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A Need for Investment in Nigerian Crude Oil Refining and Infrastructures: A Panacea to Refined Petroleum Shortages and Economic Growth

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ABSTRACT

Despite the abundance of occurring natural crude oil resources, Nigeria continually suffers shortages of refined petroleum products, which undermines economic development of the country. The purpose of this multicase study was to explore the strategic role of how investment in petroleum refineries and infrastructures can improve supply and hence mitigate shortages or scarcity of refined petroleum products in the petroleum supply chain and enhance economic development in Nigeria. The research participants comprise of ten senior leaders from two private-sector Nigerian downstream petroleum supply companies located in the Niger Delta region, who had effectively implemented strategies for petroleum supply. The conceptual framework for the study was the resource based view theory. Data were collected through semistructured face-to-face interviews and review of operational and policy documents from the supply or marketing petroleum companies. Data were transcribed, analyzed, and validated through member checking and triangulation. The discoveries indicate the need to establish more refineries, privatize the existing moribund refineries, and build more infrastructures in Nigeria. Findings may be used by petroleum leaders and investors to optimize available crude oil natural resources, and to create investment strategies in the petroleum supply chain, leading to product availability, sustainability, poverty reduction, and economic development in Nigeria.

Keywords: Oil and Gas, Shortages, Investment, Refineries and Infrastructures, Economic Development, Nigeria

INTRODUCTION

Nigeria is endowed with huge crude oil resources, and a leading member of OPEC; the organization of petroleum exporting countries (OPEC, 2018). Notwithstanding, the Nigerian economy suffers annual shortages or scarcity of refined petroleum products such as petrol (PMS), Diesel (AGO), and Kerosene (DPK), which powers the economy. Every enterprise uses refined petroleum products for either power generation, transportation, or heat source (Okwanya, Moses, & Pristine, 2015). Nigeria has a growing population, which has led to increase in social-economic activities, resulting to high demand for refined petroleum products (Aminu & Olayinka, 2014).

Nigeria is the only OPEC country that heavily imports petroleum products to sustain the economy because of lack of adequate refining capacity of crude oil (Aminu & Olawore, 2014; Chigbu, Ubah, & Chigbu, 2016). The petroleum importation is subsidized, which depletes the countries reserves and undermine development of other sectors of the economy (Lawal, 2014). The high importation of refined products is an indication of a gap in the Nigerian petroleum refining industry (Chigbu et al., 2016).

The Nigerian state has four refineries, whose production output cannot meet with the quantity required to sustain regular consumption in the country (NNPC 2018, Osuala 2013). The private sector was ushered into the petroleum business in 2003 to enhance a sustainable framework for regular petroleum supply. The federal government of Nigeria issued licenses to the private sector for the establishment of private depots, infrastructures, and refineries. (Alaba & Agbalajobi, 2014; Chigbu et al., 2016). While several depots and a modular refinery are operational at different locations across the country, no regular or complete refinery is operational (Lawal, 2014). Though construction work is ongoing for the establishment of private refineries in some part of the country, shortages still persist (Alaba & Agbalajobi, 2014).

The purpose of this article is to identify the strategic role of investment in refining of crude oil and infrastructures in the petroleum supply chain to mitigate petroleum supply shortages and enhance business development in Nigeria. Findings from this study may provide petroleum organizational leaders with sustainable supply chain management (SCM) strategies regarding contribution of improved crude oil refining and infrastructural management for increased business development, increased revenue, job creation, and enhanced economic growth.

Conceptual Framework

The conceptual framework for this research was the resource based view theory (RBV). RBV holds that leaders achieve sustainable competitive advantage by possessing resources (physical, human, financial, technological, organizational, and reputational) and the capability to combine two or more of these resources (Barney, 1991). Penrose (1959) designed the groundwork and application of RBV, which researchers used to assess valuable resources to understand how firms establish advantages over industry competitors with strategies. Barney (1991) advanced that to achieve sustainable competitive advantage, leaders of organizations must acquire resources (a) for producing effective and efficient strategies, (b) scarce in the industry, (c) that are imperfectly imitable, and (d) nonsubstitutable in the industry. Furthermore, Crook and Esper (2014), Zimmermann and Foerstl (2014) noted that leaders use RBV to elevate resources to create value, leading to organizational effectiveness and efficiency. Crude oil is a natural physical occurring resource in Nigeria.

The supply of refined product in the Nigerian Downstream Petroleum Supply Industry (NDPSI) is affected by crude oil management (Adelabu, 2012; Aminu& Olawore, 2014). In the NDPSI, crude oil ineffective management has resulted in several inefficiencies such as (a) crude supply shortage to refineries (b) low refining output, (c) moribund refineries, (c) pipeline breaking and interdiction. (Adelabu, 2012; Aminu& Olawore, 2014; Osuala, 2013). Crude oil resource management inefficiencies result to refined product shortages, which negatively affect transportation and power generation, leading to economic underdevelopment in Nigeria. (Adelabu, 2012; Aminu& Olawore, 2014; Itsekor, 2018, Osuala, 2013).

RBV recognized the possession of valuable, rare, imperfectly imitable, and non-substitutable (VRIN) resources by firms to attain competitive advantage (Barney, 1991). Nigeria is endowed with abundant crude oil resources; a VRIN commodity. Business leaders noted that private sector participation in refining capability of the Nigerian crude oil will act as a panacea to solving petroleum product shortages and enhance economic development of the country (Itsekor, 2018). Morali and Scerci (2013) affirmed that RBV strives for improved efficiency and effectiveness of a firm by controlling VRIN resources to gain and sustain competitive advantage. RBV links organizational resources to the profitability of firms (Morali & Scerci, 2013).

A REVIEW OF THE PROFESSIONAL AND ACADEMIC LITERATURE

An Overview of the Nigerian oil and gas industry

After years of search by international oil companies (IOC), oil was discovered in commercial quantities at oloibiri in present Bayelsa state in 1956 (Asagunla & Agbede, 2018; Chigbu et al., 2016). Oil was first exported in 1958 by shell D Archy, now shell petroleum development company (Aminu & Olawore, 2014; Asagunla & Agbede, 2018). In 1971, the Nigerian government established the Nigerian National Oil Company (NNOC) to regulate oil-production activities that were controlled by IOCs (Osuala, 2013). For the purpose of efficiency, the Nigerian National Petroleum Corporation (NNPC) was created in 1977 to replace the NNOC and take control over the Nigerian petroleum industry (Osuala, 2013).

The Nigerian oil and gas industry consists of the upstream sector, the midstream sector, and the downstream sector (Aminu & Olawore, 2014; NNPC, 2018). The upstream industry is the sector charged with exploration, exploitation, and production of crude oil. The midstream sector is responsible for refining and storage of products. The downstream sector's activities involve marketing, distribution, and transportation of refined petroleum products from the refineries or import jetties to retail outlets or points of consumption (NNPC, 2018; Osuala, 2013).

The NNPC has performed below expectation in the efficient management of the Nigerian petroleum industry, as inefficiency still persists (Adelabu, 2012; Chigbu et al. 2016; Osuala, 2013). Aminu and Olawore (2014) noted that inefficiencies such as refined product shortages, dilapidated refineries and infrastructures, pipeline breakage, capacity underutilization of resources, and vandalism of oil industry equipment dominate the Nigerian downstream industry. In 2003, the federal government of Nigeria embarked on the process of deregulation and liberalization of the downstream subsector to usher-in a sustainable framework that will create supply efficiency and enhance the economic development of the nation (Chigbu et al., 2016).

Nigerian refineries and production

The Nigeria state has four refineries located in Port Harcourt, Warri, and Kaduna. The refineries are; the Port Harcourt Refinery Company1and 2, the Warri Refinery and Petrochemical Company, and the Kaduna Refinery and Petrochemical Company (Akinwotu 2014; NNPC, 2018). The refineries process crude oil into different refined products such as petrol or premium motor spirit (PMS), diesel (AGO), dual purpose kerosene (DPK), lubricants, jellies, and coal tar (Akinwotu, 2014; Oladepo, 2014). Nigeria refineries have a total installed capacity for 445,000 barrels but refine less quantity because of old age and poor management of resources (Akanle, Adebayo, & Adetoro, 2014; Osuala, 2013). The four Nigerian governments owned refineries operate less than 40% percent capacity, creating room for importation to support local demand (Chigbu et al., 2016; Glyba, Mulugetta, & Azapagic, 2013). Nigeria's four refineries are small in relation to the country's population when compared to other members of oil-exporting countries (Aminu & Olawore, 2014).

The Nigerian refineries are characterized by inefficiencies, leading to low productivity (Alaba & Agbalajobi, 2014; Osagibovo, 2012). As of 2014, the refineries were producing less than 25% of the required 30 million liters of daily local demand (Alaba & Agbalajobi, 2014). The low-capacity production has resulted from the moribund state of the refineries, lack of maintenance, neglect, and improper resource utilization (Oladepo, 2014). Aminu and Olawore (2014) attributed the petroleum production shortages to (a) low refining output of refineries, (b) inadequate pipeline infrastructures, (c) pipeline vandalism and rupture, and (d) inefficient road transportation of petroleum products. The NNPC spent over 400 million dollars on turnaround maintenance of refineries between 1990 and 2000, without improvement in production (Adelabu, 2012; Chigbu et al., 2016). The low productivity of the existing refineries resulted in sourcing petroleum through importation from abroad (Alaba & Agbalajobi, 2014).

Oil spill and Pipeline vandalism disrupts both crude oil and refined products supply to refineries and consumer respectively (Anifowose et al., 2014). Oil spill in Nigeria occurs because of corrosion of pipes and storage tanks, operational error and oil tanker accidents (Anifowose, Lawler, Horst, & Chapman, 2014; Osuala, 2013). In Nigeria, thieves break oil pipelines to siphon fuel, often with sparks results in explosion, leading to hundreds of deaths of looters and by-standers (Anifowose et al., 2014). The resultant effect is refined petroleum product shortages and scarcity in the Nigerian economy.

Shortages

Nigeria is a leading member of the organization of petroleum exporting countries (OPEC), with large reserves of oil. However, Nigeria suffers from a shortage of refined petroleum products (Aminu & Olawore, 2014). Nigeria is the only OPEC member that relies heavily on importation to meet local demand (Aminu& Olawore, 2014; Chigbu et al., 2016). Nigeria imports 80% of petroleum products to meet local demand (Aminu& Olawore 2014; Oladepo, 2014).

An acute shortage of petroleum products is consistent with the Nigerian petroleum industry (Aminu & Olawore, 2014; Chigbu et al., 2016). The petroleum product scarcity is associated with low refining output, inadequate pipeline infrastructure, pipeline vandalism and rupture, and bridging of petroleum through roads (Aminu& Olawore, 2014). Moreover, Aminu and Olayinka (2014) attributed high levels of petroleum consumption in Nigeria to increasing population, economic growth, an increase in vehicular traffic, inadequate supply of electricity, low price of fuel, and lack of petrol tax. Furthermore, Alaba and Agbalajobi (2014) affirmed that the supply and distribution of petroleum products in Nigeria is bedeviled by crises, irregular supply, shortages, hoarding, smuggling, adulteration, and long queues.

The continual shortage or scarcity of petroleum products in Nigeria has a multiplier effect on almost all sectors of the economy, which has given rise to some abnormal business practices in the downstream petroleum supply chain (Adelabu, 2012; Chigbu et al., 2016). The abnormal business activities contribute negatively to product supply sustainability and enhance scarcity (Osuala, 2013). The abnormal business activities include (a) retail outlet inefficiencies, (b) product diversion and cross-border smuggling, and (c) pipeline interdiction and stealing of nation's products.

Investment in Nigerian refineries

The petroleum industry is the mainstay of the Nigerian economy (Adamu, Ajienka, & Ikiensikimama, 2015; Asagunla and Agbede, 2018). Petroleum export and marketing dominates the Nigerian economy (Oladepo, 2014). Petroleum accounts for 95% of foreign exchange, 65% of federal government income, and 85% of total export (Aminu & Olawore 2014; Oladepo, 2014). The petroleum industry provides energy and energy-related products that power the Nigerian economy (Ambituuni et al., 2014; Aminu& Olawore, 2014). The effective running of the Nigerian economy depends on the sustainable supply of petroleum products (Asagunla and Agbede, 2018; Chigbu et al., 2016).

The NNPC is the major importer of petroleum products into Nigeria (Alaba & Agbalajobi, 2014). The establishment of the NNPC retail department, with proposed ownership of 50% retail outlets in the downstream, was intended to end fuel scarcity in Nigeria (Oladepo, 2014). The Nigerian government also gave licenses to independent oil marketers to import petroleum products and set up private depots to alleviate shortages (Alaba & Agbalajobi, 2014; Chigbu et al., 2016). Several private depots exist through the country; however, they are not operating at optimum efficiency (Alaba & Agbalajobi, 2014). Also, Alaba and Agbalajobi (2014) noted that the challenges facing the private depots include insecurity, price instability, and policy instability by the government.

Petroleum is a vital source of energy and essential raw material in manufacturing process all over the world (Okwanya et al., 2015). Nigeria's demand for refined petroleum product has outgrown the nations supply because of growth in population and socio-economic activities (Aminu & Olawore, 2014). Every aspect of life in Nigeria is connected and dependent on happenings in the oil and gas sector (Akanle et al., 2014).

Electricity generation and transportation relies exclusively on diesel and petrol products, which drives the Nigerian economy (Adekomaya, Sadiku, Jamiru, Huan& Suleiman, 2015; Aminu & Olawore, 2014). Petrol and diesel prices affect almost every commodity, and politicians use the medium to convince voters as better managers (Srinivasan, 2014). Nigeria daily consumes 42 million and 26 million liters of petrol and diesel respectively (Glyba et al., 2013). According to Adelabu (2012), Nigerian refineries refine 18 million liters of petrol per day while the daily national demand is approximately 40 million liters. Nigeria economy relies on imported petroleum while the local refineries produce less than 40% of their installed capacities (Adelabu, 2012; Chigbu et al., 2016). Chigbu et al. (2016) noted that if all four Nigerian refineries were operational, a gap of 15million liters per day would exist.

Complete deregulation involves removal of petroleum subsidy from the downstream sector, which, Nigeria masses opposed by embanking on industrial action and civil unrest (Okwanya et al., 2015). The implementation of complete deregulation will have a trickledown effect on resources management, sustain investor's confidence, create employment, erode supply shortages, and improve national development (Akinwotu, 2014). Appropriate pricing of petroleum product will attract both local and foreign investments into NDPSI (Chigbu et al., 2016; Okwanya et al., 2015).

The private sector participation will facilitate increased competition, promote higher productivity and enhance supply sustainability for improved profitability (Chigbu et al., 2016).

Government should leave the management of petroleum supply companies in the hands of strategic private partners to ensure optimum resource allocation and efficiency of the sector (Chigbu et al., 2016). According to Aminu and Olayinka (2014), the government should tax petroleum products, and subsidy removed to increase the price, lower consumption and make the products more available. No petrol tax exists in Nigeria. The Nigeria government once set up committee to manage funds derived from subsidy removal towards improving local capacity to refine crude. The management of these resources is critical to providing steady petroleum supply, jobs, and development to Nigeria people (Chigbu et al., 2016).

New Refineries in Nigeria.

Besides importation, Nigerian economic consultants proposed strategies to improve petroleum product production. Oladepo (2014) and Aminu and Olawore (2014) suggested that constructing more refineries will increase the nation's refining capacity and enhance petroleum availability. Also, Aminu and Olawore (2014) and Chigbu et al. (2016) recommended that privatizing existing refineries and pipeline networks would help create proper resource management to achieve fuel availability. However, The Nigerian government granted licenses to private investors to build refineries and depots to mitigate shortages (Oladepo, 2014). Private investors include major oil marketers, independent oil marketers, and private depot owners (Alaba & Agbalajobi, 2014). Private investors and oil marketers have built depots across the country; however, they have not succeeded in establishing refineries (Alaba & Agbalajobi, 2014).

The Niger Delta Petroleum Resources (NDPR) is the first and only privately owned modular refinery operating in Nigeria. The NDPR commenced operations in 2012 and produces mainly AGO and variety of gas products (Lawal, 2014). According to Fatona (2019) NDPR has completed an ultra mordern gas processing plant and also has projection for PMS production. Also, the 650,000 barrel per day (bpd) Dangote petroleum refinery is under construction, scheduled to commence production by 2020. Devakumar (2019) noted that the project suffers completion timeline because of delay in equipment importation.

Economy and business development.

The Nigerian economy and business development depends directly on activities of the oil and gas industry (Asagunla and Agbede, 2018; Akinwotu, 2014). Oil is the main stay of Nigerian business economy (Chigbu et al., 2016). Nigeria is a mono-economy state that depends on oil for over 95% of foreign exchange earnings and 65% budgetary reserves (Akanle et al., 2014).

Almost every business enterprise relies on petroleum products for survival in Nigeria (Aminu & Olawore, 2014). Petroleum is used either as a substitute source of energy to generate electricity, or as a means to power vehicles for transportation (Chigbu et al., 2016). The majority of the small, and medium enterprises (SMES) depend on petroleum to power their businesses since the national electricity source is unstable and unreliable (Adekomaya, Jamiru, Sadiku, Huan, & Sulaiman, 2016).

The increase in the price of world oil and petroleum products affects business development and quality of life in developing economies like Nigeria (Alimi & Fatukasi, 2014). Alimi and Fatukasi (2014) asserted that end users take the responsibility of increasing world petroleum prices without changes in government taxes or subsidies. Poverty has increased, and future businesses activity has been negatively affected (Adelabu, 2012; Chigbu et al., 2016). Further, the higher cost of imported petroleum products, such as in Nigeria, leads to an increase in the external country spending and underdevelopment of the local economy (Okwanya et al., 2015).

Crude oil and physical resource in Nigeria.

Crude oil is the natural raw material obtained from beneath the earth and refined into consumable products (NNPC, 2018). Crude oil has imparted positively on world economy since the 1960s (Dulami, 2014). The supply of crude oil has a direct developmental effect on nation's economies (Tule, Salisu, & Chimeke, 2018). David, Harrak, Mills, & Ocampus, (2014) posit that international oil supply volatility affects the national retail price of petroleum products.

Nigeria is endowed with abundant petroleum natural resources, which has generated billions of dollars for the nation (Chigbu et al., 2016). Nigeria exports petroleum and serves as a leading member among OPEC nations (OPEC, 2018). However, Nigerian oil wealth does not reflect the development of the NDPSI, national physical infrastructures, and product supply amenities (Osagibovo, 2012). According to Adelabu (2012), petroleum products are unavailable to Nigerians and are costly because refining of crude oil takes place overseas.

Nigeria does not have enough refineries to refine the desired quantity of products for the Nigerian population (Chigbu et al., 2016). If all four refineries are functioning, a gap of 15 million liters will still arise every day (Aminu& Olawore, 2014). Alaba and Agbalajobi (2014) asserted that the establishment of private refineries and depots would solve the problem of continual refined petroleum shortages in Nigeria. Furthermore, Aminu and Olawore (2014) noted that the obsolete nature of physical facilities such as pipelines, roads, rail, and jetty receiving equipment affect the supply chain of petroleum products in Nigeria. An upgrade of physical facilities will enhance petroleum supplies in the NDPSI (Aminu& Olawore, 2014).

RESEARCH METHOD AND DESIGN

Ingham-Broomfield (2015) affirmed that scholars apply qualitative research methods to explore individual experiences through non-statistical enquiry. I used the qualitative method for this study. Marshall and Rossman (2016) noted that scholars acquire detailed perspectives of a problem by applying qualitative research techniques.

I chose a case study design for this research. The case study design provide researchers with an easy means of using interviews, documentations and other flexible data collection instruments to respond to relevant interview questions (Gare & Melin, 2011). The case study design was appropriate for this study because I triangulated multiple data sources of interviews, archival documents, and existing literatures to address the phenomenon.

Study Population and Sample

I employed purposeful sampling to recruit petroleum business leaders who work for private oil marketing companies and who had successfully implemented strategies of petroleum supply in

Nigerian downstream. Ingham-Broomfield (2015) reiterated that scholars applying purposeful sampling target a specific sample to collect extensive information. I interviewed 10 petroleum business leaders (Five each) from two organizations in NDPSI (Company A and B) situated in Oghara, Delta state of Nigeria. Hart and Warren (2015) noted that in a qualitative study, scholars may attain data saturation from a sample consisting of 10 participants. I ensured data saturation by interviewing participants until no new themes emerged. Bristowe, Selman, & Murtagh, (2015) avowed that researcher attain data saturation when no new information arises from the participants' interviews and the codes and themes become significant.

I selected the study participants based on the research criteria. The participants were petroleum business leaders in NDPSI who had supply experience and had been tasked with (a) decision-making in sourcing of refined petroleum products within Nigeria and abroad, (b) storage of petroleum products, and (c) sales and marketing of petroleum products. O'Lynn and Krautscheid (2011) noted that selecting competent participants with an understanding of the research question is essential for the study.

Data Collection

In qualitative studies, researchers are the primary instrument who collects subjective and comprehensive data (McCusker & Gunaydin, 2015). I served as the primary data collection instrument for this research. I collected data using semistructured interviews, with open-ended questions, in a face-to-face setting. Yin (2014) affirmed that researchers use semistructured interviews to obtain individual perspectives and firsthand explanations of the topic under study. Hart & Warren (2015) asserted that researchers use open-ended questions to allow the participants to elaborate on the research topic and provide in-depth perceptions. Moreover, Rowley (2012) posited that a face-to-face interview setting allow researchers to obtain valuable responses by enhancing participant confidentiality.

In addition to data from the interviews, I reviewed archival operational and policy documents with interview responses from participants for methodological triangulation. Marshall and Rossman (2016) posited that with methodological triangulation, researchers employ data from different sources to substantiate, clarify and address research questions. Also, Kaczynski, Salmona, & Smith (2014) established that researchers can apply archival documents to explore the research question and support the study.

I used member checking to assure reliability and validity of the data collection instrument and the research process. Birt, Scott, Cavers, Campbell, and Walter (2016) affirmed that qualitative researchers use member checking to explore the credibility of study results through participant's checks for accuracy and quality on interpreted data. Participants received a copy of my interpretation of transcribed interview to ensure correct representation of responses. To ensure that all the participant's responses align with the interview questions, I utilized an interview protocol. Yin (2014) noted that an interview protocol guides the researcher in data collection and increases the reliability of case study research.

Data Analysis

Marshall and Rossman (2016) stated that qualitative data analysis is a process whereby researchers search for patterns, themes, and relationships. I employed methodological triangulation process for the study data analysis. Case study researchers use triangulation to test the validity of a study through the convergence of information from different sources (Carter, Bryant-Lukosius, Dicenso, Blythe, & Alan, 2014). I analyzed the interviews and archived documents using QSR NVivo®, computer-assisted qualitative data analysis software (CAQDAS) tool. Castleberry (2014) affirmed the use of NVivo® software to process data from different sources such as Microsoft word® into useful codes and themes.

I interviewed business leaders in the two organizations to obtain patterns and themes that may lead to the establishment of more refineries for sustainable petroleum product supply in Nigeria. I assigned letters and numbers to each participant for anonymity purposes. The letter *L* and a number represent petroleum business leaders (i.e., *L1*) in the companies A and B.

DISCUSSIONS AND FINDINGS

Participants L10B and L2A stated that Nigeria is an OPEC country, endowed with abundant crude oil natural resources, as affirmed by Aminu and Olawore (2014) and Chigbu et al. (2016). Ninety percent participants referred to the federal government of Nigeria in the area of distributing crude oil natural resources and functioning refineries. The government of Nigeria owns the crude oil natural resources and also control, monitor, and supervises the exploitation, exploration, and production of crude oil and other refined petroleum products through the agency, the NNPC (DPR, 2018; NNPC, 2018). All participants affirmed that crude oil natural resources impart positively on the availability of refined petroleum products, which enhance business development in Nigeria. The petroleum industry is the mainstay of the Nigerian economy (Adamu et al., 2015; Asagunla and Agbede, 2018). The effective and efficient function of the Nigerian economy depends on the sustainable supply of petroleum products (Aminu & Olawore 2014; Chigbu et al., 2016). Eighty percent participants noted that NNPC regulates the refineries, produces petroleum products, and distributes products to the private depot and other consumers. Participant L2A stated that government policies, laws, and regulations have a direct effect on the industry. The government provides petroleum import permits, gives quarterly allocation to marketers to lift products from NNPC, and provides licenses to build private refineries (L2A). Participant L6B affirmed that NNPC is the main manager of oil and gas business in Nigeria. Alaba and Agbalajobi (2014) emphasized that the Nigerian federal government and the NNPC are the major managers and importers of petroleum products into Nigeria.

Ninety percent of participants mentioned that the Nigerian refineries are moribund and produce below the required local consumption quantity. Chigbu et al. (2016) affirmed that Nigeria does not have enough refineries to refine the desired quantity of products for the Nigerian population. The low capacity utilization of the refineries is because of the moribund and parlous state of the refineries, lack of maintenance, neglect, and improper resource utilization (Oladepo, 2014). Oladepo (2014) stressed that Nigeria relies on exporting crude oil and importing refined petroleum product, which is not healthy for the economic development of the nation. Participant L7B noted that crude oil is an international product and the Nigerian government or NNPC act to cushion price variations. Participants L1A and L7B stated that the high cost of crude oil in the international markets affects the cost of refined products and the Nigerian economy. Participants L5A and L6B mentioned that the importation of refined petroleum products depletes the Nigerian foreign reserves, which is negatively affecting economic development. David et al. (2014) avowed that international oil price volatility determines the national or local retail price of petroleum products across the world. The Nigerian economy and business development depend directly on activities of the oil and gas industry (Akinwotu, 2014; Asagunla and Agbede, 2018; Osuala, 2013). Participants L5A and L6B noted that if refining is done in Nigeria, cost per liter will be lower as the product will be readily available.

Chigbu et al. (2016) advocated the use of private sector participation to improve business development in the NDPSI. Eighty percent of participant suggested the private sector taking over of the NDPSI and for the government to play only a supervising role. The establishment of private sector participation by Nigerian government was to improve production and distribution of refined petroleum products and also to develop the economy (Chigbu et al., 2016; Oladepo, 2014). Governments should leave the management of petroleum supply companies in the hands of private strategic partners to ensure optimum resource allocation and efficiency of the sector (Chigbu et al., 2016). Eighty percent participants asserted that neither the Nigerian federal government nor their NNPC can satisfy the increasing petroleum demands of the Nigerian population. Aminu and Olawore (2014) acknowledged that Nigeria's demand for refined petroleum product had outgrown the nations supply, because of the growth in population and socio-economic activities. Eighty percent of participants stated that the government should deregulate, privatize, liberalize the NDPSI, and provide an enabling environment for private investors to operate and play the supervising role on regulatory, quality, and controls. Deregulation and privatization of the Nigerian oil and gas industry will lead to a reduction in prices of product and guarantee product supply availability (Adelabu, 2012; Chigbu et al., 2016). Furthermore, Chigbu et al. (2016) and Oladepo (2014) suggested the deregulation and privatization of the Nigerian petroleum sector for steady supply of products to enhance national economic development. Participant L8B acknowledged that government must empower private business owners to invest in the refinery process. Participant L8B noted that private refineries will liberate the country from international oil companies and create economic development. Oladepo (2014) further noted that international oil companies dominate the Nigerian oil and gas production with little indigenous participation.

Ninety percent participants supported the notion that an increase in the number of refineries by the private sector will improve the supply situation, alleviate scarcity, and automatically change the dynamics of the NDPSI. The passage of the Petroleum Industrial Bill (PIB) into law will encourage the establishment of new refineries and create an enabling business environment in Nigeria (Adangor, 2016; Adamu et al., 2015). The new refineries will mitigate supply shortages and encourage the export of refined products to earn foreign exchange (Adangor, 2016; Adamu et al., 2015). Participants L6B and L9B affirmed that the establishment of more refineries would change the current model on the ground, lower cost, create product sustainability, and enhance economic development. Alaba and Agbalajobi (2014) asserted that the establishment of private refineries and depots would solve the problem of continually refined petroleum shortages in Nigeria. Also, 60% of participants mentioned that privatization of the existing moribund refineries would create efficiency in these organizations. Chigbu et al. (2016) recommended fixing the existing dilapidated refineries and building new refineries to enhance the sustainability of petroleum. Ninety percent participants declared that with private sector investment in refineries, the multiple effects are enormous to economic development, including, but not limited to the following: employment and job creation, export of refined products to earn foreign exchange, growth in GDP, etc. A well-developed NDPSI will have a multiplier effect on almost all forms of business activity, including agriculture, power generation, health, cottage industry, transportation, small and medium enterprises, banking, schools, and manufacturing industries (Adelabu, 2012; Okwanya et al., 2015). Participant L6B emphasized that the government should only provide oversight function in the industry and allows private investors to run the business of establishing refineries, depot storage, and distribution of petroleum products in Nigeria.

Participant L3A stated that Nigeria needs to partnership with foreign investors to build more refineries and more private depots. This will translate to more products, more employment opportunities and, hence, economic development in Nigeria. Nigerian policy makers should create policies, enabling the environment to attract foreign investors to build refineries in Nigeria to improve supply content, encourage export, and boost the Nigerian economy (Chigbu et al., 2016). Continuous and sustainable supply of refined petroleum product will enhance business development and transform the Nigerian business landscape for productivity (Agbede, 2013). Participant L8B stated that firms should be given a license and the capacity to build and operate private or modular refineries. With more private refineries, the cost of a product is reduced, the agency cost is removed, the product is available, and the vandalism of pipelines will also be reduced. Forty percent of participants encouraged the establishment and development of pipelines and the revival of the old pipeline system, because products could be pumped to all depots in Nigeria to ease distribution challenges. Anifowose et al. (2014) stressed that a pipeline facility is an easy means of transporting petroleum products to and from refineries and to depots across the country.

Participants L7B and L8B stated that the federal government of Nigeria is responsible for the scarcity of products, because of the non-favorable policies and grounding of refineries, pipelines, and the depot system. Participant L8B emphasized that there should be sincerity and consistency in goods policies to encourage investors into the industry. Participant L9B mentioned that there should be an improvement of government policies toward the oil and gas industry. Olukoju (2014) emphasized that good leadership is crucial for the development of the oil economy and the enhancement of a sustainable petroleum supply in Nigeria. The NDPSI requires innovative, sincere, sacrificial, well-informed, and impudent leaders to manage the resources of the nation and build a healthy oil and gas industry (Olukoju, 2014). Seventy percent participants agreed that the federal government of Nigeria should assist the private sector in creating a conducive business environment and good policies for the establishment of private refineries and depots. Chigbu et al. (2016) emphasized the judicious utilization of oil and gas resources, advising Nigerian petroleum leaders to create jobs and encouraging participation of Nigerians in the supply chain to achieve national economic development.

The Nigerian state is plagued with low-level infrastructure, poor electricity, bad roads, and persistent scarcity of refined petroleum (Akinwotu, 2014; Okwanya et al., 2015). To enhance a sustainable business development and grow the Nigerian economy, an adequate private partnership must be involved in the NDPSI (Chigbu et al., 2016). Fifty percent of participants agreed that the government should come to the aid of private sectors in terms of funding, providing infrastructure (i.e., road networks and electricity), and abolish duplication of activities by agencies, such as the Nigerian Customs, Nigerian Navy, Nigerian Immigration, NIMASA, NPA, PEF, DPR, and PPPRA. Participant L7B emphasized that government should provide loans, mortgages on retail stations, and trucks to facilitate the development of the sector. According to participant L10, Nigeria is an OPEC country producing crude oil. Our refineries are producing less than expected, which cannot meet the demands of the economy. There is pressure on the foreign exchange. NNPC alone cannot meet the demands of the country. The building of private refineries and depots will help product availability, create jobs, and enhance economic development. Refineries should be privatized and deregulated.

In Table 6, I present the frequency at which participants mentioned the need for private sector investment in crude oil refining and infrastructures.

Table 6: Need for Investment in Private Sector Crude Oil Refining and Infrastructures (Frequency)

Participants	Interview questions	Total number of references
L1A	4, 6, 12	13
L2A	1, 4, 6, 12	9
L3A	4, 6, 12	6
L4A	4, 6, 12	12
L5A	4, 6, 12	8
L6B	4, 6, 11, 12	11
L7B	4, 6, 12	9
L8B	4, 6, 12	13
L9B	4, 6, 12	7
L10B	4, 6, 11, 12	11

Archival Document Analysis

I reviewed the operational and policy statement documents of Company's A and Company's B regarding petroleum refining and business areas of operation. The archival documents revealed that the organizations are involved in the downstream supply value chain activities, excluding refining of crude oil. According to the archival documents, the business focus areas of both companies include petroleum importation, bulk storage, marketing, sales, distribution, transportation, logistics, retailing, and services consulting, which cuts across the private and public sectors, in the Nigerian oil and gas industry. Furthermore, the archival documents showed that the private sector downstream companies are not involved in refining of the available crude oil resources, instead, import from abroad. Aminu and Olawore, (2014) acknowledged that Nigeria's demand for refined petroleum product had outgrown the nations supply, because of the increase in population and business activities across the country. Chigbu et al. (2016) attested that Nigeria does not have enough refineries to refine the desired quantity of petroleum products for the Nigerian population.

Akinwotu (2014) and Okwanya et al. (2015) revealed that the Nigerian nation is afflicted with low-level infrastructure, bad roads, poor electricity, and continual scarcity of refined petroleum. Investments in building more refineries, privatization of the existing moribund refineries, are definite solutions to eradication of petroleum shortages in Nigeria (Aminu& Olawore 2014; Chigbu et al. 2016)

Application to Practice

Nigeria is endowed with crude oil natural resources but lacks the capacity to refine (Chigbu et al., 2016; Glyba et al., 2013). Participants noted moribund and inadequate refineries as the major cause of shortages and Nigeria importing refined petroleum product at international prices, which depletes the nation's foreign reserves. The availability of local crude oil natural resources can only be harnessed if Nigeria has adequate refining capacity (Chigbu et al., 2016). The deregulation of the downstream sector by the Nigerian federal government and the involvement of private sector participation in refining is a good leap in the right direction (Chigbu et al., 2016). With more refineries (i.e., modular and regular refineries) Nigeria will create employment opportunity, reduce poverty, export refined petroleum products, earn foreign exchange, and enhance economic development (Akinwotu, 2014; Aminu& Olawore, 2014; Chigbu et al., 2016).

RECOMMENDATIONS AND CONCLUSION

Chigbu et al. (2016) attested that Nigeria does not have enough refineries to refine the desired quantity of petroleum products for the Nigerian population. Akinwotu (2014) and Okwanya et al. (2015) revealed that the Nigerian nation is afflicted with low-level infrastructure, bad roads, poor electricity, and continual scarcity of refined petroleum. Investments in building more refineries, privatization of the existing moribund refineries, are definite solutions to eradication of petroleum shortages in Nigeria (Aminu & Olawore 2014; Chigbu et al. 2016). Based on the research findings, I recommend the following actions:

- Marketers and investors (Local and Foreign) should capitalize on available crude oil natural resources to build refineries.
- The current state-owned refineries should be privatized by federal government of Nigeria to capable organizations
- Private sectors should be involved in building and managing of petroleum infrastructures such as roads, rail, electricity (for refineries only), jetties, and pipelines across the country
- Private sector investors should advise the Nigerian federal government to completely deregulate, liberalize, and privatize and to serve only a regulatory and supervisory role on NDPSI.
- Establishing more refineries will translate to export of refined petroleum products, which will lead to increased revenue, job creation, poverty eradication, improved GDP, and economic development of Nigeria.

Building more refineries will lead to the local use of the nation's crude oil (instead of exporting to refine), massive employment generation through the value chain system, and export of refined products to yield foreign exchange, and improve the country's GDP (Chigbu et al., 2016; Itsekor, 2018; Okwanya et al., 2015). Also, the findings indicate deregulation, privatization, and liberalization of the downstream sector; private sector taking charge of the petroleum downstream, privatizing the current state owned refineries, and private sector involvement in building infrastructures. The findings from this research may enhance the continuous and sustainable availability of refined petroleum products to power the economy, which will lead to increased revenue, reduce poverty, and enhance economic development in Nigeria.

References

Adamu, M. A., Ajienka, J. A., & Ikiensikimama, S. S. (2015). Evaluating the economic impact of fiscal provisions in the draft petroleum industry bill on offshore marginal oil field development. *International Journal of Science and Engineering Investigations, 4*(5), 39-46. Retrieved from www.ijsei.com

Adangor, Z. (2016). Petroleum industry bill 2012 and the principle of vicarious liability of oil producing states and local government councils for sabotage of petroleum facilities: Resurrecting an old colonial policy in the Niger Delta region of Nigeria. *Journal of Law and Conflict Resolution*, *8*(1), 1-14. doi:10.5897/JLCR2015.0225

Adekomaya, O., Jamiru, T., Sadiku, R., Huan, Z., & Sulaiman, M. (2016). Gas flaring and its impact on electricity generation in Nigeria. *Journal of Natural Gas Science and Engineering*, *29*, 1-6. doi:10.1016/j.jngse.2015.12.042

Adelabu, N. S. (2012). The political economy of oil deregulation in Nigeria's fourth republic: Prospects and challenges. *Journal of Emerging Trends in Educational Research and Policy Studies, 3*, 193-198. Retrieved from www.jeteraps.scholarlinkresearch.org

Agbede, M. O. (2013). The growth implication of oil price shock in Nigeria. *Journal of Emerging Trends in Economics and Management Science, 4*, 343-349. Retrieved from http://www.jetems.scholarlinkresearch.com

Akanle, O., Adebayo, K., & Adetayo, O. (2014). Fuel subsidy in Nigeria: Contexts of governance and social protest. *International Journal of Sociology and Social Policy*, *34*, 88-106. doi:10.1108/IJSSP-01-2013-002

Akinwotu, S. A. (2014). A comparative study of the discursive strategies in the media interviews of participants in the January 2012 fuel subsidy removal crisis in Nigeria. *Journal of Arts and Humanities*, *3*(7), 21-33. Retrieved from www.theartsjournal.org/index.php/site/issue/view/21

Alaba, O. C., & Agbalajobi, S. A. (2014). Evaluation of private refineries and depots in distribution of petroleum products in Nigeria. *International Journal of Engineering and Technology*, *4*, 118-126. Retrieved from www.psu.edu

Alimi, R. S., & Fatukasi, B. (2014). The role of oil prices and real exchange rate on the output growth in Nigeria. *International Journal of Research Economic, 3,* 70-79. Retrieved from www.researchgate.net/profile/R_Alimi/publication/265051311

Aminu, S. A., & Olawore, O. P. (2014). Empirical investigation of challenges of distribution of premium motor spirit (PMS) in federal capital territory (FCT), Abuja and environs, Nigeria. *International Journal of Management Sciences and Humanities, 2*(2), 11-38. Retrieved from www.ijmsh.com

Aminu, S. A. & Olayinka, K. A. (2014). Achieving petrol conservation through higher pump price in Nigeria: Evidence from the transport sector of Lagos State. *International Journal of Management Sciences and Humanities, 2*(2), 102-122. Retrieved from www.ijmsh.com

Anifowose, B., Lawler, D., Horst, D., & Chapman, L. (2014). Evaluating interdiction of oil pipelines at river crossings using Environmental Impact Assessments. *Area*, *46*(1), 4-17. doi:10.1111/area.12065

Asagunla, T. M., Agbede, M. O. (2018). Oil revenue and output growth in nigeria. *International Institute of Academic Research and Development. 4* (6), 65-74. Available at www.iiardpub.org

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*, 99-120. doi:10.1177/014920639101700108

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research*, *26*(13), 1802-1811. Retrieved from www.qhr.sagepup.com

Bristowe, K., Selman, L., & Murtagh F. E. (2015). Qualtative research methods in renal medicine: An introduction. *Nephrology, Dialysis, Transplantation, 30,* 1423-1431. doi:10.1093/ndt/gfu410

Carter, N., Bryant-Lukosius, D., Dicenso, A., Blythe, J., & Alan, J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum.* 41, 545-547.doi:10.1188/14.ONF.545-547

Castleberry, A. (2014). NVivo 10. *American Journal of Pharmaceutical Education,* 78(1), 25. doi:10.5688/ajpe78125

Chigbu, U. S., Ubah, C. P., & Chigbu, E. E. (2016). Deregulation of the petroleum downstream sector and Nigerian economy: An econometric investigation. *International Journal of Business and Applied Social Science, 2* (9), 16-27. Retrieved from www.ijbassnet.com

Crook, T. R., & Esper, T. L. (2014). Do resources aid in supply chain functioning and management? Yes, but more (and more precise) research is needed. *Journal of Supply Chain Management*, *50*(3), 94-97. doi:10.1111/jscm.12055

David, A. C., Harrak, M. E., Mills, M., & Ocampus, L. (2014). Oil spill covers: Linkages in petroleum product pricing policies in West African countries. *The Journal of Developing Areas, 48*, 329-363. Retrieved from www.search.blekko.com

Department of Petroleum Resources (2018). Operations. Retrieved from https://dpr.gov.ng/index

Devakumar, E. (2019). Dangote refinery. Available at https://leadership.ng

Dulami, H. A. M. (2014). The collapse of crude oil prices: Cyclical evolution or market manipulation? *Economic Insight-Trends and Challenges, 66*, 89-96. Retrieved from www.upg-bulletin-se.ro/archive_en.html

Fatona, L. (2019). Nigerian association of petroleum exploratinist. 37th Annual international conference and exhibition. Management session. Available at www.nape.org.ng.

Gare, K., & Melin, U. (2011). SMEs need formative infrastructure for business transformation. *Journal of Enterprise Information Management*, *24*, 520-533. doi:10.1108/17410391111166558

Glyba, H., Mulugetta, Y., & Azapagic, A. (2013). Passenger transport in Nigeria: Environmental and economic analysis with policy recommendation. *Energy Policy, 55*(1), 353-361. Retrieved from www.elsevier.com/locatelenpol

Hart, S. M., & Warren, A. M. (2015). Understanding nurses' work: Exploring the links between changing work, labour relations, workload, stress, retention and recruitment. *Economic and Industrial Democracy, 36*, 305-329. doi:10.1177/0143831X13505119

Ingham-Broomfield, R. (2015). A nurses' guide to qualitative research. *Australian Journal of Advanced Nursing, 32*(3), 34-40. Retrieved from http://www.ajan.com.au

Itsekor,L. U. (2018). *Mitigating petroleum product shortages in the Nigerian downstream petroleum supply industry.* (Walden Dissertation and Doctoral Studies) https://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/2033044375?accountid=14872

Kaczynski D., Salmona M., & Smith T. (2014). Qualitative research in finance. *Australian Journal of Management, 39*, 127-135. doi:10.1177/0312896212469611

Lawal, Y. K. (2014). Subsidy removal or deregulation: Investment challenge in Nigerian petroleum industry. *American Journal of Social and Management Sciences. 5*, 1-10. doi:10.5251/ajsms.2014.1.1.10

Marshall, C., & Rossman, G. (2016). *Designing qualitative research* (6th ed.). Thousand Oaks, CA: Sage.

McCusker, K., & Gunaydin, S. (2015). Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion, 30*, 537-542. doi:10.1177/0267659116

Morali, O., & Searcy, C. (2013). A review of sustainable supply chain management practices in Canada. *Journal of Business Ethics*, *117*, 635-658. doi:10.1007/s10551-012-1539-4

Nigerian National Petroleum Corporation. (2018). Profile / products. Retrieved from www.nnpcgroup.com

Okwanya, I., Moses, O., & Pristine, J. M. (2015). An Assessment of the impact of petroleum subsidy on consumer price index in Nigeria. *Global Journal of Interdisciplinary Social Sciences*, *4*(1), 36-39. Retrieved from www.gifre.org

Oladepo, I. O. (2014). Evaluation of petroleum products marketing in a globalizing economy: Conceptual evidence from Nigeria. *British Journal of Marketing Studies, 2* (2), 71-81. Retrieved from www.eajournals.org

O'Lynn, C., & Krautscheid, L. (2011). Original Research: 'how should I touch you?': A qualitative study of attitudes on intimate touch in nursing care. *American Journal of Nursing*, *111*, 24–31. doi:10.1097/10.1097/01.NAJ.0000395237.83851.79

Organization of Petroleum Exporting Countries. (2018). Brief history. Retrieved from www.opec.org/opec_web/en/about_us/125.htm

Osagibovo, J. A. (2012). Developmental implications of Nigeria's oil wealth. *Journal of Research in National Development*, *10*, 410-416. Retrieved from www.transcampus.org./journals

Osuala, U. S. (2013). The sublimeness of sleaze in the NNPC in the fourth republic, 1999–2007: A historical conspectus. *Journal of Culture, Society and Development*, *2*, 52-59. Retrieved from www.iiste.org/journals/index.php/JCSD

Penrose, E, T. (1959). *The theory of the growth of the firm.* New York: John Wiley

Rowley, J. (2012). Conducting research interviews. *Management Research Review*, *35*, 260–271. doi:10.1108/01409171211210154

Srinivasan, S. (2014). Economic populism, partial deregulation of transport fuels and electoral outcomes in India. *Energy Policy, 68*, 465-475. doi:10.1016/j.enpol.2014.01.026

Tule, M., Salisu, A., & Chimeke, C. (2018). You are what you eat: The role of oil price in Nigeria inflation forecast. *Centre For Econometric and Allied Research, University of Ibadan Working Paper Series* CWPS040. Retrieved from www.researchgate.net

Yin, R. (2014). *Case study research method: Design and method* (5th ed.). Thousand Oaks, CA: Sage.

Zimmermann, F., & Foerstl, K. (2014). A meta-analysis of the "purchasing and supply management practice–performance Link". *Journal of Supply Chain Management*, *50*(3), 37-54. doi:10.1111/jscm.12051