ASSESSING THE RELATIONSHIP BETWEEN CRUDE OIL PRICE AND PROFITABILITY AND DECOMMISSIONING OF MATURE OILFIELD IN NIGERIA: THE CASE OF BONGA DEEP-WATER OILFIELD

A Thesis Submitted to the School of Energy, Construction and Environment, Faculty of Engineering, Environment and Computing, Coventry University in Partial Fulfilment of the Requirements for an Award of MSc Oil and Gas Management.

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List of abbreviations

CBN Central Bank of Nigeria

CGTA Capital Gains Tax Act

COMD Crude Oil Marketing Department

DPR Department of Petroleum Resource

E&P Exploration and Production

FDI Foreign Direct Investment

FIML Full Information Maximisation Likelihood

FIRS Federal Inland Revenue Service

GDP Gross Domestic Product

IEA International Energy Agency

IOCs International Oil Companies

IT Information Technology

JOA Joint Operating Agreement

JV Joint Venture

MOCs Multinational Oil Companies

MOU Memorandum of Understanding

MPR Ministry of Petroleum Resources

NAPIMS National Petroleum Investment Management Services

NNOC Nigerian National Oil Corporation

NNPC Nigerian National Petroleum Corporation

NOC National Oil Company

OML Oil, Mining License

PSC Production Sharing Contract

SC Service Contract

Acknowledgement

First, I wish to express my gratitude to Almighty Allah for making it easier for me to successfully complete this programme, Alhamdulillah for the Lord and the sustainer of the Universe. May Allah put Albarka and paves ways to ample opportunities and uplift me to the greater height Ameen.

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Declaration

I declare that this research Project is entirely my original work and where others work are being used has been properly acknowledged as in-text citations and listed in the reference. I also confirm that the thesis has been carried out in line with the ethical policy of Coventry University and research guidelines and then evidence of this has been appendix.

I permit the University to reproduce or replicate the project for research or should be made available as a reference material for other students in the School of Energy, Construction and Environment Map Library/ Information Room.

Signature: …….. Date: ……

Dedication

To my parents: Late AlhajiIsah Idris Kucheri and Hajiya Zainab Ibrahim.

Abstract

The recent global Crude oil price crash has affected the revenue streams of many license holder of oil fields with end economic life and then leading to shutting down of many field operations, because the cost of production outweighs the current and potential revenue of the field operator, which could also affect the financial preparation for decommissioning liabilities of mature fields in Nigeria, even though at the moment decommissioning of oil and gas platforms is not the key issue. This Dissertation provides a structure for appreciating the numerous issues on Crude Oil Price crash in relation to Profitability and Decommissioning of mature Oilfield in Nigeria. Its main aim is to assess the relationship between the Crude Oil Price and Profitability and Decommissioning of mature Oil Field in Nigeria with a particular view on Bonga Deep-water Oilfield operates by Shell Nigeria.

The empirical data collected were then analysed using simple linear regression to determine statistically the extent of response between the variables and content analysis was used to evaluate the Nigerian tax policy on decommissioning operations. These analyses allowed tentative conclusions about the validity of the hypotheses developed in the dissertation.

The study revealed that the Crude Oil Price crash below $50 per barrel, negatively impacted on the profitability and future financial preparation for decommissioning of Bonga oil field and also there were no good tax policy in play at the moment to facilitate decommissioning operations in Nigeria. Nevertheless, presently a bill, called ‘‘Petroleum Industry Bill’’ is before the National Assembly, for the amendment of the existing regulations.

Keywords: Crude Oil Price, Revenue, Decommissioning, Tax Policy, Bonga Oilfield, Nigeria.

CHAPTER ONE

Introduction

1.1 Background to the Study

Eels' and Akporiaye (2015) assert that crude oil is debatable the most essential product in the world due to its significant political and economic impact among the international communities. In a nutshell, there is a high reliance on it globally with an estimated proven reserves of 1,492.6 billion barrels (OPEC 2017) and still it remains the global mainstay of energy and power generation without any foreseeable alternate (Dorian, Franssen and Simbeck 2006). However, some developed and developing countries have been supporting more cleaner energy initiatives to cut down greenhouse gases emission effect on climate change (Gao, Gao, and Zhang 2017).

Nigeria is a well-known country among the African nations, for its resource abundance; for example, in human resources as the Africa's most populous country with above 190 million people as of July 2017, Agriculture, Black Gold, Oil and Natural Gas (CIA 2017). The economic history of Nigeria initially recorded the advantage of the thriving agricultural sector and more strongly displayed the influence of oil and its substantial offerings to economic growth since the 1970s (Okeke and Eke Okoro 2009). Crude oil has been the mainstay for revenue generation, foreign exchange and energy for the Nigerian economy for the past three decades (Adamu 2015). Oil, being the backbone of the economy, plays a very important role in determining the political and the economic fate of the country (Odularu 2009).

Oil exploration begun in Nigeria in 1908 with the discovery of deposits, but not in commercial quantity at Araromi in Ondo State, then later at Oloibiri in Delta State in 1956 by Shell-BP (Chinweze*et al.* 2012). Even though in 1937 Shell/D A'rcy exploration parties, a group owned by Shell has begun the exploration for oil in the region (Adefi, Asada and Okojie 2015). Following the first oil discovery in 1956 by Shell, Nigeria turns out to be an oil producing country when the initial oilfield (Oloibiri field), started producing 5,100 bpd in 1958 and between the late 1960s to early 1970s with the emergences of higher engagement in operations by many Multinational and National Oil and Gas Companies, Nigeria was producing above 2,000,000 bpd (Chinese *et al.* 2012). The Crude Oil discovery made the nation to abandon the Agricultural sector, which was the backbone of the economy prior to the oil discovery. For

instance, the northern region was known for groundnut, hides and skin, cocoa export for the western region and palm produce for the eastern region (Dode 2012). Consequently, Nigeria has suffered from "Dutch Disease" (Brahmbhatt, Canuto and Vostroknutova 2010), as explained by Barder (2006) ''Dutch Disease is a term that describes a decline in a country's exports due to appreciation of the exchange rate after the discovery of natural resources such as oil.'' OPEC (2016) estimated the proven reserves of Nigeria to be approximately 37.45 billion barrels resulting in 43 years of production and converted to be around 2.2% of the global reserves with estimated gas of around 5.1 trillion cubic meters (TCM) which is comparable to 2.7% of global total (PWC 2015). The Nigerian petroleum industry, since 1970's has continued to play a significant role in the socioeconomic development of the society, export of crude oil offers the greater part of the government revenue and maximizes the foreign exchange earnings (Adamu 2015). As further explained by Adamu, crude oil revenue has been and still remain the strength of the nation's economy and probably will still remain for a long period of time in the future. Similarly, from the period of 1970 to 2008, oil contributed more than US$391. 6 billion in government revenue, which was approximately 77.1% of the total government revenue generated (Asekunowo and Olaiya 2012). This supported the position of Central bank of Nigeria (CBN) figures in 2006 which revealed that out of #5, 965.1 billion, the total revenue accumulated in the country, #5,287.6 billion was realized from crude oil and this was equivalent to 88.6% of the federal government total revenue (Adamu 2015) and earnings from the export of oil and gas in 2000 accounted for around 83% of revenue generated by the federal government (Ibegbu 2008). Many publications were made to address the issues of unlocking uncertainties associating with Crude oil price and expenses of shutting down operations, cleaning, closing the wells and removing, relocating of or disposing facilities. The crude oil price serves as a major determinant of barrels of oils (Lautier and Riva 2008). Preferably in an uncontrolled economy, the crude price is determined by the demand and supply forces (Le 2014). However, in a real sense many factors determine the crude oil price in the international market (Chevillon and Rifflart 2007) and the following are some few factors, but not restricted to the global demand of oil; OPEC alliance, particularly in the Middle East; geopolitical conflicts; subsidies and surcharges; environmental policies; government taxes; logistic and infrastructure and fluctuations of currency (Brigida 2016). The crude oil price is highly volatile and affect the cash flows of oil and gas operators or

licence holders who worked the field and responsible for all Decommissioning liabilities of the assets at the end of the field economic life (Robert *et al.* 2014).

Oil and Gas mineral resources are non-renewable and finite, due to it finite nature cannot be extracted in eternity. Afieroho*et al.* (2017) described the petroleum business as a cycle which runs from field exploration, development, production and to when the field becomes uneconomical for production "decommissioning and abandonment" (See figure 1.1 below). As elucidated by Afieroho*et al.*, with the diminishing of associated production, the integrity deterioration of infrastructures as a result of old age and increase in environmental concerns, oilfields decommissioning has become a very essential activityand an argumentative topic in recent times and Mashitah*et al*. (2016) explained decommissioning of oil and gas project infrastructure as the key aspect in the facility life cycle and occurs a substantial amount of cost, however, getting the costing right prior to the project execution is important because the operator is required to measure the financial reserves needed to be set aside for dismantling the project.

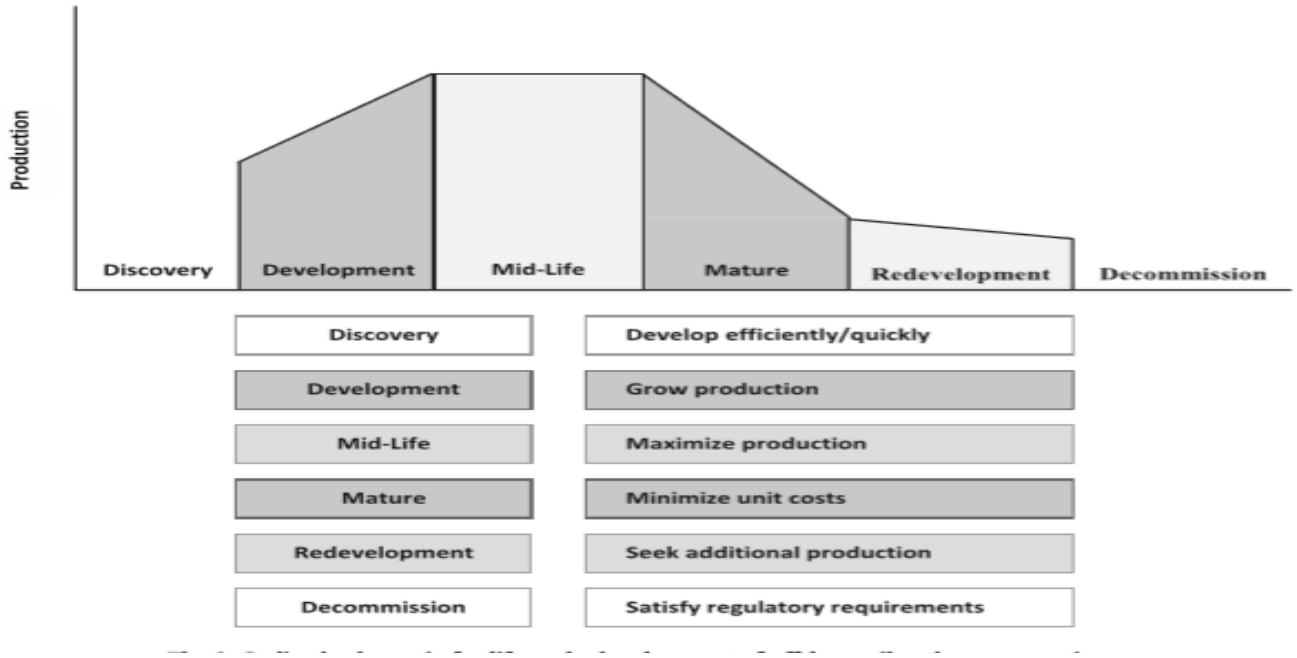


Fig. 1.1: Offshore Oil and Gas Properties life cycle Development (Kaiser 2014).

Wood Mackenzie (2016) projected the cost of decommissioning facilities in the North Sea to be around US$ 40 billion and this is consistent with the fiscal Policy of UK, which stated that the

government is anticipated to pay about US$ 19 billion of this cost to oil companies as tax credits once the decommissioning activities is completed. US triggered new regulations in the Gulf of Mexico (GoM), Decom World (2015) projected the decommissioning costs to be around US$26 billion. Rogers and Atkins (2015) assessed that nearly 50% of the oil and gas industry total debt is the estimated cost of resolving decommissioning liabilities. Ruivo and Morooka (2001) defined decommissioning as "the dismantling, decontamination, and removal of process equipment and facility structures" at the economic life end of a field. This exercise is multidiscipline by involving different specialties such as environmentalism, engineers, health and safety, finance and socio-political disciplines. The terms "abandonment" and "decommissioning" in most cases are used interchangeably, even though, according to Ayoade (2002), decommissioning is preferable to use by industry operators which does not mean the relinquishment deliberately like the way abandonment does and some operators in financial reports, used Asset Retirement Obligation (ARO), as their decommissioning liabilities.

Crude Oil fields are normally categorised into either onshore fields or offshore fields in Nigeria (See Fig. 1.2 underneath). According to NAPIMS (2016) offshore fields are positioned deeper or water depths of 100 m of the continental shelf in the Atlantic Ocean. Whereas the onshore fields are positioned on land and less than roughly 100 m deep in shallow waters, which swamps mostly mangrove places.

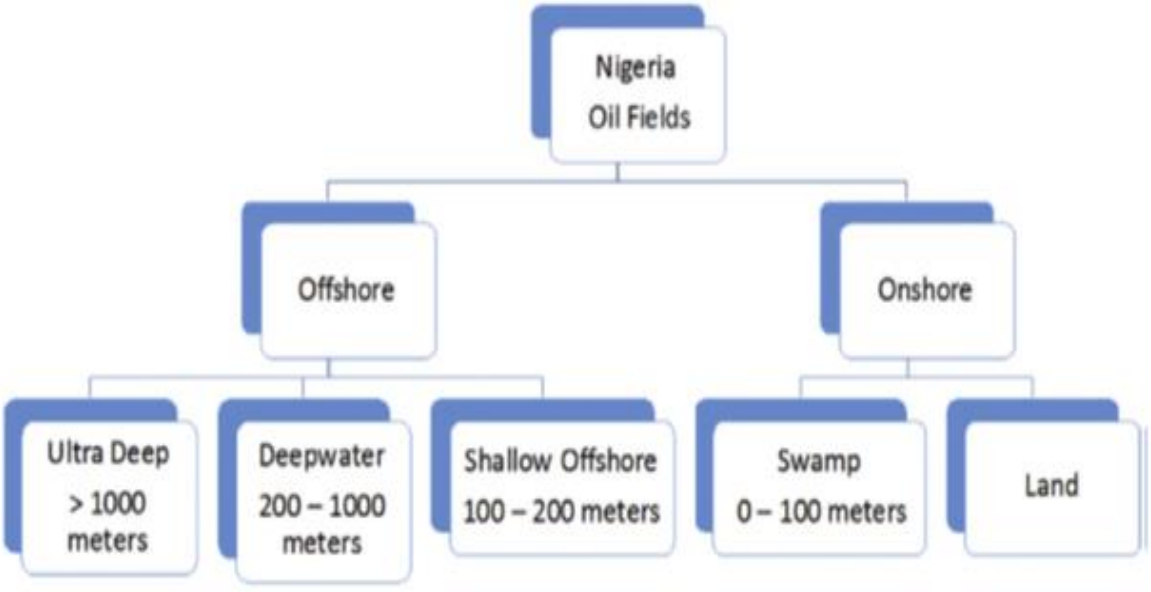


Fig. 1.2: The Structure of Oil Fields in Nigeria (NAPIMS 2016).

1.1.1The Niger Delta and Bonga Oilfield

Niger Delta is also called the delta of the Niger River, typically considered to be located on the Gulf of Guinea within the Atlantic Ocean, sitting directly within nine coastal southern Nigerian states and is the location of most Nigerian crude oil production (Eweje 2017) as shown in Fig. 1.3 below. It is a very densely populated region with approximately 30 million people, 40 ethnic groups speaking about 250 different dialects (Chukwu and Oben 2002).

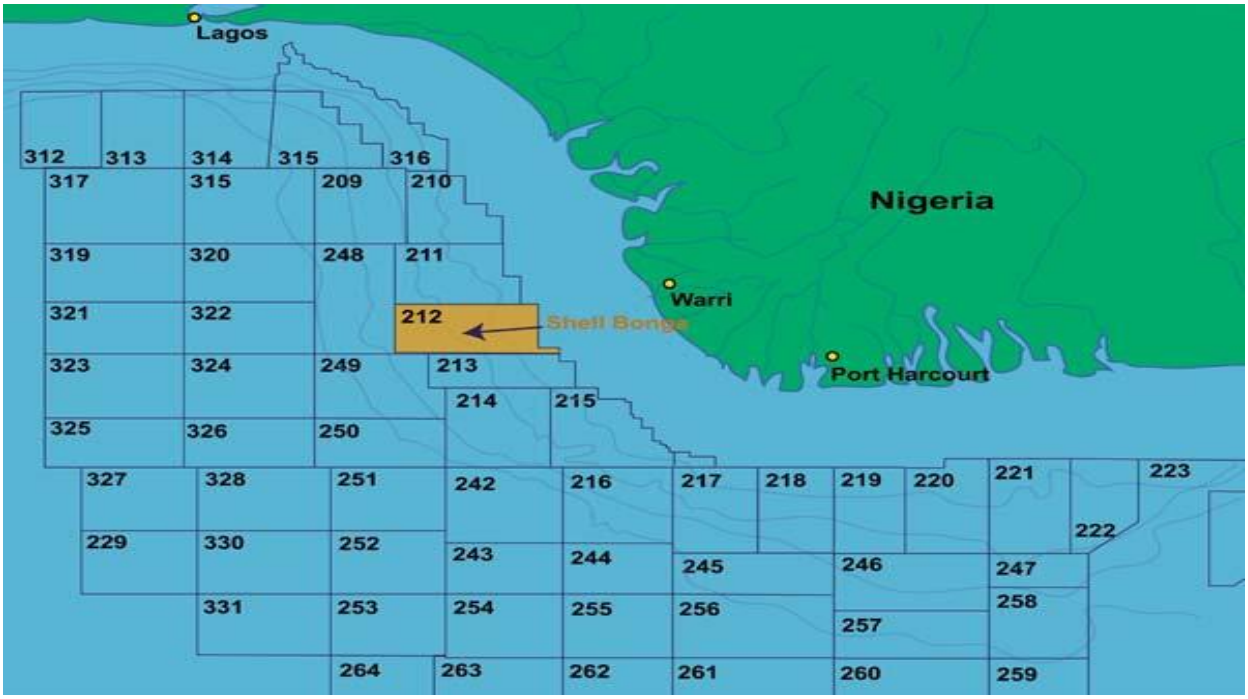


Fig.1.3: Shell Bonga Oil Field, offshore position in the Niger-Delta blocks (EPOCH 2017).

Bonga Offshore Oilfield was initially located in block OPL 212 License as of February 2000, now renamed to OML 118 (See Table 1.1 below), the field production is carried out through a Floating Production Storage and Offloading vessel (FPSO) and is operates by Shell Nigeria Exploration and Production Company Limited (SNEPCo) who possess 55% and in conjunction with other partners which includes: Nigerian AGIP (12.5%), Exxon Mobil (20%) and Elf Petroleum Nigeria Limited (12.5%) of the license in the field development (EPOCH 2017).

Table 1.1: The Profile of Bonga Deep-Water Oilfield.

Bonga Oil Field	
Country	Nigeria
Block	OML 118 (formerly OPL 212)
Offshore/onshore	Offshore
Operator	Shell Nigeria
Partners	Royal Dutch Shell ExxonMobil Nigerian AGIP Elf Petroleum Nigeria Limited
Field History	
Discovery	1996
Start of production	November 2005
Abandonment	2022 (Estimated)
Oil current production	202,000 bpd (~1.01×10^7 t/a)
Oil current production year	2006
Gas current production	144×10^6 cu ft./d (4.1×10^6 m^3/d)
Estimated oil in place	965 million tonnes (~ 234×10^9 m^3 or 1470000 MMbbl)
Producing formations	Middle to Late Miocene unconsolidated turbidite sandstones

1.2 Statement of Research Problem

The birth of shale revolution and market oversupplied alongside with some adjustments in the global oil industry collapsed in the global oil price beneath the threshold required to maintain the current output and the cost of production outweighs the revenues leading to shutting down of many oil and gas fields (Kemp 2017).

In Nigeria, International Oil Companies begun to divest and sell their equity to small or local oil companies (Afieroho*et al.* 2017). It was supported by the Nigerian Vanguard newspaper (2013) which reported an increasing trend of oil fields divestment by MOCs, attaining to an approximately 50% of total stake. Apparently, to the IOCs, the fields are less attractive on the basis of either production, socio-political or financial factors (Dawodu 2016). However, the small or local oil companies that acquired these fields are not financially strong to absorb the cost for proper decommissioning, possibly could lead to improper field decommissioning which

could result in degradation of the environment (Salawu 2014). Nevertheless, imposing the decommissioning on the IOCs will not be possible, most especially after they have divested, disposed the assets off to small oil companies and left Nigeria. Schaps and George (2017) stated a court in the UK passed a verdict that Shell, an IOC in Nigeria over an environmental liability dispute cannot be taken to a UK court to find justice.

This study, therefore, is geared in the direction of assessing the relationship between Crude Oil Price and Profitability and Decommissioning of mature Oil Field in Nigeria, paying specific attention on Bonga Deep-Water Oil Field.

1.3 Research Questions

In order to address the research gap, the study will seek to answer the following questions:

i. To what extent does the Crude Oil Price crash impacted on the Profitability and Decommissioning of Bonga Oil Field?

ii. Does the Petroleum tax policy on Decommissioning operations fair in representing the interests of the IOCs and the Nigeria Government?

iii. How effective does the Nigerian Petroleum tax policy on Decommissioning are?

1.4 Hypotheses of the Study

The following hypotheses are formulated to guide the research questions and objectives:

$H1_1$: The Crude Oil Price crash has negative significant impact on the Profitability and Decommissioning of Bonga Oil Field.

$H1_2$: Nigeria's Petroleum tax policy on Decommissioning is fair in representing the Government and the IOCs interests.

$H1_3$: The Petroleum tax policy on Decommissioning are effective in Nigeria.

1.5 Aim and Objectives

The project aims to critically assess the relationship between Crude Oil Price and Profitability and Decommissioning of mature Oil Field in Nigeria, with a particular attention on Bonga Deep-water Oil field by achieving the following objectives:

i. To assess the impact of the Crude Oil Price crash on the Profitability and Decommissioning of Bonga Oil Field;

ii. To critically review the Petroleum tax policy on Decommissioning operations in Nigeria; and

iii. To critically examine the effectiveness of Nigerian Decommissioning tax policy.

1.6 Significance of the Study

1. The government will find it very useful due to divestment of mature oilfields consequence, made by some Multinational Oil Companies to local and small independent oil companies with lower financial capabilities to absorb the cost as well as inadequate technology for proper decommissioning in the future.

2. Multinational Oil Companies will find it very essential to gain more awareness, to properly plan ahead for the future decommissioning project of mature oil fields, with less than ten years economic life and to seek for government compensation in a situation where the oil price turn to be unfavourable.

3. The study will also examine the effectiveness of the Nigerian Petroleum tax policy on Decommissioning operations. With this review, policy makers may be encouraged to make required corrections, if any, in order to help in realising the policy aims without the MOCs interest being jeopardised.

4. It will contribute to the existing body of knowledge (literature) on mature Oilfield Profitability and future Decommissioning in relation to Crude Oil Price. With regards to this, it may serve as valuable resources for subsequent researchers who wants to carry out research in the field to use as reference material.

5. The general public may gain a better understanding to appreciate the activities of the Nigerian upstream oil sector. Particularly, on Asset Retirement Obligation for environmental concerns.

1.7 Scope of the Study

The scope of this study was constrained to only matured offshore Properties (Oilfields) approaching decommissioning between five to ten years' time. Specifically, paying more attention on Bonga Deep-Water, Oil Field operates by shell Nigeria. The study also focuses on tax policy and its effectiveness on decommissioning operations in the Nigerian petroleum industry.

CHAPTER TWO

Literature Review

2.1 Introduction

This chapter review critically the existing relevant literature in the area of the study, with a particular view to identify the gap or issues that exist which this research is indented to address. The review covers the Concept of Petroleum fiscal regimes, its components and operations in Nigeria. The Crude oil price crash, Decommissioning regulations and tax policy on Decommissioning of Oil and Gas platform are also outlined and discussed.

2.2 An Overview of Petroleum Fiscal Regimes

The States have an independent authority over their natural resources and are responsible for maintaining the legal regime or management in regulating the petroleum operations, which is usually established in a constitution. While the large quantity of hydrocarbons in a state is a gift of nature, it needs large investments and great labours to convert it into profitable crude oil (Demiren 2010). Apart from the choice of government to directly invest in the natural resources or by way of private oil companies, its primary assignment or task is the social benefit maximisation which should be derived from the exploitation of the natural resource (Al-Emadi 2010 and Jolly 2012). Different nations are competing with each other in order to attract direct foreign investment to develop their own natural resources as well as the economy. Demiren (2010)concluded that, the multinational oil company or prospective investors and Host Governments may share common objectives.However, their set aims and objectives may not be fully aligned at a more thorough level. Thus, all Host governments are interested in the following:

- Revenue maximisation of its mineral resources by way of designing the best fiscal system;
- Foreign investment attraction as well as creating maximum value through each oil and gas exploration and production;
- Entering into a contract to explore, develop and produce hydrocarbons with a private

company that, has the highest required financial background, expertise, technologies and reputation; and

- Socioeconomic development objectives for instance, creation of job, infrastructure development and technology transfer into the country.

This can be done through planning a fiscal system which will permit large shares of revenue capturing from the projects to encourage economic efficiency (Abdul-Manaf*et al.* 2016). Similarly, the interest of the IOCs or investors, is to ensure that any risk associated with the project is consistent with the return on investment and the strategic goals of the company as well as paying more attention to the economic measures such as project venture present value and rate of return (Tordo 2007, Demiren 2010 and Abdul-Manaf*et al.* 2016).

Petroleum taxation is the major instrument for sharing the oil and gas wealth between the investors (International Oil and Gas Companies) and the host Governments (The owner of the Natural resources). As explained by Nakhle (2008) "it is to acquire for the state in whose legal territory the resource in question lies, a fair share of the wealth accruing from their extraction, whilst encouraging investors to ensure optimal economic recovery for those hydrocarbon resources". The host Government has to strikes a balance between these two competing and complementary objectives: (1) to make sure that the revenues are fairly shared among the parties; and (2) to provide an enabling environment to encourage investments (i.e. By way of sufficient incentives). The key issue here, is to find a common ground between these objectives, most especially in a volatile oil price situation. In order to remedy this problem, the governments of the oil and gas-rich countries have to come up with various methods of taxation and transactions with the MOCs, which in mixture represent the design of the fiscal system for the country.

Marcel (2010) viewed the petroleum fiscal system as the mixture of established legislative taxation structure and the contractual framework under which the IOCs operates with the host government See Fig 2.1 below and (Harraz 2015) stated that fiscal terms and conditions comprised royalties, bonuses, provisions of carried interest, rentals, special and corporate income

taxes and sharing arrangements of production. Similarly, Jolly (2012) explained the "fiscal system" as all kinds of payments necessary under the petroleum arrangement with the host government.

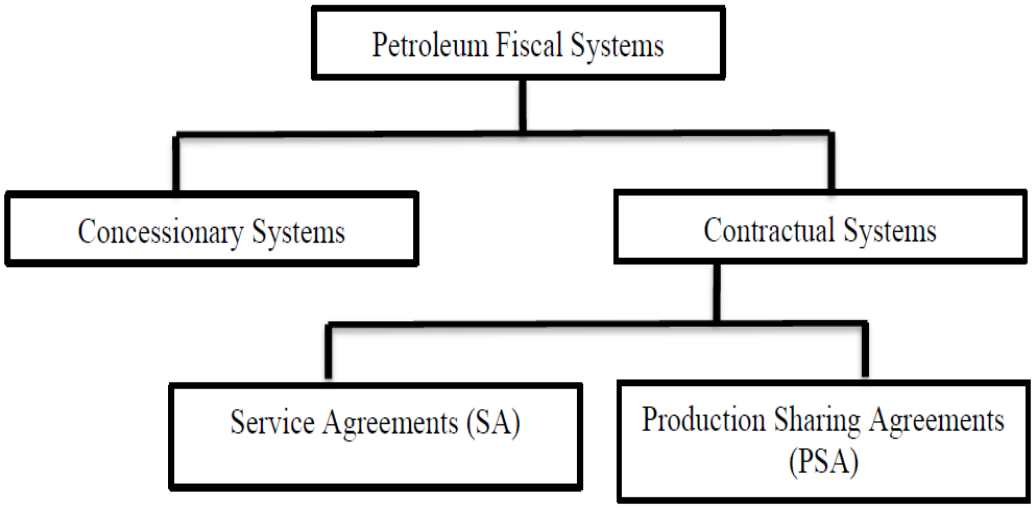


Fig.2.1: Showing the petroleum fiscal systems Classification (Mazeel 2010).

As illustrated in Fig. 2.1 above the main types of the petroleum fiscal systems are two according to Dharmadji and Parlindunan (2002), Johnston (2003), Luo and Yan (2010) and Mazeel (2010), when a license or a permit is granted by a host government to an oil company to explore and produce hydrocarbons on a specific field, the system is called concessionary, net tax and/or royalty is imposed on the producing oil company. In Nakhle (2008:32) words ''is an arrangement between a government and a company that grants the company the exclusive right to explore for, develop, produce, transport and market the petroleum resource at its own risk and expense within a fixed area for a specific amount of time.'' Whereas a system is called contractual when the production and marketing is shared among the private oil companies and a host government or either self-produce. The private oil companies may receive it rewards in cash (revenues) or in raw oil (share of production) but all rest on the terms of the contract either a service contract (SC) or production sharing contracts (PSC) (Mazeel 2010). The major distinction between a SC and PSC is the type of reward receives by an oil company. In a production sharing contract, the investor has a right over a portion of the production, this implied that the compensations are received in crude oil. However, in the case of a service contract, the investor gets a portion of the profits, i.e. the rewards are received in cash (Luo and Yan 2010).

Furthermore, another type of contract called the Rate of Return (ROR) tax, suggested by Johnston (1994) as the third category of the fiscal systems. This system of tax is usually integrated into a Royalty/ tax or the contractual system, even though it was categorised as a separate system (Blake and Roberts 2006). In this system, tax allows the contractor with an unconstrained net assessable receipts, carry forward, i.e. the sum of all cash inflows generated from the project minus all the incurred expenditure, exclusive of interest payments at a particular rate equal to the ROR minimum rate expected in a fiscal year by the contractor. Regardless of this variation used, the bottom line is financial issue, i.e. sharing of profits and cost recovery.

2.3 Nigerian Petroleum Fiscal Regimes

The Nigerian main employed or operating petroleum fiscal regimes is: i) the overseers of all the Joint Venture agreement which is the Tax/royalty system and ii) production sharing agreements (PSA). As supported by Babajide*et al.* (2014) and Ernest and Young (2015) claimed that only two major categories of fiscal regimes play in Nigeria: The Royalty/ Tax and Contractual systems.

2.3.1 Joint Venture Contract in Nigeria

In 1969, Nigeria introduced Joint venture (JV) arrangement as replacement of the traditional Royalty/Tax system (Saidu*et al.* 2014). As explained byIledare (2004), a JV contract is an adjusted arrangement of the royalty/tax fiscal system with government involvement. It was into play from 1970s to 1990s (BCG 2012). The Joint Venture Agreement (JVA) is a standard contract between the government, via the Nigeria National Oil Company (NNPC) with one or more oil companies (MOCs) (NNPC 2012). The Nigerian JV contract, accounted for approximately 95% productionof its crude oil (ESMAP 2004), its allowed a selection of one partner to be an operator, who prepares the annual budget of the expenditure and schedules of work program of the JOA, which should be accepted by other partners based on their holdings. This agreement vested to each partner the right to lift and individually dispose its production share of interest upon the payment of royalty and petroleum profit tax (NNPC 2012).

Nigeria's JV model granted the partners the right to make decision and to carry on the business operations with sole risk. Umar (2005) stated the following as other requirements of the JOA:

- ❖ The partners' funds contribution to finance the JV operations must commensurate with their holdings interest in the joint venture.
- ❖ The operator is at liberty to act, but on specific matters on behalf of the joint venture and also has the right to a certain authority limit to be committed in the JV.
- ❖ Policy matters and technical issues are to be discussed at a regular meetings of the operating committee and each partner having equal representative.

The government is require to contribute its portion of assets usually called 'calls' to meet up with the huge capital costs in the general operations. However, the Nigerian Government under the joint venture agreement had difficulty to meet up with its cash obligations or the upstream cash commitments for some numbers of JVA contracted See table 2.1 below.

Table 2.1: The main Nigerian Joint Ventures Oil Production (Extract) (EIA 2003).

Operators	**Other Partners**	**NNPC**	**Main Fields of Production**
Shell (30%)	TotalFinaElf (10%)	55%	Ekulama,Kolo Creek,Etelelbou,Imo River,Adibawa, Bonny,Jones Creek,Otumara,Egwa,Olomoro, Odidi andForcados.
ExxonMobil (40%)	None	60%	Unam, Ubit, Edop, Asasa and Oso.
ChevronTexaco (40%)	None	60%	Okan, Meren, Delta/Delta South, Robertkiri, Meji, River, North Apoi, Sengana, Funiwa, Pennington and Middelton.
Agip (20%)	Phillips (20%)	60%	Obiafu, Abgara, Obama and Oshi.
TotalFinaElf (40%)	None	60%	Aghigo, Obodo-Jatumi, Obagi, Okpoko, Afia and Upomami.

2.3.2 The Nigerian Concessionary System Fiscal Provisions

The Royalty/Tax agreements conquered the Nigerian oil industry (Onaiwu 2010). Under this contract, a pure 80 years concession was granted to Shell D'Arcy (later Shell BP) by the government in 1930s. However, concession right was also granted to Agip in 1962, which was not pure as it involved participation of government equity in the company subject to crude oil discovery (Babajide*et al.* 2014). As demonstrated in table 2.1 above, the entire JV partners are governed by the royalty/ tax system provisions which encompass the following:

1. **Royalty**: is imposed under the provision of petroleum profit tax Act 1990 as amended. In 1995, onshore fields are charged fixed rate of 20% and the offshore fields are charged from 18.5% to 0% as imposed by the government. The payable royalty is presently, calculated using Nigerian crude oil price as established by the Minister of Finance (ESMAP 2004).

2. **Petroleum Profit Tax**: for JV agreements, the PPT rate is 85% for those companies of which their preproduction expenses were recovered and for those companies in which their costs for preproduction are not yet recovered a fixed rate of 65.75% is imposed by the Act.

3. **Additional Taxes**: all companies engaged under the JV agreements are also liable to education tax, value added tax (VAT) and import duties in addition to the PPT as extra taxes, among others.

4.**Ring Fence Income Tax:** for the purpose of PPT, the entire exploration activities of all companies engaged under the JV contract are ring fenced. This stops the oil companies from accounting for losses incurred on the offshore fields to onshore fields or to transfer the losses from downstream to upstream operations.

5.**Income Tax Allowances:**apart from the allowable deductions as mentioned under the provision of section 10 of the Act, all oil companies engaged under the JV contracts are also allowed to enjoy an additional allowances.

- ✓ Capital Allowance is initially granted on all incurred qualified capital expenditures as indicated in table 2.2 below. However, where the company's assessable income or profit for that period is not sufficient to absorb the full amount of the period capital allowance, the unabsorbed amount therefore, may be carried forward against the subsequent period assessable profits until the amount is fully relieved in line with the provision of section 15(5) of the PPTA.

Table 2.2: The Nigerian rate of Annual Allowance for IOCs (NPPTA 1990).

Year	**Rate %**
1	20
2	20
3	20
4	20
5	19

- ✓ Investment Tax Credit Allowance is granted to all IOCs engaged under the JV contracts as tax offset on incurred qualified capital expenditures and the allowable rates for this tax differs based on the fields locations as shown in table 2.3 below.

Table 2.3: The Nigerian rate of Investment tax credit for IOCs (NPPTA 1990).

Location	**Rate %**
Oil Onshore	5
Oil Offshore	-
Up to 100m deep	10
101-200m	15
Above 200m	20

- ✓ Losses Incurred in any accounting period by the oil companies engaged under the JV contracts are allowed to be indefinitely carried forward (PPTA 1990). Preceding accounting periods losses brought forward are added and relieved on the current period adjusted income to work out the assessable profit for the current period.

2.3.3 Production Sharing Contract in Nigeria

The Production Sharing Contract Inland Basic Act (PSCA) as amended 1999 and Nigerian Deep Offshore defined a PSC ‘‘asany agreement or arrangements made between the Corporation or the Holder and any other petroleum exploration and Production Company or companies for the purpose of exploration and production of oil in the Deep Offshore and Inland Basins’’.The term ‘‘Holder’’ is further defines under the provision of Section 18 of the Act as: ‘‘any Nigerian company holding an oil prospecting license or oil mining lease that is located within the Deep Offshore and Inland Basin areas of Nigeria.’’ As historically stated by Umar (2005) a PSC was introduced into Nigeria in 1973 at inception, as an agreement between the Ashland Oil Nigeria Company and Nigerian National Oil Company concerning OPL No. 98/118 for a duration of 20 years, subject to renewal for a period of 5 years. However, some challenges were encountered in carrying out its operation which required renegotiation of some terms (Babajide*et al.* 2014). Consequently, this experience discouraged the Government to further use the PSC and adopted Risk Service Contract in 1979 for an award of 11 Oil Blocks. BCG (2012) and KPMG (2014) stated that,the Nigerian government adopted PSC in 1993 due to some problem encountered in raising of funds for JVs, even though the first licencing rounds was successfully implemented in 1993 and followed with execution of the second rounds in 2000.

The Nigerian PSC is governed by both the legislative and the prescribed areaswhich are negotiable terms between the IOCs and the government via the NNPC. The legislation covered areas such as participation of government, oil reserves commerciality, oil and gas resources ownership, safety and environmental protection, issues of taxation and local content. whereas the prescribed areas which are subject to negotiation consist the following: contract terms and

duration, commitment of the work, the contractual parties rights and obligations, powers and functions of the management and methods of accounting. Umar (2005) outlined the Nigeria's PSC model major provisions which encompass the following:

- The NNPC is vested with responsibility of contract rights for all areas.
- The responsibility to appoint the IOCs as contractors and granting them exclusive right to petroleum operations in the areas covered under the contracts is held by NNPC.
- The IOCs are allowed to operate by the agreement for 30 years which should be split into exploration for10 years and the oil mining for 20 years.
- The contract mandated the IOCs to make adequate funds available for the operations and to guarantee the bearing of operating costs risks.
- The IOCs are allowed to recover their OPEX within five years of commencing operation and also to enjoy an agreed share of the profit.

In order to ensure adherence to the above mentioned provisions, the PSCA required a management committee to be established within thirty days, commencing from when the contract becomes effective. The committee required only ten members, five members each from both parties. The NNPC is saddled with the power to appoint the committee chairman and the contractor is assigned with the power to appoint the secretary. Moreover, through the committee, the NNPC, oversees and controls the activities of all the oil companies operated under the PSCs. The following are some outlined powers of NNPC by PSC Act in monitoring and controlling the operations of the contract:

1. The budget estimates and work plans review and approval;

2. Proper contractor monitoring to ensure compliance of accounting provisions, procurement, lifting and procedures for the project implementation; and

3. Considering matters related to contract relinquishment and taking necessary actions in line with the provisions of the petroleum laws and the contract terms.

The most vital aspect in the PSC is the cake sharing i.e. IOCs and the government take from the gross oil. In Nigeria, the gross oil produced under this type of contract are shared between the IOCs and the government as: Royalty oil, cost oil, profit oil and tax oil (See figure 2.2 below).

a) Royalty Oil is allocated to NNPC in a quantity which would commensurate to each month actual royalty payable.
b) Cost Oil is allocated to IOCs in such a quantity, which would be sufficient enough to recover the amount of their OPEX.
c) Tax Oil is allocated to NNPC in a quantity equal to the each month amount payable on petroleum profit tax liability.
d) Profit Oil is the crude oil remaining balance after the royalty oil, cost oil and tax oil are being deducted and is shared to the parties according to the predetermine sharing formula or ratio.

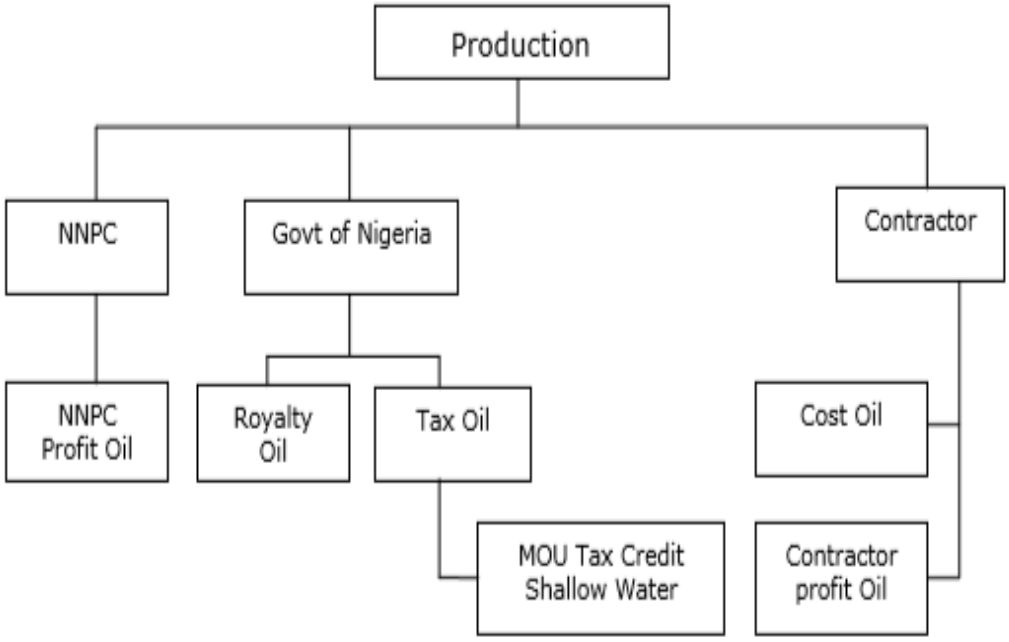


Fig. 2.2: Typically the PSC structure in Nigeria (NNPC 2011).

Furthermore, under the Nigerian PSC arrangement, the government is relieved from funding obligations or contributing the upfront cash calls required for the operations as IOCs are responsible for activities in the upstream (KPMG 2014). Nevertheless, in order to encourage investment influxes, the Nigerian government come up with diverse kinds of PSC operating mostly offshore (Onwuka 2011). As outlined byEchendu (2011) and Onwuka (2011) PSC Model series of1993, 1999, 2000, 2003 and 2005 are the various PSC forms for offshore operations in Nigeria. Similarly,Babajide*et al.* (2014) stated that, in the inland basin PSCs decree no. 9 of 1999

which functions as the country's principal framework for the use of PSCs, covers the inland basin deep offshore and the areas of deep offshore.The inter-agency team (2009) argued that, small fields influxes of investments would be significantly unattractive, even though, Wood McKenzie (2009)concluded that, the 2005 PSC was considered as being harsh to investment due to it outrageous share of gross revenue provided to government. As supported by Babajide*et al.* (2014) explained, that prior to 2005 PSC Nigerian profit oil share was based on accumulative production with minimum of 20% to 60% government share and after 2005 the oil was shared on rate of return basis.

2.4 Crude Oil Price Crash Below $50 and Decommissioning Cost

CrudeOil Price like othercommoditiespricesexperiences wide variations in times of oversupply or shortage. The oil prices history See Fig 2.3 below dates back to many years of political and economic events that shaped the price, economy, policy, wars, price controls, domestic and Organization of Petroleum Exporting Countries (OPEC).

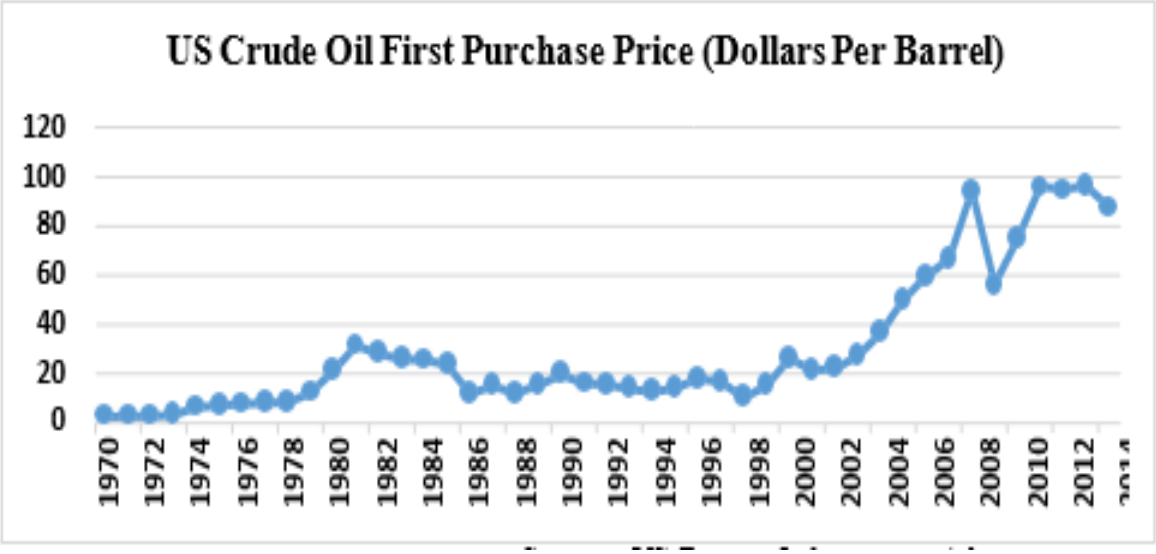


Fig.2.3: 1970 to 2014 Trent of crude oil price (US EIA 2017).

Various Scholars have given different definitions to the term ''Volatility'' across the disciplines. However, volatility in relation to crude oil price is the variation/deviation among worth of variables particularly price (Mgbame*et al.*2015). Ogiri*et al.* (2013) defines volatility as the extent or degree of the trend of crude oil price to fall or rise suddenly within a period of time, such as

daily, monthly and annually. Similarly, Oriakhi and Osazee (2013) explained volatility as standard deviation and also noted it instant significant negative impact on economic growth as compared to impact of oil price changes which can be delayed till after a year. As concluded by Oriakhi and Osazee, change or volatility of oil price has a significant impact on economic growth. Ghalayini (2011) studied on oil price volatility and revealed that the shocks of oil price would frequently influence macro-economic performance via different channels. As supported by Jawad (2013) stated that Oil prices relocate financial reserves through its trade from oil importing nations to oil-exporting nations. Siddiqui (2005) worked on oil prices in the period of 1953 to 2003 and discovered a special effects on financial growth instability, inflation and growth in United Kingdom. The result revealed that there is significant relationship between the variables.Similarly, Nooreen*et al.* (2007) explained that changes in Oil prices has unconstructive impact in a very large scale on the large economies. Kilian (2009) concluded that oil prices changes has strong impact on the inflows or the earnings of companies as well as the operation of the companies directly or indirectly.

Strong (1991) studies the world leading oil companies and examines the oil equities portfolios ability to hedge against the oil price risk and develops portfolios which meant to increase the sensitivity of the oil pricefluctuationsanddiversifying the otherriskaway. As stated byHuang*et al.*(1996),atthemicrolevel, oil price changes is a key factor in the production process that affect cash flows of firms or financial performance, in turn influencing firms' retained earnings, dividend payments and prices of equity.Sadorsky(1999)describedthatifthe changesofeither supply shocks ordemandshocksincreases, this will produce high fluctuations in both aggregate oil prices and stock market returns. This is supported by Aleisa*et al.* (2003) that examines the return on equity of companies engaging in oil exploration, refinery and marketing. Similarly, Manera, Giovannini, Lanza and Grasso (2004) examines the correlations of changes in the return on stock price and their determinants for the top integrated multinational oil companies, namely Total-Fina Elf (TFE), British petroleum (BP), Eni (ENI), Chevron-Texaco (CVX), Royal Dutch (RD) and Exxon-Mobil (XOM). They measure “within” and “between” the different oil firms actual co-risk in stock returns and their determinants. Consistent with Lanza *et al.* (2004) studies the correlations of return fluctuations in the stock price and their determinants for the top integrated oil and gas companies. However, Hammoudeh*etal.*(2004)used multivariateandunivariateGARCHtostudyvolatilitypersistenceinthecrude oil market and its

impact on return on equity's volatility of the S&P oil and gas exploration and production sector indices. Boyer and Filion (2007) investigate the Canadian oil and gas company's factors that explain stock returns. Similarly, Kilian and Park (2009) observes the impact of differentshocks'ontheU.S.stockmarket. However, Odusami,Elyasini andMansur (2011)used GARCH(1,1)technique and examinedthe impact of changes in the oil return volatility and oil returns on excess return volatilities and stock returns ofthirteenU.S.industries and the result revealedstrongevidence thatoilpricefluctuationscreateasystematicassetpricerisk. Ready (2013) suggest a novel technique for categorizing oil price changes as demand or supply driven and gives evidences as regards to the relationship between stock returns and oil prices.

2.5 Decommissioning Policy of Offshore Oilfields

Obviously, Decommissioning as regards to offshore installations has it recent origination. It turnout to be a worrisome to the international oil industry follow-on to the controversy of 1995 Brent Spar (Hamzah 2003).As discussed by Feidt (2012), decommissioning process is generally occurs after the offshore platform (i.e. oil and gas platform) has been ceased or abandoned to be operative or productive. Even though, decision may be made by the field operator in conjunction with the relevant regulatory agencies to decommission the infrastructure when production of the oil field becomes uneconomical (West 2014).

The 1958 Geneva Convention stipulates that "any installations which are abandoned or disused must be entirely removed.'' In contrast, with 1982 UN Law of the Sea Convention (UNCLOS) which states that: ''any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization.''

Globally, there are above 7,300 oil and gas platforms/installations, many have been in service for over 20 years and some have been abandoned to be decommissioned in the future (King and Valencia 2014). Salawu (2014) noted that maturing of many oil and gas fields offshore globally, has outstretched the query of accountability and oil and gas industry's good practices. However, the issue of decommissioning cost became a vital concern to both the oil producing nations and the oil industry (Ayoade 2002). Similarly, Parente *et al.* (2006) highlighted that a high cost is expected to be incurred in disposing and removing all the unused platforms. Moreover,decommissioning an installations by way of removing the large concrete and steel

structure in the deep sea, some are legalised to remained in situ can be colossal and costly (Osmundsen*et al.* 2003). Similarly, Rogers and Atkins (2015) concluded approximately £60 million it cost Shell to decommission in 1995 Brent Spar.Wood Mackenzie (2016) highlighted that,huge aggregate cost would be used to take away all the offshore installations in the North Sea. The study of Zawawi*et al.*(2015) in Malaysia, conventionally estimated to remove two hundred plus offshore installations it will cost the national oil company (PETRONAS) around US$2 billion.

2.6 Decommissioning Regulations in Nigeria

Nigeria is one of the most essential producer of oil and gas in the African continent, host more than 170 structures among 480 installation located in Africa, with attendant cost implications (Stratfor 2013). In the U.S oil and gas companies have the legal obligation to abandon, dismantle and plug wells and facilities constructed and acquired (Kaiser 2014). However,in the GoM, the regulatory requirement are codified on 2013 Bureau of Ocean Energy Management guidelines but not all Deepwater decommissioning procedures have been specified. For instance, manifolds, templates, booster pumps, anchor piles and some other relevant facilities may be removed during decommissioning (Kaiser 2014). Similarly, Kaiser (2017)explained pipelines removal processes required by the BSEE are specified in 30CFR250.1750 through 250.1754 e.g. pipeline that is out of service for less or a year is isolated with a close block valve or blind flange at each end of the pipeline. Consistent withthe SEC guidelines through the FASB also require the detailed of the long term asset retirement obligation on the company statement of financial position.

Offshore structures are located close shore, in deep water or shallow waters areas (Afieroho et al. 2017). As stated byAdedayo (2016), the following equipment are the most used or operated in the sea shore and the Nigerian continental shelf:

1) Fixed steel platforms containing of a topside that comprises the accommodation facilities, drilling processing units and the jacket or supporting substructure;
2) Gravity base platforms comprising of topside facilities which are reinforced by groundwork typically made of steel protected concrete, frequently with tanks that can be employed to regulate its buoyancy and also seating on the seabed fixed by its weight;

3) Floating Production Storage and Offloading (FPSO) structures is unlike 1 and 2 mentioned above See Fig. 2.4 below. These are converted vessels or custom built which are usuallyship shaped and tanks are used to store crude oil which are also located in the vessel hull. The extracted Crude oil from production wells on the seabed are then conveyed to the FPSO via flexible risers and the crude oil is once in a while offloaded to ocean-going barges or shuttle tankers for onshore transportation. Nigeria have two which are best known in Oil Mining Lease (OML) 118 (Bonga FPSO) and Oil Prospecting Lease (OPL) 216 (Agbami FPSO).

Fig. 2.4 Showing Bonga FPSO Structure Deepwater Oilfield (Shell's Bonga Vessel 2017).

Esson (2017) Views the technical, legal, financial, environmental and public opinion as the key issues in decommissioning matured oil and gas field. However,the requirements for asset retirement obligation or liabilities are not detailed in Nigeria laws and guidelines, outside an aspiration to remove facilities at the time when it is not profitable feasible (Ibebuike 2013; West 2014 and Salawu 2014). Similarly, Smith *et al.*(2000) and Lawal (2008) statedthere was no recognition of any activities related to petroleum in Nigeria's Joint Venture contract to go beyond the phase of production. As further argued by Lawal, this means indirectly when the agreements were drafted, decommissioning was not discussed and signed.However, presently a bill, called ''Petroleum Industry Bill (PIB)'' is before the National Assembly under consideration, for the

amendment of the existing petroleum regulations (Salawu 2014).Many exploration and production companies cannot offer a cradle to grave way out but designing new facilities to the future decommissioning activities has an ultimate cost lifecycle advantage and this type of solution may be favoured by the host countries (Robert et al. 2014).

A sustainable method to decommissioning will make an effort to evaluate the risk related with the offshore fields in Nigeria, find reliable setups and seek mitigation strategy for an optimal socioeconomic development. Nigeria is at early level concerning development proposal to decommissioning offshore and onshore (Lawal 2008). West (2014) explained that the onshore decommissioning is undisputable as it is well captured in Nigerian law as such it involves the operator well bores plugging with cement to safeguard the contamination of ground water; wellheads, storage tanks removal, processing equipment , waste handling pits, non-producing wells and pump jacks. In contrast with the offshore decommissioning Salawu (2014) outlined four different stages: cessation of oil and gas, wells safe plugging, installation removal and removed parts recycling or disposal. However, FPSO structure is unlike fixed platform as shown in Fig. 2.4 above, requires only decommissioning of pipelines, subsea equipment, abandonment and plugging of wells.

Lawal (2008) augured that the contractual provisions that express the relationship between offshore oil and gas operators and the Nigerian state does not addressed the issue of sustainability. As supported by Ibebuike (2013), emphasised that Joint Venture and Risk Service agreements, as currently constituted, have no any provisions for offshore structures decommissioning. Eventhough, the Shell /NNPC Joint Venture (JV) is sited in deep waters within a 200 meter depth for the EA fields. Moreover, offshore decommissioning is treated better in the PSCs Model 2000 and 2005 which provides for decommissioning fund establishment to ensure that at field life end there is available money to pay for the site rehabilitation and restoration (Adedayo 2016). In UKCS and GoM empirical observations show that as the field production becomes uneconomical, divestment of matured asset is common by large operator to small or local operator with straightforward transfer of resource, but ownership transfer of environment liabilities and future decommissioning are not inclusive (Sinclair and Diduck 2016). Similarly, Hesson (2006) highlighted this issue in California at Eureka canyon oil field numerous wells were left orphaned when the field became non-operational by the last operator and the

wells had to be properly abandoned and address the resulted environmental challenges by the state of California. Walters's *et al.* (2000), O'Faircheallaigh (2010), Marzuki (2015) and Sinclair and Diduck (2016) noted inadequate participation of public in most policy issues that concerns the community. As observed by Lawal (2008), participation of community has not been witnessed in the policy or strategy improvement for decommissioning in Nigeria. Afieroho et al. (2017) concluded that this factor could be qualified to the lack of accessible relevant data publicly, such as the relative environmental liabilities and the potential decommissioning cost, it could lead the public through the government to end up compensating for the activities and therefore, cost cognizance could assist to advance the level of community participation in Nigeria.

2.7 Decommissioning Cost in Annual Financial Statements

The legal and mandatory obligation associated with the responsibilities for decommissioning liabilities are best described and presented from the perspective of an asset retirement obligation. Kaiser (2015) described the AROs as those assets which have legal obligation to be settled under enacted or existing law, oral or written contract and statute. However, their real implementation may be in the future. This employed the need to consider the time value of money. The stated cost of ARO in financial reports is the present value of the future cost estimated to settle all AROs related to the entity owned assets at a particular period. Consequently, if any asset is decommissioned properly, ARO total cost is decreased by the amount of ARO cost mainly related with that asset and if any asset is newly acquired with related AROs, these new liabilities accumulated to the existing ARO cost of the company (Afieroho et al. 2017). Thus, the need for transparent and proper accounting of ARO cost.

The Securities and Exchange Commission (SEC), International best practice and most of the local Standard Accounting Bodies expect companies or businesses to report their decommissioning liabilities/asset retirement obligations at fair value within the year in which they were incurred. Even though, Nigerian adaptation of the International Financial Reporting Standard (IFRS) was in 2012. Bala (2013) noted ''IFRS provides that, the present value of the cost of dismantling, removing, or restoring an oil and gas field as a result of legal or constructive obligation is recognized as a liability and the corresponding cost capitalized as part of the related property, plant or equipment.'' Similarly, in Nigeria oil and gas companies are required to make

recognition, measurement and full disclosure of the decommissioning liabilities same approach to other countries whose operate similar standards.

The measures for ARO determination are founded on the International Accounting Standards (IAS) 37 and Accounting Standard Code (ASC) 410-20 or Statement of Financial Accounting Standards (FAS) 143. Ernst and Young (2016) and McEown (2017) highlighted the Fair Market Value of ARO stated in the entity's financial statement is determined from the estimated cost to settle the asset retirement obligations in present dollars and current business environment by the company See Fig. 2.5 below. The estimated cost in present dollar is then converted through application of discounting factor or an inflation rate to the nominal cost of decommissioning at the field life end. This future cost is discounted by using the company's discounting rate back to the present year to work out the current value of ARO for the company. Bala (2013), Rogers and Atkins (2015) and McEown (2017) described and acknowledged this approach of estimating the reported ARO value.

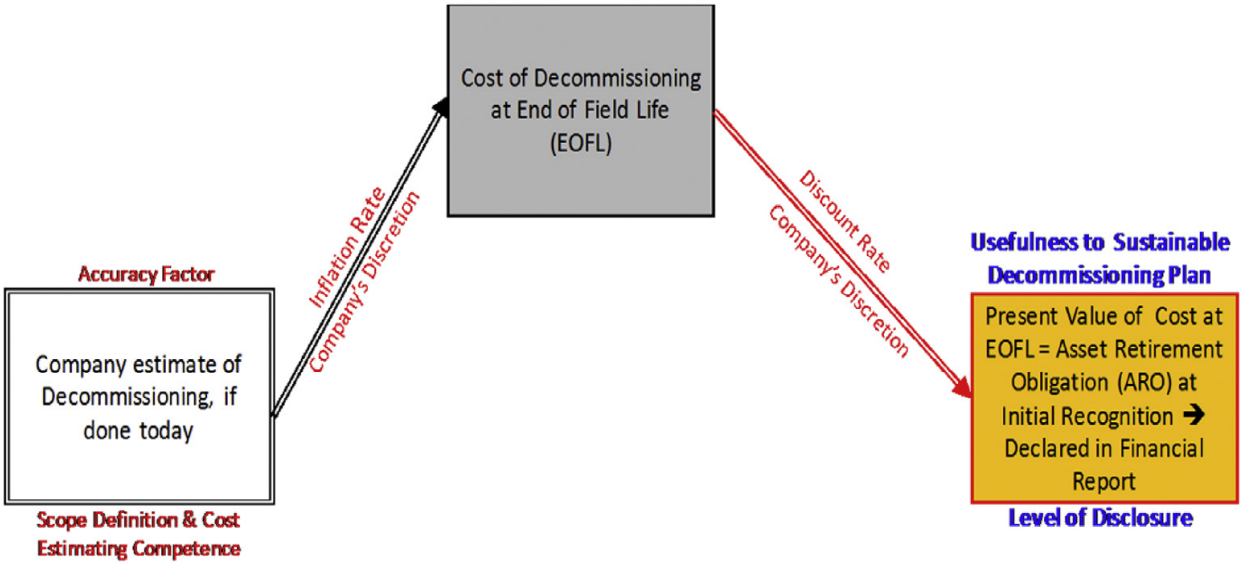


Fig. 2.5: Showing the initial cost of asset retirement obligation declared in the financial statement determination (Afieroho et al. 2017).

The reporting entities in often not revealing the inflation and discount rate used to work out the present value of ARO cost presented in their financial statements. Rogers and Atkins (2015) assessed 146 oil and gas companies' performance in US from 2003 to 2015 with regards to disclosed ARO cost in their financial statements and concluded that most companies'

undiscounted value, discounted rate used in determining the present value reported or revision made to annual ARO cost reported details are not clearly stated. These financial statement should have the interest and discount rate clearly disclosed as well as the assumptions for end of the field life. However, due to competition and confidentiality or security of business is hardly to have ARO data that meet these needs, even though there could be some empirical circumstances that will give chance to get ARO data that meet these needs to a reasonable level. Kaiser (2015) used public information to infer decommissioning cost of some platforms settled on ARO liabilities in the Gulf of Mexico and from the data, he deployed a regression model for decommissioning cost. In Nigeria, there were no or few decommissioning project are completed, so availability of cost data for settled liability may not be possible in this type of crude oil producing region (Adedayo 2016).However,Afieroho et al. (2017) used operating companies' non-proprietary data published in their annual financial statement and deployed probabilistic Monte carlo on per facility evaluation of decommissioning cost for onshore oilfields in Nigeria.

2.8 Petroleum Policy Development in Nigeria

Oil and GasPolicy in Nigeria, until 1966 had only been the rents, royalties and taxes collection (Nwokeji 2007) and then from 1966 forward, Nigeria had observed many variations in its oil policy such as Decree No. 65 enactment of 1966 which modified the financial arrangements of government with the IOCs. This Decree, addressed problems concerning the capital allowance rates allowable on qualifying capital expenditures (Olufemi 2012). In 1967, the Fiscal Provisions of Petroleum Act were modified by enactment of Decree No. 1 of 1967 to afford for the formation of posted prices which pay more attention to tax and royalties payments and allowed for royalties to be expensed. These new provisions made the government to experience a tremendous increase in oil revenues from N30 million to N6.081 billion from 1966 to 1977 (Udosen*et al.* 2009). To realise its nationalisation and indigenisation policy as enclosed in the 1969 Petroleum Decree, the formation of Nigerian National Oil Corporation (NNOC) was made by the government and the acquisition of 35% stake in Elf in 1971. By 1979, the share of government in the IOCs interests' in Nigerian JVs arrangements had extended to an average of 60% (Nwokeji 2007). However, Ameh (2005) argued that, the average of 60% government stake in the IOCs only achieved the Nation's nationalisation and indigenisation policy and then

the government are left with the burden of funding 60% of the JVs financial commitment which became so challenging to meet up.

Nigeria, signed a Memorandum of Understanding in 1986. This is done, with an intention to boost further participation of the IOCs in the oil subsector, which offers for posted price replacement with realisable market price of crude oil and guaranteed for $2.00 minimum margin for realisable prices lower than $12.50/bbl.For successful discoveries an addition bonus is reserved, altogether these efficiently reduced the aggregate tax paid by the MOCs (Kyari 2013). Ameh (2005) stated that the government policy begun to change from JV agreements to PSCs with major aim of encouraging exploration in deep sea while making the royalty and relative rates applicable to the JVs more attractive. In 1990, new indigenisation approach was adopted by the government to support for Nigerian participation increase in the oil sector. Thus, a law that empowers the legally abandoned 183 marginal oilfields by the IOCs for being not commercially viable was promulgated and the fields were later allocated to various indigenous oil companies (Agoro 2000).

2.9 Petroleum Tax System in Nigeria

According to Somorin (2010) a tax system incorporates these three basic mechanism: tax laws, tax administration and tax policy objectives.

2.9.1 Petroleum Tax Policy Objectives

Nigeria, same with any other Oil Producing Nation, has its major upstream fiscal purpose to ensure maximum generation of revenue to the Government from the oil and gas activities while the investors are guarantee with a reasonable investment return (National Policy on Oil and Gas 2004). Furthermore, in relations to sharing of oil rents, the tax system is designed by the government to capture a fair share andusually, the shares of rents from oil and gas projects in Nigeria are fixed ranging from 80-85 percent (ESMAP 2004). These oil rents shares accounted for approximately 78% of the nation's total revenue (Asekunowo and Olaiya 2012). However, achieving the objective of revenue maximisation has rendered Nigeria to became heavily oil dependent Nation (Odularu 2009).Thus, might not be good in the long run for the country as the world is shifting now to renewable energy (Gao, Gao, and Zhang 2017).

Oil and Gas revenue stability in Nigeria is of vital importantas illustrated in table 2.4 below.As discussed by Odularu, oil revenue is the mainstay of the economy. For instance, above 60% of the Nigerian government generated revenue for the years 2012 to 2015 are realised from Crude Oil and any fluctuations or delay concerning these revenues will surely be unfavourable to the government.

Table 2.4: 2012-2015 Nigerian Fiscal Framework (extract) (BOFN 2012).

Fiscal Item	2012 (Billion)	2013 (Billion)	2014 (Billion)	2015 (Billion)
Gross Revenue	N9,406.06	N10,097.19	N10,949.97	N11,566.50
Oil Revenue	N6,403.40	N6,506.34	N6,638.33	N6,922.10
Non-oil Revenue	N2,741.15	N3,300.31	N3,998.48	N4,329.15

2.9.1.1 Petroleum Tax Instruments

Omorogbe (2005) classified tax instruments as pre-production and post production payments. Pre-production outflows, permit the government to realise some revenue before the oil discovery and the amount that can be received from these kind of expenditures are subject to the discovery of oil deposits that the IOCs are expected to make (Omorogbe 2005). While the Post-production payments, are outflows once oil is produce in commercial quantity. These expenses are mostly geared to capture as much economic rent as possible to the government without the development activities and continued exploration are hindered.

Fees: The IOCs operating in Nigeria pay numerous fees to the government and these fees include expenditures in respect to the applications, grants and assignment of the oil prospecting licences, oil exploration licences and oil mining licences.

Bonuses: These are characterised only in the service and production sharing contracts (Omorogbe 2005) and two other categories of bonuses are included in Nigerian PSCs namely: bid bonus and signature bonus.

Rent: The IOCs operating in Nigeria are responsible for a rent payable each calendar year from the date in which an oil exploration licence is in force and where the exploration licence is less than a calendar year, that period shall be regarded as a full calendar year (Petroleum (D&P) Regulation, paragraph 60(1)).

Income Tax: Petroleum profits tax (PPT) is liable on IOCs operating in Nigeria.The liability to pay PPT clearly free them from the corporate income tax liability which is applicable to other sectors' companies in the economy. All in play Nigeria PSCs and JVs are liable to pay PPT at the rate of 50% to 85%.

Education Tax: Any company engaged in oil and gas operation in Nigeria is liable to pay education tax which is assessed together with PPT at the rate of 2%. This is an allowable deduction under section 10 of the PPTA for the companies in working out their adjusted profit.

Farm-out Tax: All IOCs engaged in farm out, operating in Nigeria are liable to pay PPT which is recommended by the PPTA, 1999 under schedule 2.9 as follows: ''where in any account period of a company, the company owning any asset in respect of which it has incurred qualifying expenditure wholly and exclusively for the purposes of petroleum operations carried on by it, disposes of that asset, the excess of the value of that asset, at the date of its disposal, over the residue of that expenditure at that date shall be treated as income of the company of that accounting period.''

Capital Gain Tax: All categories of property are defined as an assets under section 3 of the PPTA for the purpose of Capital Gain tax Act (CGTA) regardless of the asset location either in foreign country or in Nigeria and is to be charged at the rate of 10% irrespective of whether any gain will be accrued to the taxpayer.

2.9.2 Petroleum Tax Law in Nigeria

Petroleum tax system in Nigeria is ruled by PPTA, this law is however, accompanied by MOU between the IOCS and the Government via NNPC.

2.9.2.1 Petroleum Profit Tax Act (PPTA)

The Nigerian tax system for oil and gas activities are governed by the PPTA 1990 as amended.The main aim of this Act is to impose a tax on the incomes or proceeds of companies operates in oil and gas businesses in Nigeria as well as arranging for the assessment and collection of tax from their profits.

2.9.3 Petroleum Tax System Implementation in Nigeria

The value of a Nation's tax system either petroleum or else, is subject to how well it can be applied. A well planned tax system that cannot be effectively executed is of no value or worth little (Bird and Zolt 2003). Taxation administration needs to be properly captured when designing a tax regime. As explained by Calder (2010a), poorly administered resource tax system has it substantial risk to bring severe damage to government revenues, reputation and also the chances of choosing bad tax policy.

2.9.3.1 Decommissioning Tax in Nigeria

Decommissioning of Oil and Gas fields upstretched some interested tax questions. As a decent background to this issues, the Nigerian general features of the petroleum tax systems are earlier presented. The Nigerian petroleum tax regime is established on the Nigerian rules for corporate income tax PPT, which is charged at 50%-85% of the corporate profit. Moreover, for the decommissioning cost tax treatment Osmundsen and Tveteras (2003) stated that, there should be sharing or appropriations of the future removal costs in the tax account for the oil and gas companies and the actual costs for decommissioning should be tax deductible. As argued further by Osmundsen and Tveteras, this is also contrary in the case of petroleum tax code in Norway instead of the state to share the cost, is paid to the private oil and gas companies directly at the time of the decommissioning.

The main reason why the oil companies are denied for appropriations of the decommissioning costs in the tax account, is because the approach may imply large tax advantages to the oil companies. However, decommissioning cost tax treatment in this case does not convey the advantageous of the tax credit, it appears only to provide the oil companies with higher chance of obtaining a tax deduction as compared to other cost (Gorman and Nelson2012). As compared to the present petroleum revenue tax PRT rules in the North Sea, decommissioning cost may be effectively shared between the government and the licence holders in form of tax refund (Palmer and Hutchinson 2013). As further highlighted by Palmer and Hutchinson, the licensees are entitled for PRT relief merely at the end of the field life after the costs has happened, the relief is then considered retroactively on a ring fence basis and a compensation is given with tax-free interest. Similarly,the lump sum of PRT clawback is paid on decommissioning with the interest inclusive and any abandoned field unrelieved costs may be counterbalance against another field PRT profits (Alex 2013: 152-154). This is an incentive given to the oil companies in order to cut down the platforms future removal costs,by underrating the anticipated cost as result of developments in technology as well as obtaining excessive tax credits (Raven and Christensen 2014).

2.10 Summary of the Chapter

This chapter reviewed petroleum fiscal regimes, its concept together with its components (Royalty/tax system and contractual systems) and how its operates in Nigeria. Moreover,the review covers all matters related to Crude Oil price crash as associated with profitability of major International Oil and Gas companies. The chapter also reviewed Decommissioning operations tax policy and its effectiveness in Nigeria.

CHAPTER THREE

Research Methodology

3.1 Introduction

This chapter discusses the study philosophy, data sample, and the applied strategies in defining the variables, as well as collection of data procedure and the data analysis empirical methodology. The chapter is broken into sub-sections, comprising of research design, research paradigm, research approach, Data sample, variable measurement strategies and Data collection procedure and Analysis. It also deals with the model deployed for the analysis as well as pinpointing limitations from the existing literature. This is done with a view to enabling a complete appreciation of the instrument and the techniques used in conducting the study, along with their justifications. Finally, an effort was made to base, themodel choice to the earlier studies in order to stick to the study objectives and then ethics and risk assessment processes were enumerated.

3.2 Research Design

The driving force behind every research study is to answer a research question which can be perceived through observing or seeing the problem that exist (Saunders, Lewis and Thornhill 2016) and is typically began by conducting studies through data collection and data analysis in order to get the research question answered (Saunders and Tosey 2013).

The study research questions are restated below:

i. To what extent does the Crude Oil Price crash impacted on the Profitability and Decommissioning of Bonga Oilfield?
ii. Does the Petroleum tax policy on Decommissioning operations fair in representing the interests of the IOCs and the Nigeria Government?
iii. How effective does the Nigerian Petroleum tax policy on Decommissioning are?

3.3 Research Paradigm

In social sciences there are three research paradigms namely: interpretivism which deals with primary data research, positivism which deals with secondary data and pragmatism which deals with the combination of primary and secondary data research (Saunders *et al.* 2012). The post-positivism is instinctive, qualitative and individual or subjective. While the positivism method is dependable, the focus assumption or hypothesis is reproducible and the result is quantitative, important and objective that have broader application to the entire population.

The research paradigms are frequently assessed on the basis of epistemological and ontological positions. Hence, for this research purpose secondary data for a period of twelve years from 2005-2016 will be used for analysis which will be collected through the Shell Nigeria websites in published annual reports and form 20-F for the financial year ended and International Energy Agency (IEA) for reliability and accuracy. Energy data can be accessed easily through International Energy Agency link online, while the information about provisions for decommissioning cost and revenues generated from oil and gas business can be collected online from the website of the company or the field operator in their published annual financial statements. The published annual financial statements are chosen as a source of obtaining the data because is deemed to be the official way of communication between a company and its various stakeholders or the users of the financial information (Dawkins and Ngunjiri 2008). Thus, positivism is carefully chosen for this study as a research paradigm.

3.4 Research Approach

There are basically four different approaches of research namely: deductive, inductive, retroductive and abductive approaches out of which two are the most prominent these are inductive and deductive reasoning (Bryman and Bell 2015). Implementing a deductive approach of research assuggested by Hyde (2000), a research procedure would be clearly based on recognised and current theory with a sole purpose of testing the theory applicability. Hyde

(2000) highlighted that the deductive approach is usually and appropriately adopted in quantitative research. As compared, with inductive approach is openly opposite to the deductive approach this means that, the discoveries of a study will be based on theory, i.e. from a particular to overall height and is commonly used in qualitative study (Bryman and Bell 2015).

3.5 Data Sample

This research present an attempts to conduct an empirical analysis of Crude oil price impact on Profitability and Decommissioning of mature oil field operates by Nigerian quoted Exploration and Production International Oil and Gas Companies. The study total population encompassed all theInternational Oil Companies quoted in the Nigerian Securities and Exchange Commission (SEC). However, a specific attention is pay on Bonga Deep-water Oilfield operates by Shell Nigeria Exploration and Production Company Limited (SNEPCo), being the first Nigerian Deep water Offshore field which was estimated to be abandoned in 2022 (EPOCH 2017). Consequently, the sample data published online has correspond to the precise timeframe chosen by this study.

3.6 Variable Measurement Strategies

The independent/exploratory variable for this study will be represented by Crude Oil Price and it is consistent with the study of Jawad (2013) that measure and examine the relationship of Crude Oil price impact on economic growth and Hazarika (2015) analysed and assessed the Liquidity, Profitability, Efficiency and Financial soundness of five top global Oil and Gas Multinational Companies on the basis of revenue, market value and net income in relation to Crude Oil Prices from 2007 to 2014. While the dependent variable will be denoted by revenue from which the decommissioning cost is provided.

3.7 Data Collection Procedure and Analysis

The study uses secondary data collected annually from Shell Nigeria online published annual financial statements and form 20-F for the financial year ended 31st December, from the commencement period of Bonga Oil field production from 2005 to 2016 and annual average Oil Price from International Energy Agency for estimating the correction coefficient between the variables (Jawad 2013; Hazarika 2015). This is referred to as Pearson's correction coefficient in

order to determine whether linear relationship exist between the variables before the simple linear regression analysis is run using the Statistical Package for Social Sciences (SPSS) software to analyse the extent of the relationship (Hedberg and Ayers 2015). Annual Average Oil Price is used for compatibility among the variables, even though Oil Prices data are reported daily or on monthly basis. This is pursues to address the study first objective which is to assess the impact of Crude Oil Price crash on the Profitability and Decommissioning of Bonga Oilfield.

For the subsequent objectives to be achieved however, which is to critically review the petroleum tax policy on decommissioning operations and its effectiveness in Nigeria, content analysis was used. According to Mayning (2004:266) defined content analysis as a ‘‘systematic examination of communicative material’’. The bottom line of the method was to process large quantity of material in correspondents through the means of quantitative method against a particular criteria, component or pattern, for instant, the frequency of an expression or word in journals. However, content analysis was also adopted for qualitative research and it can be done through involving the whole data collected into groups based on their significant or relevant to the context (Sarantakos 2005:294; Breakwell and Millward 1995:74). Consequently, the principle of content analysis was applied in this research to ascertainedthe second and third objective of the study which seemed to be more qualitative.

3.7.1 Linear Regression Model

This is an econometric method which correlates the fluctuations in the variable (the sequence data that recur over at permanent intervals) to other variable(s) and also produces an equation connecting a response/dependent variable to one or more predictor/independent variables (Laerd 2017). The overall significance can be tested with regression i.e. testing the Null Hypothesis which all the variable coefficients are zero or for the significance of specific variable against the Null Hypothesis which the slopes are zero. The variables relationship demonstration is described as linear regression model. It is deemed to be superior, sophisticated and appropriate model for analysing series of data which gives a robust and an unbiased result (Hsiao 2014). This study employed this model to establish relationship between the dependent and independent variable with twelve number of cases for Bonga Deep-water Oil field and the equations are represent underneath as follow:

$R = \beta 0 + \beta COP + \mu$ ……... (1)

PDC= β0+ βR+ μ …….... (2) and interpreted as follows:

- R represent the Revenue which is the dependent variable (Y);
- COP represent the Crude Oil Price which is the independent variable (X);
- PDC represent the Provision for Decommissioning Cost as the dependent variable (Y) in the second equation;
- μ represent the estimated standard deviation of the error; and
- β0 is the intercept

3.8 Ethics and Risk Assessment

This research project is carried out solely on the ground of secondary data. Thus, the data collection is not neither directly nor indirectly related to any potential health and safety issues. Moreover, prior to the commencement of this research, ethical approval processes were carried out and the topic is approved in accordance with the Coventry University ethical policy and guidelines.

CHAPTER FOUR

Presentations, Analysis and Interpretations of Data

4.1 Introduction

An attempt is made in this chapter to analyse and present the results of the empirical examinations of this thesis. The empirical findings of the study were presented and discussed based on the previous relevant studies reviewed in chapter two.

4.2 Empirical Analysis/ Result and Discussions

The study sample data is presented in form of descriptive statistics and subsequently tested for empirical significant in respects to the relationship between the Crude Oil Price with Profitability (Revenue) and Provision for Decommissioning cost of Bonga Oil field. Moreover, all the results available are based on the statistical model in SPSS Statistics Software Version 24.0.

4.2.1 Descriptive Statistics

Table 4.1 below depicts the summary report of the variables for the period from 2005 to 2016, with 12 total number of cases.

Table 4.1: Regression Analysis on Crude Oil price, Revenue and Decommissioning Cost

	Average Crude Oil Price (US$/Barrel)	Revenue $ Million	Decommissioning Cost $ Million
Mean	81.4865	366181.67	15085.67
N	12	12	12

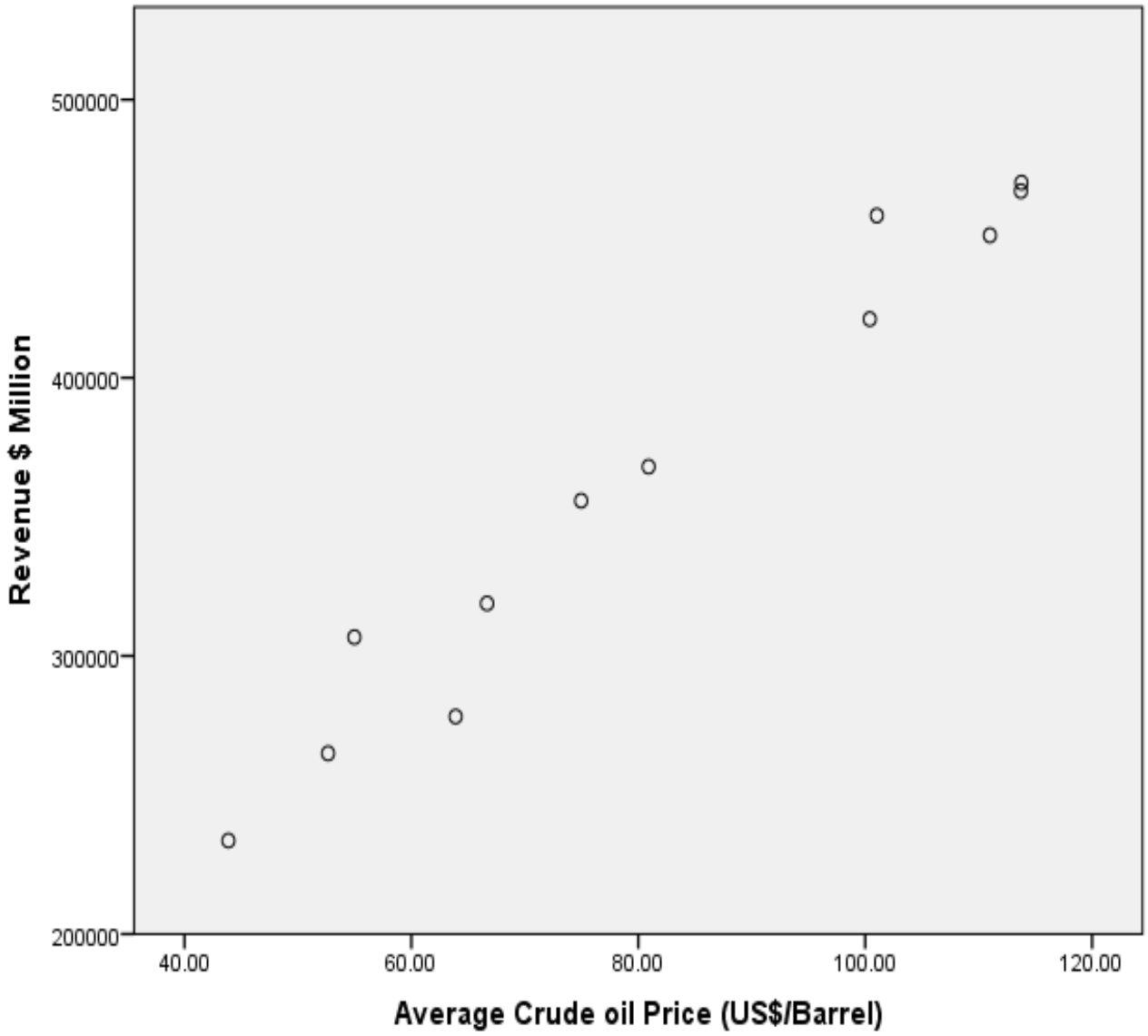
Std. Deviation	25.60476	85924.107	6200.946

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

The mean figure as a percentage shows 81 and standard deviation of 25 under the average crude Oil Price. This implied that 81% of the results has been explained by this model.

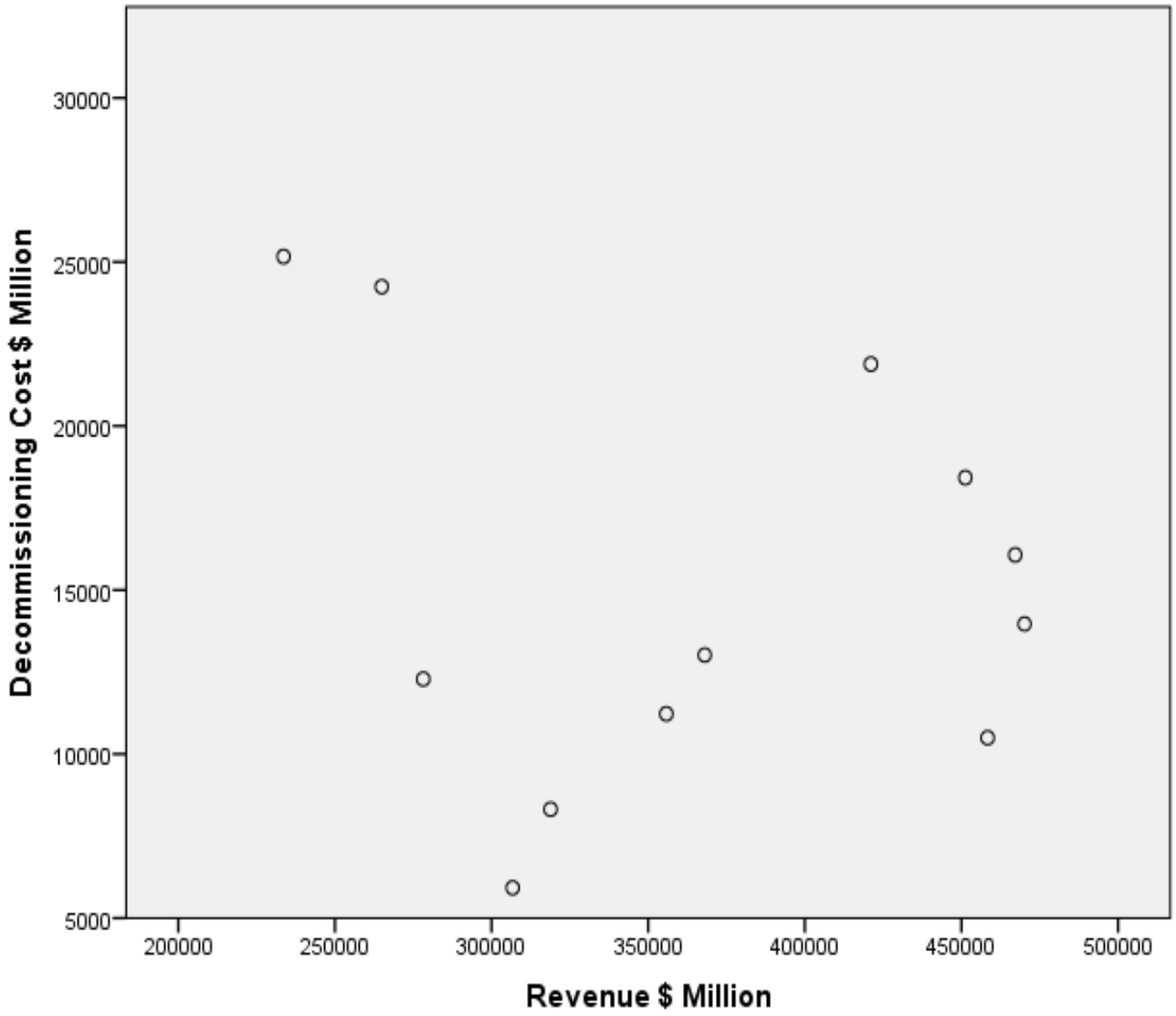
4.2.2 Correlation Coefficient

The figure 4.1 below shows whether there is an existence of linear relationship between the dependent/response variable (Revenue) and the independent variable (Crude Oil Price) while figure 4.2 also depicts the relationship existence between the revenue and future cost provision for decommissioning liabilities of Bonga Oil field.



Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

Fig 4.1 above indicates that a positive linear relationship exist between the average crude oil price and the operator revenue.



Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

Fig 4.2 above shows that no linear relationship exists between the field operator revenue and the provision for the field decommissioning cost.

4.2.3 Linear Regression

The Table 4.2 and 4.3 below shows the results of the first hypothesis that says: **$H1_1$:** The Crude Oil Price crash has negative significantimpact on the Profitability and Decommissioning of Bonga Oilfield. The hypothesis is formulated in order to achieve the 1st objective of the study (See section 1.5).

Table 4.2: Regression Analysis on Revenue ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78269148338.644	1	78269148338.644	265.921	.000[b]
	Residual	2943326348.023	10	294332634.802		
	Total	81212474686.667	11			

a. Dependent Variable: Revenue $ Million

b. Predictors: (Constant), Average Crude Oil Price (US$/Barrel)

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

Table 4.2.1: Regression Analysis on Revenue Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	97731.528	17191.025		5.685	.000
	Average Crude oil Price (US$/Barrel)	3294.414	202.024	.982	16.307	.000

a. Dependent Variable: Revenue $ Million

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

Table 4.2.2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.982[a]	.964	.960	17156.125

a. Predictors: (Constant), Average Crude oil Price (US$/Barrel)

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

From the presented results in table 4.2, 4.2.1 and 4.2.2 above, each cell contained one value. The ANOVA table summarises the overall model and indicates or given the significance level of 0.00, well is also below or less than the critical value of 0.05. Consequently, the Null hypothesis is rejected. Therefore, the Alternative hypothesis is accepted that, the Crude Oil Price crash negatively impacted on the Profitabilityof Bonga Oilfield. Table 4.2.1 also revealed that the Revenue (Y) = 97731.528 + 3294.414(x). Therefore, a prediction can be made that a dollar change in the crude oil price would lead to an increase or decrease of $3294.414. In table 4.2.2R Square and adjusted R Square values of 0.964 and 0.960 respectively both indicated that there were high degree of significant relationship between Crude Oil price and profitability of Bonga Oil field. It also means that over 90% of variance in the dependent variable was explained by the regression model and then the F test result was 265.921with a significance of 0.000.This implied that, the probability of these results occurring by chance was less than 0.05. Therefore, the recent global Oil Price crash below $50 drastically declined the amount of revenue realised from Bonga Oil field and rendered the acceptance of H1 necessary. This is consistent with the previous studies of Huang*et al.*(1996), Sadorsky(1999), Aleisa*et al.* (2003), Giovannini*et al.* (2004), Lanza *et al.* (2004), Hammoudeh*etal.*(2004), Boyer and Filion (2007),Nooreen*et al.* (2007) Kilian and Park (2009), Odusami,Elyasini andMansur (2011), Ghalayini (2011), Ready (2013), Jawad (2013) and Hazarika (2015) in section 2.4 of the chapter two above.

Table 4.3: Regression Analysis on Decommissioning Cost ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9942134.033	1	9942134.033	.241	.634[b]
	Residual	413026916.634	10	41302691.663		
	Total	422969050.667	11			

a. Dependent Variable: Decommissioning Cost $ Million

b. Predictors: (Constant), Revenue $ Million

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

Table 4.3.1: Regression Analysis on Decommissioning Cost Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	19137.252	8463.823		2.261	.047
	Revenue $ Million	-.011	.023	-.153	-.491	.634

a. Dependent Variable: Decommissioning Cost $ Million

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016, using SPSS version 24.0.

From the presented results in table 4.3 and 4.3.1 above, each cell contained one value. The ANOVA table summarises the overall model and indicates or given the significance level of 0.634 which is above or greater than the critical value of 0.05. Consequently, the result revealed that regardless of any change in the revenue generated, the provision for decommissioning cost of Bonga Oil field can change. This implied that, there is a persistence increase every year in the current and noncurrent cost for future decommissioning of the field. Table 4.3.1 also revealed that the provision for future decommissioning cost (Y) = 19137.252 - 0.011(x). Therefore, a prediction can be made that a dollar change in the revenue generated would lead to $-0.011 change in the provision for future decommissioning cost of the field.

4.3 Percentage Change

The figure 4.3 below depicts the percentage change in crude oil price as against the percentage change in the decommissioning cost provision for Bonga oil field.

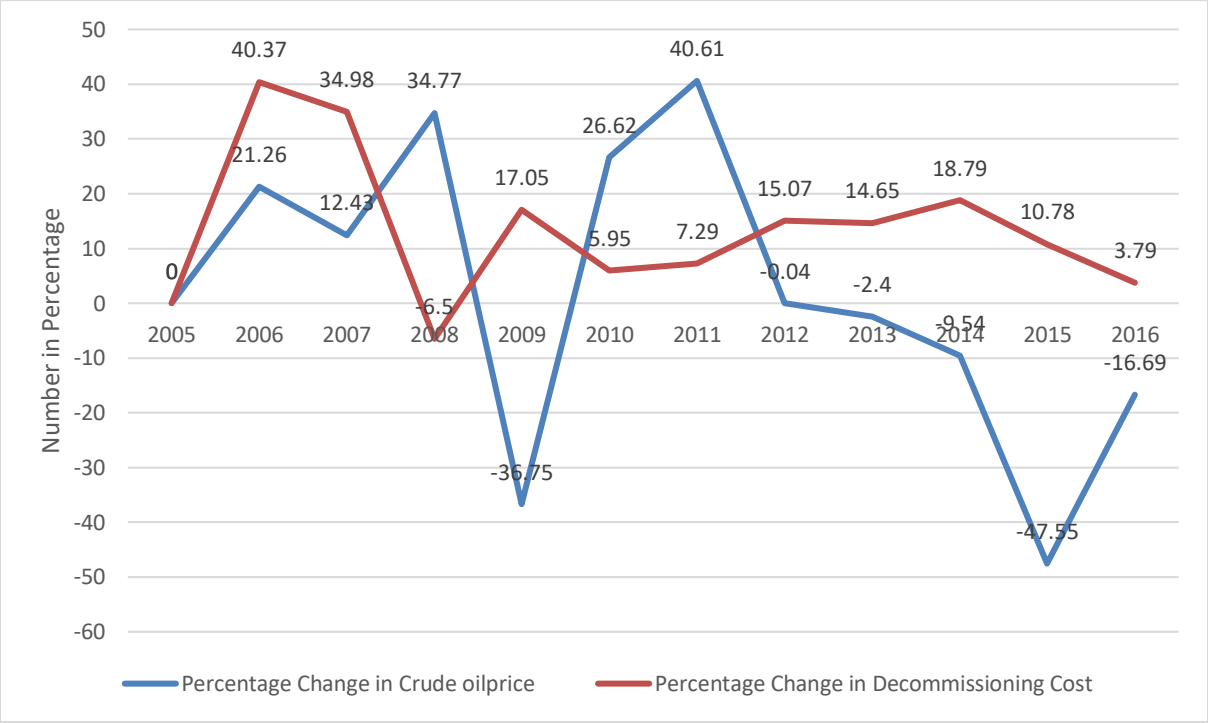


Fig. 4.3 : Percentage change

Source: Generated by the Author from the sampled firm's Annual Report and Accounts, 2005-2016.

The Figure 4.3 above depicts the crude oil price percentage change as against the field operator provision for future decommissioning cost. In 2006, there was an increase of 21.26% and drastically decreased to 12.43% in 2007. However, there was massive decreased from 2008 to 2009 of -36.75%, subsequently recovering from 2010 and later experienced another shocks from 2012, 2013. The crash of the crude price in 2015 to -47.55% impacted negatively on the revenue stream of the field operator, leading to huge revenue losses and equally affected the provision to begin declining and then recovering from 2016. While in 2006, the provision for the decommissioning cost increased to 40.37%, slightly dropped to 34.89% in 2007, massively decreased to -6.5% in 2008 until 2009 to 2014 it start recovering from 17.05% to15.07.

However, in 2015 the crude oil price crash also has negative effect on the decommissioning cost provision as leading to continuous declining towards the subsequent years.

4.4 Nigeria Decommissioning operation Tax Regulations and Effectiveness

In this section, the second and third hypotheses formulated for the study are tested. Testing of Hypothesis is a process that basically contains five steps: ‘‘i) assumptions making; ii) stating the research and null hypotheses and selecting alpha; iii) selecting the sampling distribution and specifying the test statistic; vi) computing the test statistic and v) making a decision and interpreting the results (Lean-Guerrero and Frankfort-Nachmias 2011:166).’’ For the purpose of achieving the second and third objective of the study. The following Hypotheses were formulated:

H1$_2$: Nigeria’s Petroleum tax policy on Decommissioning is fair in representing the Government and the IOCs interests; and

H1$_3$: The Petroleum tax policy on Decommissioning are effective in Nigeria.

As informed by the previous studies reviewed in chapter two above, decommissioning of Oil and Gas field structures or installations is yet an emergent issue and there is as yet not any instance of decommissioning or abandonment record of offshore oil and gas platform in Nigeria. As argued by Afierho*et al.*(2017) there is no existing law in play, in relation to decommissioning liabilities for some crude oil producing regions like Nigeria, where there is no or very few decommissioning projects are finalised. This is supported by Ibebuike(2013); West (2014) and Salawu(2014) stated that, the requirements for asset retirement obligation or liabilities are not detailed in Nigeria laws and guidelines, outside an aspiration to remove facilities at the time when it is not profitable feasible, Smith *et al.*(2000) and Lawal (2008) also revealed that, there was no recognition of any activities related to petroleum in Nigeria's Joint Venture contract to go beyond the phase of production (Decommissioning Liabilities). As further argued by Lawal, this means indirectly when the agreements were drafted, decommissioning was not discussed and signed. Nevertheless, presently a bill, called ‘‘petroleum industry bill (PIB)’’ is before the National Assembly under consideration, for the amendment of the existing petroleum regulations (Salawu 2014).

On a general note, the findings above specified that, the interests of both the MOC and the Host governments were perceived not to have been satisfied, as there is no laid down of a good tax policy structure on decommissioning operations in the country. It could be argued, that should be the causality why the IOCs begun to divest their mature asset and sell to the small independent oil companies. Thus, the Alternative hypotheses here is rejected in respects to this statement.

4.5 Summary of the Chapter

The primary purpose of this study is to assess the relationship between Crude Oil Price and Profitability and Decommissioning of mature Oil field in Nigeria with a particular attention on Bonga deep water Oilfield. The study reported descriptive data for twelve years (2005-2016) of the sampled firm and then analysed with regression model through SPSS version 24.0 software package on all the variables in order to determine if there were any significant relationship. The analyses were tested at 0.05 level of significance and then were found to be consistent with the formulated hypothesis. However, the content analysis revealed poor petroleum regulations at the moment depending the assenting of the new Petroleum Industry Bill.

CHAPTER FIVE

Summary and Conclusion

5.1 Introduction

The purpose of this chapter is to give a summary of the previous chapters and then make conclusion of the dissertation. Accordingly, the remaining part of the chapter is divided into three sections. Section 5.2 gives an entire summary of the study, followed by section 5.3 which gives the conclusions of the empirical investigations carried out. While section 5.4 gives some limitations of the study and section 5.5 presents recommendations for further research.

5.2 Summary

This research investigated the relationship between the crude oil price and profitability and decommissioning of mature oil field in Nigeria and then given specific attention on Bonga Deep-water Oil field, with an aim of determining whether the recently, global crude oil price crash has negative impact on Bonga Oil field operator's profitability and the Financial preparation of its future decommissioning liabilities. The findings reported in the analysis section presented a valid evidence (See Section 4.2) and three specific objectives were set (See Section 1.5) which are emerged from the research questions of the study.

In order to achieve the study set objectives, relevant studies were critically reviewed on petroleum fiscal regimes, crude oil price crash and decommissioning regulations. Guided by the study chosen paradigm, secondary data both quantitative and qualitative were carefully collected online through Shell Nigeria website on the consolidated annual report for the period from 2005 to 2016, were analysed using simple linear regression model and related literature were also critically analysed using content analysis techniques to obtained the answers to some of the research questions.

5.3 Conclusion

The study assessed the relationship between Crude Oil Price and profitability and decommissioning of mature Oil field in Nigeria, particularly, the case of Bonga Deep-water Oil field. In this regard, three different objective were set (See section 1.5) and Data was collected from the annual financial statements of Shell Nigeria for a period of twelve years from 2005 to 2016. In order to obtain the measurement of some indices of the response variables both the

revenue and the provision for decommissioning cost, the consolidated financial statements were analysed on the basis of certain criteria identified in the literature reviewed in section 2.7 in relation to decommissioning cost in Annual report. The analysis of the data was made based on linear regression model and content analysis.

Furthermore, an attempt was made to achieve the set objectives. In line with this, a set hypotheses were formulated and tested. Based on the study findings the prediction of the first hypothesis suggested a positive relationship between crude oil price and the operator revenue. Impliedly, this relationship is linearly indicating that, the recent crash of crude oil price has negative impact Bonga Oil field operator's revenue streams. However, the second equation test revealed a positive nonlinear relationship between the variables, is apparently indicating that, the provision set aside for preparation of the field future decommissioning activities changes regardless of any change in revenue generation. Therefore, lower revenue generated as experienced during the Oil crash resulted to tremendous loss of revenue to Bonga field operator negatively would affect the financial preparation for it future decommissioning. The literature reviewed depicted unsound regulations on decommissioning operation in Nigeria. However, presently a bill, called ''petroleum industry bill (PIB)'' is before the National Assembly under consideration, for the amendment of the existing petroleum regulations.

5.4 Limitations of the Study

The study was subjected to the following limitations. First, the crude oil price data collected was reported on monthly basis which was converted to yearly and obtained the average price annually for compatibility among the variables and this may not produce accurate prediction.

Second, the draft copy of Nigeria joint venture contract or production sharing contract which the preceding studies claimed that, decommissioning operations is not recognised or signed was not evident to appendix in this thesis.

5.5 Recommendations for Further Research

First, the findings of this research is constrained to only profitability and provision future for decommissioning cost. Further research should incorporate or put into recognisance more than two financial parameters which could provide an insight about the degree of the relationship between the crude oil price and other financial performance indicators.

Second, the further research will make use of the currently passed Petroleum Industry Bill (PIB) which is before the National Assembly under consideration, for the amendment of the existing petroleum regulations when assented, to critically assess the effectiveness of the tax policy on decommissioning operations in Nigeria.

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APPENDIX A: Means, Correlation, Regression, Crude Oil Price and Percentage Change Computed data

Means results

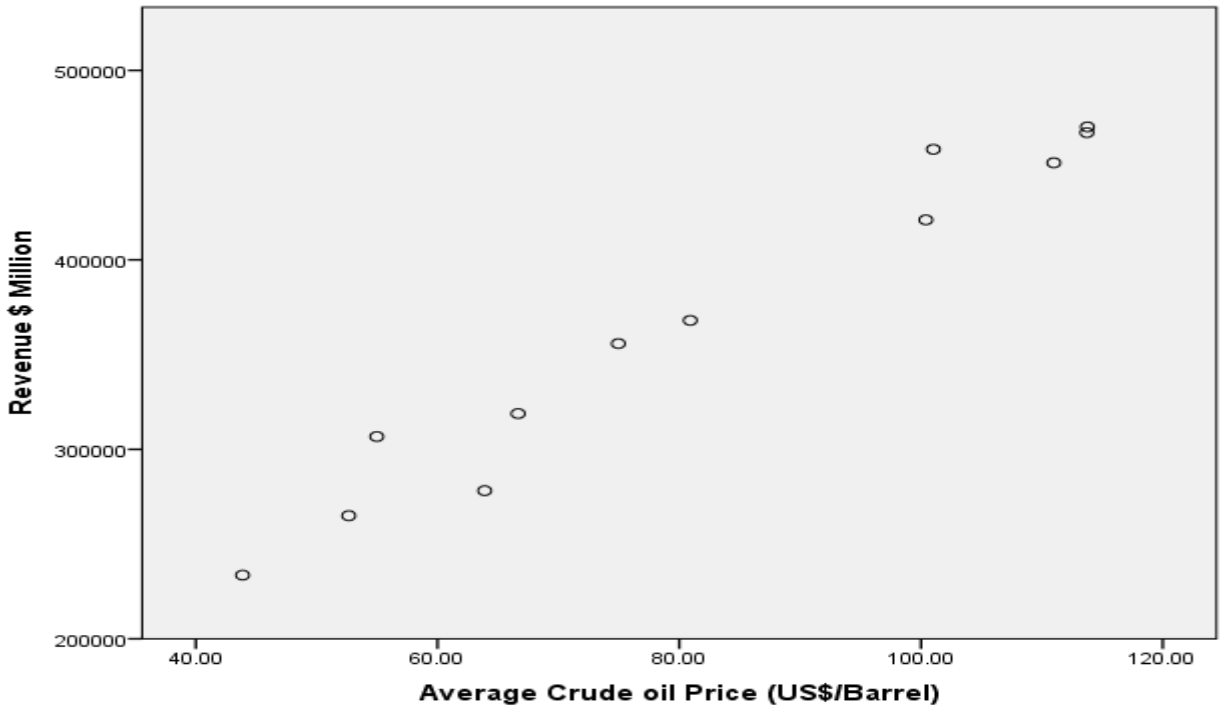
Case Processing Summary

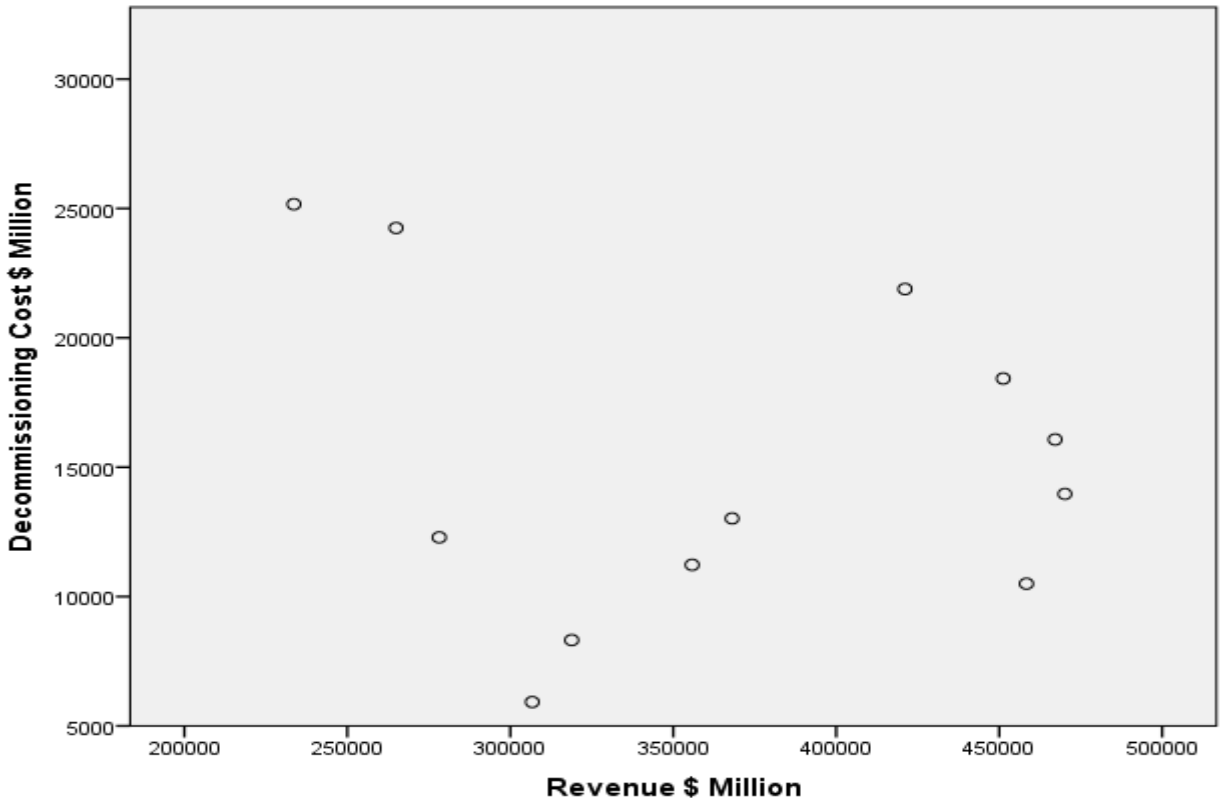
	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Average Crude oil Price (US$/Barrel)	12	100.0%	0	0.0%	12	100.0%
Revenue $ Million	12	100.0%	0	0.0%	12	100.0%
Decommissioning Cost $ Million	12	100.0%	0	0.0%	12	100.0%

Report

	Average Crude oil Price (US$/Barrel)	Revenue $ Million	Decommissioning Cost $ Million
Mean	81.4865	366181.67	15085.67
N	12	12	12
Std. Deviation	25.60476	85924.107	6200.946

Correlations Graphs





Regression Analysis Results

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Average Crude oil Price (US$/Barrel)[b]	.	Enter

a. Dependent Variable: Revenue $ Million

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.982[a]	.964	.960	17156.125

a. Predictors: (Constant), Average Crude oil Price (US$/Barrel)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	78269148338.644	1	78269148338.644	265.921	.000[b]
	Residual	2943326348.023	10	294332634.802		
	Total	81212474686.667	11			

a. Dependent Variable: Revenue $ Million

b. Predictors: (Constant), Average Crude oil Price (US$/Barrel)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	97731.528	17191.025		5.685	.000
	Average Crude oil Price (US$/Barrel)	3294.414	202.024	.982	16.307	.000

a. Dependent Variable: Revenue $ Million

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Revenue $ Million[b]	.	Enter

a. Dependent Variable: Decommissioning Cost $ Million

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.153[a]	.024	-.074	6426.717

a. Predictors: (Constant), Revenue $ Million

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9942134.033	1	9942134.033	.241	.634[b]
	Residual	413026916.634	10	41302691.663		
	Total	422969050.667	11			

a. Dependent Variable: Decommissioning Cost $ Million

b. Predictors: (Constant), Revenue $ Million

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	19137.252	8463.823		2.261	.047
	Revenue $ Million	-.011	.023	-.153	-.491	.634

a. Dependent Variable: Decommissioning Cost $ Million

Percentage change in oil price against the percentage change in provision for decommissioning cost

Year	Percentage Change in Crude oilprice	Percentage Change in Decommissioning Cost
2005	0	0
2006	21.26	40.37
2007	12.43	34.98
2008	34.77	-6.5
2009	-36.75	17.05
2010	26.62	5.95
2011	40.61	7.29
2012	-0.04	15.07
2013	-2.4	14.65
2014	-9.54	18.79
2015	-47.55	10.78
2016	-16.69	3.79

Year	Percentage Change in Decommissioning Cost	Percentage Change
2005	0	0
2006	40.37	40.37
2007	34.98	34.98
2008	-6.5	-6.5
2009	17.05	17.05
2010	5.95	5.95
2011	7.29	7.29
2012	15.07	15.07
2013	14.65	14.65
2014	18.79	18.79
2015	10.78	10.78
2016	3.79	3.79

Year	Average Crude oil Price (US$/Barrel)	Revenue $ Million	Decommissioning Cost $ Million
2005	54.98	306731	5925
2006	66.67	318845	8317
2007	74.96	355782	11226
2008	101.02	458361	10496
2009	63.90	278188	12286
2010	80.91	368058	13017
2011	113.77	470171	13966
2012	113.72	467153	16071
2013	110.99	451235	18425
2014	100.40	421105	21887
2015	52.66	264960	24247
2016	43.87	233591	25165

Live Data Report Generated From Swift Enterprise Data Manager														
Year	January	Febuary	March	April	May	June	July	August	September	October	November	December	Total	Average Crude oil Price (US$/Barrel)
2005	40.72	45.69	53.03	52.00	49.09	53.90	58.54	66.42	65.30	61.29	56.17	57.55	659.70	54.98
2006	63.85	61.33	65.00	72.09	71.18	69.32	75.13	75.15	62.97	59.49	59.81	64.70	800.02	66.67
2007	55.57	59.97	64.28	70.46	70.40	73.28	79.76	73.76	79.76	83.86	95.05	93.40	899.55	74.96
2008	94.26	98.15	103.73	116.73	126.57	138.74	137.74	115.84	103.82	75.31	55.51	45.87	1212.27	101.02
2009	44.95	46.52	49.70	51.16	60.02	72.24	66.52	74.00	70.22	78.25	78.11	75.11	766.80	63.90
2010	77.60	75.10	80.30	85.30	77.50	75.80	77.20	78.70	79.50	84.40	86.70	92.80	970.90	80.91
2011	98.00	106.60	116.60	124.50	118.40	117.00	117.90	112.00	115.70	113.10	113.90	111.50	1365.20	113.77
2012	113.81	121.87	128.00	122.62	113.08	98.06	104.62	113.76	114.36	108.92	111.05	114.49	1364.64	113.72
2013	115.24	118.81	112.79	105.55	106.00	106.06	109.78	107.84	113.59	112.29	111.14	112.75	1331.84	110.99
2014	110.19	110.83	109.47	110.41	111.90	114.60	109.63	102.33	98.27	83.50	80.42	63.28	1204.83	100.40
2015	48.81	58.09	56.69	57.45	65.08	62.06	57.01	47.09	48.08	48.90	44.82	37.80	631.88	52.66
2016	30.66	31.70	37.76	41.60	47.01	48.46	45.92	46.15	47.43	51.00	45.25	53.48	526.42	43.87

	Decommissioning Cost		
Year	Current	Non Current	Total
2005	233	5692	5925
2006	289	8028	8317
2007	388	10838	11226
2008	514	9982	10496
2009	653	11633	12286
2010	656	12361	13017
2011	750	13216	13966
2012	1356	14715	16071
2013	1340	17085	18425
2014	1275	20612	21887
2015	1239	23008	24247
2016	797	24368	25165

APPENDIX B: Certificate of Ethical Approval

Certificate of Ethical Approval

Applicant:

Abdulkarim Isah

Project Title:

Assessing the Impact of Oil Price Volatility on Decommissioning Cost in Nigerian Petroleum Industry: A Case Study of Bonga Deep-Water Oilfield.

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Low Risk

Date of approval:

30 October 2017

Project Reference Number:

P62327