of costs capitalized on the statement of financial position (Cortese, Irvine & Kaidonis 2009).

Financial Performance of oil and gas Companies

Financial performance measures indicate whether the organization's strategy, implementation and execution are contributing to bottom-line improvement. The value drivers for an upstream company depend on company's ability to replace diminishing reserves with cost effective new reserves. Earnings before interest, taxes, depreciation, amortization, and exploration expenses (EBITDAX) are an important value metric for oil and gas firms. One of the common relative valuation metrics to

evaluate an E&P company's cash flow is EV/EBITDAX. Another metric is the barrels of oil per day. Oil field service company valuation is generally similar to that for non-oil field related companies. At firm level, cost efficiency of operations, which span exploration, production, refining, marketing, and overhead spending, is a major driver for value creation. Horizontal concentration and vertical integration also result in value creation. Petroleum projects are highly capital intensive. Vertical integration is another significant feature of petroleum industry.

In contrast to manufacturing companies, the oil and gas firms' financial performance is not only judged using accounting ratios but also judged based on the firm's ability to replace and grow resources at a favourable cost rather than profit margins and growth. Analytical ratios, like lifting costs and finding costs, are of high relevance in oil and gas industry. Earnings before income tax, depreciation, depletion, amortization, and exploration costs are an important pricing metric for oil and gas firms. Another important performance indicator is the return on capital employed (ROCE). Other key performance indicators include oil and gas production growth, unit production costs, unit finding and development costs. In general, the financial measures of profitability most widely used in prior research are the return on assets (ROA) and the return on equity (ROE) or variations of these. ROA reflects the ability of the firm's management to generate profits from assets, while ROE indicates the return to shareholders on their equity.

Empirical review

Daniel, Adam and Nigel (2018) study uses the dynamic upstream gas model (DYNAAMO), a new techno-economic, bottom-up model of natural gas supply, to quantitatively assess the economic impact of lower drilling and exploration costs on the US upstream gas industry. A sensitivity analysis of three key economic indicators is presented,

with results quoted for the most common field types currently producing, including unconventional and offshore gas. While all operating environments show increased profitability from drilling automation, it is found that conventional onshore reserves can benefit to the greatest extent. For large gas fields, a 50% reduction in drilling costs is found to reduce initial project breakevens by up to 17 million USD per billion cubic metres (MUSD/BCM) and mid-plateau breakevens by up to 8 MUSD/BCM.

Fard (2011) revealed that the effect of oil and gas reserves volume on the financial value of large oil companies is approximately 1.73 times greater compared to that of the profits of the firms. Using the data from 1992-2005 for 114 oil and gas companies, Misund et al. (2008) examined whether an upheaval in the oil and gas industry has resulted in a structural shift in the relationship between the financial statement information and market valuation. Their result confirmed that a structural break took place in the valuation of oil and gas companies in the late 1990s.

Kumar and Sujit (2016) found that dividend policy and cost efficiency are major determinants of valuation of oil companies. The study presented here examined the financial and operating variables at firm specific level to understand the role of investment, financing, working capital, and dividend decisions as value drivers in the valuation of oil companies. Their results indicated a negative relationship between intensity of capital investments and value creation. The relevance of book value has been found to be significantly lower for integrated companies than for pure upstream companies in a study that compared the relationship between different classifications of reserves and oil company returns. The study also revealed that the information on probable reserves does not have an effect on stock returns.

Rajesh and Sujit (2017) examines the value drivers for value creation in oil firms.

Specifically, it explores the effect of investment, financing, and dividend decisions on value creation in oil-based energy firms. The study was based on 82 oil and energy firms selected based on average asset sizes and revenues during the 2009-2013 period. PLS SEM methodology was used to analyze the effect of various exogenous latent variables on the endogenous latent constructs of profitability and value creation. Higher earning potential was associated with greater value creation for oil firms. Markets view high capital investments by oil companies positively, as these investments represent value creation for oil and gas firms. Higher cash flows lead to greater value creation for energy firms, and they might lead to greater profitability and hence greater value creation. Dividend policy of oil and gas firms also determines the valuation of oil firms. Higher dividend payout enhances the value of oil and gas firms. Profitability determines value creation in oil and gas firms.

Misund & Osmundsen, (2015) study addresses the impact on market valuation of various classifications of reserves amounts. Using a data sample of 94 companies that do disclose information on probable reserves, we compare the relation between three classifications of reserves and oil company returns. While we find that information on probable reserves do not have an impact on stock returns measured over the entire time period, this is not the case since 2009, coinciding with the onset of the shale gas revolution.

Shehu (2014) examines the effect of environmental expenditure on the performance of quoted Nigerian oil companies, within a period of twelve years (1999-2010) using selected firm financial statement of all quoted oil companies listed in the Nigerian Stock Exchange. The data was analysed using multiple regression, employing ROA and three independent variables; Cost of Environmental Remediation and Pollution Control (ERPC),

Cost of Environmental Laws Compliance and Penalty (ELCP), Donations and Charitable Contributions (DCC). The result reveals that environmental expenditure has significant effect on the performance of quoted oil companies in Nigeria. They therefore recommended among other things that the management of oil companies in Nigeria should increase spending on environmental issues in their host community in order to improve their performance.

Nwaiwu and Oluka (2018) study empirically examines the effect of environmental cost disclosure and financial performance measures of quoted oil and gas companies in Nigeria. Time series data were collected from annual financial reporting and economic review of Central Bank of Nigeria; Pearson product moment coefficient of correlation and multiple linear regression analysis with the aid of special package for social sciences (SPSS) version 22. The econometric results reviewed adequate disclosure on environmental cost, compliance to corporate environmental regulations have positive significant effect on financial performance measures. Thus, the study recommended regulatory enforcement for adequate environmental cost disclosure and proper reporting.

RESEARCH METHOD

Population and Sample

The sample for the study covers 4 oil and gas companies in the upstream oil and gas industry in Nigeria. The study focuses on these number of oil and gas companies in the downstream sector because of the challenges of getting secondary data for exploration companies in the upstream sector even for the public entities. The study covers variables such exploration cost (EXPCT), acquisition cost (ACQST), Production cost (PRDCT), Environmental cost (ENVCT) and financial profitability of oil and gas companies measured using ROE, ROA, EPS and Profit margin (PM).

3.4. Sampling Technique

The simple random sampling technique was employed in selecting the 4 companies. The advantage of random sampling is that the probabilities that the sample estimator will be within a given number of units from the population parameter it estimates are known. Simple random sampling has the major strengths that justify its choice in this study. Notably, among its strengths, it tends to yield representative samples, and allows the use of inferential statistics in analyzing the data collected. Finally, each selection is independent of other selections, and every possible combination of sampling units has an equal and independent chance of being selected the technique is well suited for determining the sample as it provides an equal probability of selection and as such minimizes selection bias.

3.5. Sources of Data

Secondary data will be used for the study. The secondary data will be retrieved from financial statements of the sampled companies for 2011 -2018 financial years.

3.6. Data Analysis Method

The structural equation modelling (SEM) procedure, which focuses on measurement and structural models simultaneously, was utilized in the study (Titman & Wessels, 1988). The covariance based structural equations modeling (CB-SEM) and partial least squares structural equations modeling (PLS SEM) are two structural equation models. Due to theoretical and methodological issues, PLS-SEM has been more widely used compared to CB-SEM (Hair et al., 2012). The advantage of PLS SEM is that it can be used to extend the existing theory. The comparative advantage of PLS-SEM over CB-SEM models is that in PLS SEM, large sample size and normal data to measure goodness of fit indices assumptions are not required (Wetzel et al., 2009). This study used PLS because it has several advantages over CB methods. PLS,

being a soft modelling technique, does not impose any requirements regarding distribution or measurement scale while at the same time, it estimates stable parameters. Nonnormally distributed indicators normally produce high standard errors in CB method. We tested for the normality of the variables used in the model, and none of the variables showed normal distribution. As a result, the study used PLS- SEM rather than CB method. PLS handles complex models very easily with more efficiency. PLS estimates are expected to be more robust in the presence of inappropriately operationalized construct. The two objectives of this study were to develop a model to explain the value drivers in oil industry and to verify its goodness of fit using ordinary least square method.

Presentation OF RESULTS

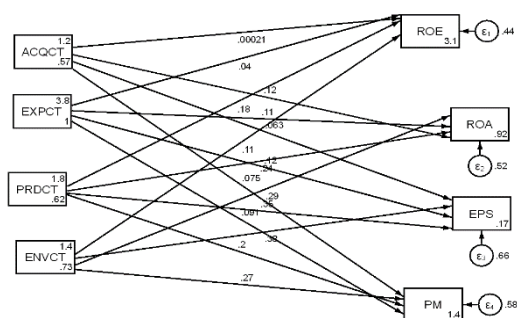
The Structural Model

The structural model is assessed in five steps. The initial stage involves the examination of collinearity issues. The second stage involves testing the significance and relevance of path coefficients. The other steps involve determination of R Square, measurement of effect sizes using F Squar. Exogenous latent variables included earning potential, growth potential, investment intensity, management efficiency, cash flow, liquidity leverage dividend policy, and liquidity. Endogenous latent variables comprised profitability and value of the company. The indicators for each exogenous and endogenous latent constructs are listed in Table 1. Preliminary model of the drivers of firm value is shown in Figure 1.

Figure 1: Structural Equation Model

Looking at the path analysis, we focus particularly on the direct effects estimates which examines the direct relationships between exploration cost (EXPCT), acquisition cost (ACQST), Production cost (PRDCT), Environmental cost (ENVCT) and financial profitability of oil and gas companies measured using ROE, ROA, EPS and Profit margin (PM). The path analysis indicates the existence of a negative (-0.01752) and significant (p=0.00)

relationship between exploration cost (EXPCT) and ROE, a negative (-0.2377) and significant (p=0.00) relationship between exploration cost (EXPCT) and ROA, a negative (-0.3548) and significant (p=0.00) relationship between exploration cost (EXPCT) and EPS and a negative (-0.1429) and significant (p=0.00) relationship between exploration cost (EXPCT) and PM. On the overall, the study reveals that exploration cost has a negative and significant effect across all measures of financial profitability for oil and gas firms in Nigeria. The finding is in tandem with Daniel Kris, Adam D and Nigel (2018), Fard (2011), Misund et al. (2008). However, in contrast, Rajesh and Sujit (2017) found that high capital investments by oil companies positively, as these investments represent value creation for oil and gas firms. Higher cash flows lead to greater value creation for energy firms, and they might lead to greater profitability and hence greater value creation.



The path analysis indicates the existence of a positive (0.1189) though not significant (p=0.997) relationship between acquisition cost (ACQCT) and ROE, a positive (0.1189) though not significant (p=0.051) relationship between acquisition cost (ACQCT) and ROA, a positive (0.06327) though insignificant (p=0.359) relationship between acquisition cost (ACQCT) and EPS and a negative (-0.0753) and insignificant (p=0.0754) relationship between acquisition cost (ACQCT) and PM. The path analysis indicates the existence of a positive (0.1109) and significant (p=0.001) relationship between environmental cost (ENVCT) and ROE, a positive (0.3796) and significant (p=0.00) relationship between environmental

cost (ENVCT) and ROA, a negative (-0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS and a positive (0.2674) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS. On the overall, especially in relation to ROA, ROE and PM, the finding is in tandem with Shehu (2014) which examines the effect of environmental expenditure on the performance of quoted Nigerian oil companies. The result reveals that environmental expenditure has significant effect on the performance of quoted oil companies in Nigeria and Nwaiwu and Oluka (2018) study which empirically examines the effect of environmental cost disclosure and financial performance measures of quoted oil and gas companies in Nigeria. The econometric results reviewed adequate disclosure on environmental cost, compliance to corporate environmental regulations have positive significant effect on financial performance measures. Arong, Ezugwu and Egbera (2014) study is aimed at ascertaining the effects of environmental cost management on the profitability of oil sector in Nigeria from 2004 to 2013. Result revealed that there exists a significant relationship between influence of environmental cost management and the profitability of oil sector in Nigeria. The path analysis indicates the existence of a negative (-0.0395) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and ROE, a negative (-0.110) and insignificant ($p=0.065$) relationship between production cost (PRDCT) and ROA, a negative (-0.1183) and insignificant ($p=0.081$) relationship between production cost (PRDCT) and EPS and a negative (-0.090) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and PM.

The structural model has an overall coefficient of determination (CD) of 0.704 which implies that the structural equations model explains about 70.4% of the systematic variations in the dependent variable. The full structural model was then tested and again to assess the fitness. The chi-square goodness-

of-fit statistic for the baseline vs saturated and model vs saturated and indicate a reasonable model fit which is statistically significant at 5%. This is further supported by the RMSEA which is 0.272. The comparative fit index (CFI) and tucker-Lewis index (TLI) stood at 0.997 and 0.955 respectively and hence confirm the primary hypothesis that the overall model is valid.

Summary of findings, Conclusion and Recommendation

Summary of Findings

The path analysis indicates the existence of a;

- i. positive (0.01752) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and ROE,
- ii. positive (0.2377) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and ROA,
- iii. negative (-0.3548) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and EPS.
- iv. negative (-0.1429) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and PM.
- v. positive (0.1189) though not significant ($p=0.997$) relationship between acquisition cost (ACQCT) and ROE,
- vii. positive (0.1189) though not significant ($p=0.051$) relationship between acquisition cost (ACQCT) and ROA,
- viii. positive (0.06327) though insignificant ($p=0.359$) relationship between acquisition cost (ACQCT) and EPS
- ix. negative (-0.0753) and insignificant ($p=0.0754$) relationship between acquisition cost (ACQCT) and PM.
- x. positive (0.1109) and significant ($p=0.001$) relationship between environmental cost (ENVCT) and ROE.
- xi. positive (0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and ROA,
- xii. negative (-0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS
- xiii. positive (0.2674) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS.

- xv. negative (-0.0395) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and ROE,
- xvi. negative (-0.110) and insignificant ($p=0.065$) relationship between production cost (PRDCT) and ROA.
- xvii. negative (-0.1183) and insignificant ($p=0.081$) relationship between production cost (PRDCT) and EPS
- xviii. negative (-0.090) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and PM.

Conclusion

The aim of the study is to examine the relationship between exploration cost and other oil and gas cost on profitability of oil and gas companies. The sample for the study covers 4 oil and gas companies in the upstream oil and gas industry in Nigeria. The study focuses on these number of oil and gas companies in the downstream sector because of the challenges of getting secondary data for exploration companies in the upstream sector even for the public entities. The study covers variables such exploration cost (EXPCT), acquisition cost (ACQST), Production cost (PRDCT), Environmental cost (ENVCT) and financial profitability of oil and gas companies measured using ROE, ROA, EPS and Profit margin (PM). The result from the path analysis, indicates the existence of a positive (0.01752) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and ROE, a positive (0.2377) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and ROA, a negative (-0.3548) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and EPS and a negative (-0.1429) and significant ($p=0.00$) relationship between exploration cost (EXPCT) and PM. The path analysis indicates the existence of a positive (0.1189) though not significant ($p=0.997$) relationship between acquisition cost (ACQCT) and ROE, a positive (0.1189) though not significant ($p=0.051$) relationship between acquisition cost (ACQCT) and ROA, a positive

(0.06327) though insignificant ($p=0.359$) relationship between acquisition cost (ACQCT) and EPS and a negative (-0.0753) and insignificant ($p=0.0754$) relationship between acquisition cost (ACQCT) and PM. The path analysis indicates the existence of a positive (0.1109) and significant ($p=0.001$) relationship between environmental cost (ENVCT) and ROE, a positive (0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and ROA, a negative (-0.3796) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS and a positive (0.2674) and significant ($p=0.00$) relationship between environmental cost (ENVCT) and EPS. On the overall, especially in relation to ROA, ROE and PM, The path analysis indicates the existence of a negative (-0.0395) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and ROE, a negative (-0.110) and insignificant ($p=0.065$) relationship between production cost (PRDCT) and ROA, a negative (-0.1183) and insignificant ($p=0.081$) relationship between production cost (PRDCT) and EPS and a negative (-0.090) and insignificant ($p=0.154$) relationship between production cost (PRDCT) and PM.

Recommendation

The study makes the following recommendations; firstly, the importance of the petroleum industry is often cited as an argument in favour of direct state intervention. But this is a political rather than an economic argument, and any political benefits from state control often come at substantial economic costs. Thus, the study recommends that the need for stakeholders to look into the level of state intervention in the petroleum sector.

Secondly, the study recommends the need for proper and efficient cost analysis for oil and gas companies to aid proper planning.

Thirdly, the important role of competition for the performance of a company is well-documented in both theoretical and empirical

work. Competition allows improved monitoring through a comparison of managerial performance. Nevertheless, often governments granted monopoly rights to most oil and gas companies in Nigeria. In this regard, the study recommends that especially the upstream should be open up to better market competition.

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