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Analysis of Potential Impact of Artisanal Refining On Jobs and Revenue Across Selected Oil And Gas Companies In The Niger Delta

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ABSTRACT
This study examined the impact of artisanal refining on jobs and revenue of oil and gas companies operating in the Niger Delta. The study relying on primary and secondary sources of data was anchored on the contingency theoretical approach. Data on loss of revenue arising from sabotage were collected from two multinational oil companies including Shell Petroleum Development Company (SPDC) and Nigerian Agip Oil Company (NAOC). The analysis showed the impact of artisanal refining with varying levels of significance it has on the operators of the company comparatively. The study also reported from selected companies designated A and B to determine the impact of artisanal refining on job loss with finding from company A and B showing an insignificant impact on job loss. Findings from the study show that while artisanal refining has some level of impact on revenue loss of the International Oil Companies operating in the Niger Delta, it do not significantly impact on job loss among other factors. Based on the foregoing the study recommended the establishment of modular refineries to increase employment for youths and further reduces the trend of the phenomenon and the need for oil and gas companies to constantly engage indigenes of impacted communities with view to employing the qualified and provision of vocational skills and financial grants to the teeming unemployed youths.
Keywords: Artisanal Refining, Oil Theft, Job Loss, Revenue Loss, Sabotage.

INTRODUCTION

Nigeria, being a mono-economy nation largely depends on the oil sector for its economic survival. The Nigerian economy is dependent on the exploitation of crude oil and the nation's future is very much tied to the commodity (Okere, 2013). Indeed, oil and gas resources from Niger Delta region accounts for over 90% of Nigerian export and foreign exchange earnings, and over 70% of total Nigerian revenue (Ekuerhare, 2002). This informs Wilson (2012) to state that the increase or otherwise in crude oil production affects directly the revenue base and development of the Nigerian state as oil largely remain the mainstay of the country's economy. Presently, Nigeria is losing over 300,000 barrels of crude oil per day to oil theft, pipeline vandalism and related criminal vices in the country's oil sector. The continuous disruptions of the production activities in the oil sector and the attendance losses that usually follow have led to many job losses. More so, artisanal refining and illegal bunkering activities is significantly affecting the revenues accruing to the Nigerian Government and the oil firms that own the assets from which oil is stolen. Oil companies have been holding back investment in billions of dollars. The country is estimated to have lost about $40 billion or N6.3 trillion investments in the last four years. Also, estimates from the Senate committee on the upstream sector of the oil industry indicated that about $28 billion dollars that should have been invested in the sector has been partially lost or deferred since 2010 due to artisanal refining, oil theft and pipeline vandalism in the Niger Delta area. Additionally, SPDC is holding back by not committing investment sums of about $30 billion in two offshore deep-water projects in Nigeria due to the same reason (Tell Magazine, 2012, p.3). Massive job loses has therefore been witnessed as a result of militant and oil bunkering activities in the Niger Delta region. For example the Shell Petroleum Development Company (SPDC) retrenched 3,500 workers in 2007 (Punch Newspaper, 2007); Indoroma Petrochemical Company shut down its operations thereby rendering over 3,000 youths jobless, aggravating the unemployment situation (Sunday Trust newspaper, 2007). These lists of retrenchments have continued unabated since 2016. Corroborating these facts, Francis John, the president of Petroleum and Natural Gas Staff Association (PENGASSAN) asserted that the impact of crude oil theft and artisanal refining, had been major causes of the incessant production shut-ins, force majeure, massive divestment, unbearable cost of facility maintenance and repairs, and workers redundancy (Vanguard newspaper, 2015).

The loss of jobs due to the perennial oil bunkering and theft is not only peculiar to the formal sector of the Nigerian economy but also that of the informal sector most especially agriculture, the main economic activity of the people. According to Odalonu (2015) the process of breaking and tapping oil from oil installations may lead to the damage of oil pipelines; it causes many leaks that cause immense environmental degradation. This act invariably leads to oil facilities damages and oil spillage. Oil spillage causes degradation of the environment; it destroys farms lands and forests thereby reducing arable land for farming. Spills into water ways destroy marine and aquatic life, flora, fauna, resort centers and result in the pollution of potable water. The phenomenon of artisanal refining has seriously plagued oil and gas companies operating in the region. A larger percentage of Nigerian crude oil output is coming from upstream exploration presently, while artisanal activities are carried out on downstream production lines mainly concentrated in the states of Delta, Bayelsa and Rivers. There is a mixed report on increasing trend of oil theft in Niger Delta. Obenade and Gordon (2014) opined that artisanal refining and oil theft in the Niger Delta is massive and growing problems with a daily loss of estimated 200,000 – 300,000 barrels of crude oil. In economic terms, the direct consequence of the high level of artisanal and oil theft is fall in government revenue and oil multinational earnings. The sharp drop in government and International Oil Companies (IOC) earnings is occasioned by the frequent disruption of oil exploration activities. The result is as reported by Odalonu (2015), that Shell Petroleum Development Company (SPDC) has consistently declared force majeure on its operations from 2009, 2010, 2012 to 2013. Asu (2013) also opined that International Oil Companies (IOC) operating in the Niger Delta is counting heavy losses of revenues to shutdown of pipelines and crude oil production. A loss of 6 billion dollars per annum to oil theft represents 6.25 percent of Nigeria's total export value in 2012. There is yet to be discovered a parallel to this industrial scale theft of natural resources in any functioning modern state, relative to the size of the economy. Nigeria continues to depend on crude oil and gas for 96.8 percent of its foreign exchange earnings and 60.5 percent of public revenues (Naanen & Tolani, 2014). Current GDP growth of about 5 percent per annum is accounted for mainly by increasing earnings from the petroleum sector. Artisanal refining has not only constituted a major economic and environmental problem, it has posed major challenges to the oil companies operating in the Niger Delta. Despite the fact that there is a global oil crisis, the adverse effect of artisanal refining poses more serious problem to the local economy which in turn affects the oil companies. First the activities of oil thieves seem to have both direct and indirect impact on the oil companies. The constant sabotaging of petroleum pipelines and oil well heads are primarily aimed at collecting crude for local refining. Over 300,000 – 400,000 barrels are lost daily to oil theft and sabotage (Okonjo-Iweala, 2013). Such economic gap created by these activities has put pressure on the economy which in turn has affected the oil companies. Today, oil and gas companies face considerable pressure from international market forces due to falling global oil price and also local sources due to increasing rate of oil theft and artisanal refining. Although there is a general consensus among researchers such as Obenade and Gordon (2014), Odalonu (2015), Asu (2013), Naanen and Tolani (2014) that activities of artisanal refiners leads to loss of revenue for the government, IOCs, existing studies have failed to point out its direct impact on job loss of oil company workers, as well as its impact on revenue loss. This therefore suggests a major empirical gap which this study intends to bridge. Hence, this study is out to analyse the potential impact of artisanal refining on jobs and revenue across selected oil and gas companies in the Niger Delta. Based on the foregoing, the study seeks to address the following research objectives:

i. Examine the impact of the incidence of artisanal refining on oil companies' revenue

ii. Examination of the relationship between job loss by employees of selected companies and incidence of artisanal refining;

Theoretical Framework – Contingency Theory

Contingency theory attempts to provide a perspective on organizations and management based on the integration of prior theories. Contingency theory starts with the theme "it depends", arguing that the solution to any one managerial problem is contingent on factors that are impinging on the situation. The contingency theory is an outgrowth of the systems design. According to Galbraith (1977) there is no one best way to organize; any way of organizing is not equally effective. Contingency theory is guided by the general orienting hypothesis that organization whose internal features best match the demands of their environments will achieve the best adaptation. Scholars who support this school of thought suggest that organizational structures should reflect current environmental circumstances. These environmental circumstances are: (i.)Technology (ii.) Innovation (iii.) Uncertainty

A great amount of scholarly contributions have been made on contingency theory. For example, Woodward (1958) pre-occupied himself with the issue of technology on work organization, pointing out that effective organizational management is contingent on the right technology in the right environment. In addition, Burns and Stalker (1961) talked of the best organizational design to be contingent on innovation both technically and cognitively.

Woodward's perspective which takes cognizance of the uncertainty, as the base of every effective organization draws our sympathy will be adopted here as the theoretical window for this study. This is because Woodward was able to show that every organization that wants to function with fewer problems must be able to adapt to environmental (both social and physical) changes that act themselves out within the scope of the organization. We therefore, subscribe to this strand of contingency theory, which argued that environment alteration, and uncertainties are the keys to successful organizational management. We also contend that in an environment where violence, conflict, militancy and kidnapping have become a culture, oil multinationals will change their human resource strategies to downsizing, outsourcing or adopting mass retrenchment in order to retain profit flow.

Impact of Illicit Activities on Revenue in Oil and Gas Sector

Premium Time reported on November 22, 2013 that the business of oil theft and illegal oil refining in the Niger Delta region has become so brazen and now made up of a network involving communities, government officials, oil workers and security agencies. It posits that oil is being stolen at an industrial scale estimated to be about 150,000 barrels per day. Part of the stolen crude is sold internationally, but at least one in every four barrels of crude stolen is locally refined using artisanal refining methods. The report claims the illegal refining industry is worth several billion annually and the same political and security officials are among those profiting as the business is rapidly growing. The illegal refineries do not drill but tap from the established oil companies at the point of transporting the crude from one point to another.

In a paper presented by the Executive Secretary, Nigeria Extractive Industries Transparency Initiative (NEITI) Zainab Ahmed on 17^{th}July 2013, it was pointed out that, there is constant loss of revenue by oil companies and government. The findings showed that the grand total volume of crude oil lost by major oil companies like SPDC, Chevron and NAOC from oil theft and sabotaging during the audit period of 2009-2011 was 136,409,573 billion barrels with a total monetary value of over $10,992,776,474. The highest loss of crude oil due to theft and sabotage was sustained by SPDC and that 89,839,689 billion barrels compared to Chevron's 28,329,444 billion barrels and NAOC's 18,240,440 billion barrels during the audit period. The total value of annual loss due to theft and sabotage for SPDC, Chevron and NAOC was highest in 2009 ($ 4,309,930,493.83) and lowest in 2010 ($ 2,290,671,464.70). Further records indicate that N1.737 trillion was the total value lost due to crude oil theft and sabotage and annual loss was N578, 990 billion and daily loss was over N1.586 billion. Recent reports have also indicated loss of revenue by IOCs in recent years. For example, the Nigerian National Petroleum Company (NNPC) reported losses of N267.14 billion, N197.49 billion and N82 billion in 2105, 2016 and 2017 respectively. In contrast, the NNPC budget shows operating surpluses of N466.94 billion, N334.04billion and N601.15 billion for the three years. The NNPC N82billion operating loss in 2017 was an improvement from 2015 and 2016, but far from the operating income it budgeted for at N360.1billion.

The improvement can be attributed to higher prices of crude oil as some of the losses incurred can be attributed to global economic force such crude oil price. Crude oil prices climb to 80 dollars per barrel in 2017 for the first time since 2014. The crude oil market has continued to push higher as geopolitical concerns drove trading, with the global benchmark Brent crude reaching a high of 80.33 dollars per barrel before retreating to 80.16 dollars per barrel. Global security concern has also contributed to the price of crude oil. For instance, the president of the United State of America, Donald Trump's decision to withdraw from an international nuclear deal with Iran and revive sanctions that could limit crude exports from OPEC's third largest producer has boosted oil prices.

In Nigeria, Shell Petroleum Development Corporation (SPDC) is the largest production company among the IOCs. The Nembe Creek Trunk Line (operated by AITEO E & P) and the Trans Niger Pipeline (TNP) are the two major pipelines used by SPDC and other producing companies operating in the eastern Niger Delta to pump crude oil to the Bonny Export Terminal in Rivers State. In the Western Niger Delta, the Trans–Forcados Pipeline (TFP) is operated by Heritage Oil. The TFP is the major trunk line in the Forcados pipeline system with an export capacity of 400,000 barrels of oil per day and the second largest to the Bonny Pipeline System. ThisDay newspaper, 18th May 2016, reported the loss of 250,000 barrel per day by the IOCs and Nigerian companies due to the closure of the TFP system. Similarly, ThisDay Newspaper, May18th, 2018, also reported the suspension of Bonny Light Crude export after an outage prompted SPDC to declare force majeure. The force majeure, which took immediate effect, followed the shutdown of the Nembe Creek Trunk Line. However, SPDC did not disclose the volume of oil affected by the force majeure declared, but it is expected to be around 195,000 barrels per day at that point. So far, the loss in revenue recorded by IOCs and Nigerian companies are as a result of shutdown of the major trunk lines and global security. The role of artisanal refining in company revenue was not highlighted. The estimated volume of missing crude and other monetary value was not also highlighted

Issues in Artisanal Refining and Job Loss

In a paper titled 'oil theft and artisanal refining in Nigeria- Scales, Impacts and the need for a multi-dimensional response', presented during the Gulf of Guinea Security Conference, Attah (2012), highlighted the impact of artisanal refining and oil theft on the operation of oil companies in the Niger Delta, especially SPDC. He argued that the scale of the problem puts enormous strain on company staff and operations, diverting time and resources to battle the consequences of artisanal refining and oil theft. Attah admitted the challenges of sabotage and loss incurred in the process of production but did not point its direct impact on staff job security in oil companies.

Gbajumo (2012) also drew attention to the impact of sabotaging pipelines for oil theft and illegal refining. The author posits that the constant breaking of oil facilities for the purpose of abstracting crude for artisanal refining has brought hardship on the oil and gas companies and the subsequent reduction in the companies' production from time to time and shutting down the oil wells. The stoppage or constant reduction of companies' production had led to the fall in reported profits over the intervening period. Due to this, most oil companies are forced to review their operations in order to reduce the overhead costs. This includes capital asset acquisitions and manpower costs. Capital asset cost like oil rigs and other oil infrastructure cannot easily be disposed of because they may not be readily needed by other companies, thus, leaving only the option of the reduction of manpower costs for oil companies. According to the National Bureau of Statistics 4.07 million jobs were lost between January and September, 2017. The Bureau reported that the unemployment figure rose from 11.92 million in the first quarter of the year to 13.58 and 15.99 in the second quarter. The Bureau attributed increasing rate of unemployment to the poor performance of the economy under review. The report posted that the labour force population increased from 83.9 million in the second quarter (Q2) to 85.1 million in the third (Q3). The report always highlighted the total decline of the total number of persons in full employment from 52.7 million to 51.1 million. The unemployment rate in percentage was moved from 14.2% in the fourth quarter of 2016 to 18.8% in the third quarter of 2017. Beside the unemployment rate provided by the bureau of statistics, there is need to look at the nature of employment and job loss in the oil companies operating in Niger Delta.

According to Fajanah (2005), the oil companies created 65,000 direct employment and 250,000 indirect jobs. Fajanah also highlighted the role of the 1969 petroleum and drilling act in creating employment for Nigeria workers. The act stipulates that the number of citizens of Nigeria in a certain grade (skilled, semi – skilled, and unskilled) must not be less than 60 percent. Similarly in 2010, an amendment of the 1969 petroleum and drilling act gave rise to the local content law under the local content act, the Nigerian government set a minimum local content target of 75 percent for all works and contracts to be undertaken in or on behalf of oil and companies. Nigerians account for about 80 percent of regular workers in the oil and gas industries and also account for majority of contract and sub contact staff. This notwithstanding, the staff of most oil and gas companies is male dominated. Women workers account for about 15 percent of the overall work force in the oil industry. Most are employed in administrative mutual, personnel, public affairs, legal department and human capital development (Fajanah, 2005).

Table 1: Distribution of Oil and Gas Workers in Nigeria (1999-2003)

Types of employment	1999	2000	2001	2002	2003
Regular	28,375	29,835	32,175	33,930	36,270
Contract	10,914	11,475	12,375	13,050	13,950
Subcontract	4,365	4,590	4,950	5,220	5,580
Total	43,654	45,900	49,500	52,200	55,800

Source: PENGASSAN AND NUPENG.

The above table shows steady increase of Nigeria workers in the oil and gas sector between the period of 1999 and 2003. The above data does not explain or cover the recent happenings or activities in the oil and gas sector in recent years. According to a report by the newspaper April 21, 2016, the oil and gas industry was believed to have lost about 150,000 jobs between 2013 to February 2016. The report stated that the unprecedented loss was recorded globally and in Nigeria. The report also highlighted the increase adoption of contract staffing, out sourcing and other precarious work forms by employers as a ways to cut cost.

METHODOLOGY

The study relied on primary and secondary sources of data. While primary data were collected using Focus Group Discussions and interview sessions with administrative staff of oil multinationals, secondary data were sourced from selected oil companies' reports, journals, newspapers, textbooks and other online materials. The study adopted the descriptive analysis to present and analyze the research data.

RESULTS

Analysis of Impact of Artisanal Refining On Revenue and Job Loss

The study in addressing the impact of artisanal refining on revenue and job loss relied on data collected from reports of incidents of sabotage/damage by the Shell Petroleum Development Company (SPDC) and the Nigerian Agip Oil Company (NAOC). Reports obtained from SPDC database shows incidents area widespread and its consequent loss of crude oil products. The study used sabotage data from 2013 to examine if there is an impact on the company's revenue. As indicated on table 2, the higest number of cases of sabotage/damage leading to spills were recorded in 2013. The rationale for using this is that, since the highest level of incidents occurred during this period, thus it should be evident how the loss is impacted the revenue of the company.

The SPDC Scenario

Table 2 shows the reported incidences of sabotage and oil spills on SPDC facilities between 2013 - 2017. The table indicated that a total of 633 cases of spill were reported between 2013 and 2017. Across SPDC operations facilities and about 86% of these incidents are attributed to sabotage showing clearly the extent to which efforts to secure supplies to feed the illegal market is impacting the legal operations of the company.

Table 2: Reported cases of spill caused mainly by pipeline sabotage

Year	Operational	Sabotage	Total
2013	23	157	180
2014	29	147	176
2015	17	110	127
2016	10	61	71
2017	10	69	79

Source: www.shell.com.ng

The analysis of these incidents are limited to operations within Bayelsa, Rivers and Delta States. The focus here is on the downstream production of the company, which is also where the oil theft activities thrive. Hence, the data does not cover sabotage and incident of spill in all SPDC locations in the Niger Delta only those cases of sabotage/damage reported by SPDC on some of the oil fields and impacted communities across Bayelsa, Rivers and Delta State.

Table 3: Compilation of incidents of sabotage and volumes of crude lost (2013)

Months	**Bayelsa**	**Rivers**	**Delta**	**Vol. Lost (bbl)**
January	4	3	0	330.7
February	1	6	0	187
March	4	9	0	1,467.808
April	10	8	0	983.98
May	5	12	4	460.2
June	4	7	1	6,152
July	1	8	2	1,339.8
August	6	9	0	641
September	2	6	4	2,146
October	1	10	2	2,747
November	3	11	0	1,706
December	2	9	3	832
Total	**43**	**98**	**16**	**18,993.488**

Source: www.shell.com.ng

From table 3, Rivers State recorded the highest cases of sabotage (98) and Bayelsa is second (43) and Delta (16) having the least. The loss of crude product was recorded across the 12 months of the year with the biggest loss coming in June with over 6,000 bbls. Major losses were also recorded in October (2,747 bbls), September November, March and July. A cumulative loss of 18,993.488 bbls was record in 2013. Evidently a certain proportion of this total loss is surely going to end up in the hand of oil thieves to be used in local refineries. This volume of crude oil lost is likely to reflect in the revenue statement of the company in the downstream segment.

Table 4: Volume of crude loss and estimated revenue loss by SPDC in 2013

Quarters	**Vol. bbls**	**Litres**	**Cost ($)**
Q 1	1,985.508	315,695.772	219,398.634
Q2	7,596.18	1,207,792.62	839,370.89
Q3	4,126.8	656,161.2	456,011.4
Q4	5,285	840,315	583,992.5
Total	**18,993.488**	**3,019,964.592**	**2,098,773.424**

Source: Author's Compilation. NB: 1 barrel of crude = 159 litres**.**
Calculated based on Nigeria average price of crude oil (110.5) in 2013

From table 4, a total of 1,985.508 barrels of crude oil was lost in Q1 resulting in total monetary loss of $219,398.634. In Q2, the volume lost (7,596.18 bbls) is worth $839,370.89 while in Q3 and Q4 estimated losses are worth about $456,011.4 and $583,992.5 respectively. Consequently, these losses amounted to a total of over $2million in SPDC operations in 2013. This analysis revealed the huge amount that is being lost due to the activities of artisanal refiners and it is not beyond reason to deduce that such loss could surely have impact on the revenue of the company.

In order to understand the significance of the loss, comparison of the amount lost to sabotage and the overall estimated revenue of the company's wider operations across the major oil fields was conducted. Nine oil fields from Bayelsa, Rivers and Delta States in the downstream sector were examined for their production volumes for the same year (2013). These fields were selected because they have witnessed several incidents of sabotage and they represented some of the highest producing fields in SPDC operations.

Table 5: Crude production and estimated revenue across selected fields

Oil fields	Qty of oil (bbls)	Qty of oil (metric tonnes)	Estimated cost ($)
Kolo Creek	1,056,107	167,907.28	116,699,823.5
Opukushi	1,341,104	213,218.10	148,191,992
Nembe Creek	4,223,780	671,526.11	466,727,690
Obigho North	2,157,537	343,020.34	238,407,838.5
Egbema	304,955	48,483.88	33,697,527.5
Cawthorne Channel	2,272,706	361,330.71	251,134,013
Forcados	10,991,267	1,747,468.57	1,214,535,003.5
Otumara	5,912,779	940,054.99	653,362,079.5
Escravos	1,089,492	173,215.06	120,388,866
Total	29,349,727	4,666,225.04	3,243,144,833.5

Source: NNPC Statistical bulletin in 2013.Calculated based on Nigeria average price of crude oil (110.5) in 2013.

Table 5 captured SPDC production in some selected fields in Bayelsa, Rivers and Delta states. These fields represented about 9.7% of the total oil fields operated by SPDC in the Niger Delta. From table 5, a total of 29,349,727 barrels of oil was produced in the selected field in 2013. Using the average price of crude oil in 2013, a total sum of 3.2 billion dollars in terms of crude oil sales was recorded. The estimated loss of $2,098,773.424 is only a small fraction of the gross sum accruing from production and sales of crude oil in 2013. It represents 0.06% of the total gross revenue from oil production across these nine fields. This is the gross sum since other costs: the cost of drilling, lifting, shipping, tax and other cost incurred during production have not been deducted. Thus, accounting for all these costs, it is plausible that proportion of lost revenue due to sabotage will be significantly higher.

However, it is evident that the activities of oil thieves for local refining have an impact on companies' revenue. The loss is not significant enough to impact the general operations of these companies but may affect a section of their operation. Such was the case reported by SPDC on September 26, 2011. SPDC reported that it has shut down its operation around Imo River due to upsurge in artisanal refining activities and illegal bunkering. Some 25,000 barrels of oil was stolen daily. The Vice President, Health Safety and Environment and Corporate affairs, Mr. Tony Attah stated that "the scale of crude theft is unprecedented within September alone; we discovered 16 illegal bunker points within Imo river field. Besides the money lost to government, significant portion of the stolen volumes are spilled affecting large swaths of land. Therefore, production from this field will remain shut until we are sure the crude thieves have left the area for good".

The NAOC Scenario

Examining the data on cases of sabotage and crude oil lost by NAOC across Bayelsa, Delta and River States also reveals the magnitude of the loss of revenue as a result of these illicit activities.

Table 6: Incidents of sabotage, volume of crude lost and estimated revenue loss by NAOC in 2016

States	No. of incidents	Vol. (bbls)	Value of Loss ($)
Bayelsa	113	2990.18	130,491.4552
Delta	4	39	1,701.96
Rivers	26	881.31	38,460.3184
Total	143	3910.49	170,653.7836

Source: Compiled from reported cases on www.eni.com/en-NG and lost revenue calculated based on the average price for 2016 (43.64).

From table 6, the cases of oil theft points used for artisanal refining were highlighted as reported by NAOC. Within the period of the review, Bayelsa recorded the highest cases resulting in an estimated loss of 2990.18 barrels of oil. Rivers State ranked second with 26 cases resulting in loss of 881.31 barrels of oil. Delta has the lowest cases recorded with 4 incidents resulting in loss of 39 barrels of oil. The total estimated loss of revenue is put at about $170,653.7836.

Table 7: Cases of sabotage and estimated revenue lost by NAOC in 2017

States	No. of incidents	Vol. (bbls)	Value of Loss ($)
Bayelsa	34	829.07	44,829.07
Delta	6	147.86	8,003.6618
Rivers	64	2439.74	132,063.1262
Total	104	3,416.67	184,895.858

Source: Compiled from reported cases on www.eni.com/en-NG and calculated bases on the average price for 2017 (54.13).

A look at table 7 shows that there is a reduction of cases of oil theft for artisanal refining in Bayelsa and slight increase in Delta and River States. The total number of cases (104) recorded in 2017, and this represents a reduction of about 27% from the 2016 total cases. Furthermore, the estimated value of the loss in revenue within this period stood at around $184,895.858

In evaluating the significance of the loss across these six fields operated by NAOC; a comparison was made to the volume of production and potential revenue from the major oils field operated by NAOC across Bayelsa, Delta and Rivers States. The fields selected were also known to have significant cases of oil theft for artisanal refining reported within around them.

Table 8: Volume of crude production in selected fields and estimated revenue loss by NAOC in 2016

Oil field	Vol. production/per year (bbl)	Total revenue ($)
Ebegoro	457,587	19,964,520.81
Obrikom	168,907	7,371,101.48
Tebidaba	367,903	16,055,286.92
Obama	365,807	15,963,817.48
Kwale	749,117	32,691,465.88
Isoko South	443,772	19,366,210.08
Total	2,553,093	111,412,402.65

Source: NNPC bulletin. Revenue calculated based the average price for Brent crude (43.64).

In table 8, the total estimated yearly production from the oil fields were presented, and this value stood at around 2,553,093 barrels of oil with a potential (gross) revenue of about $111.4 billion. A comparison of the estimated total revenue with the estimated total revenue loss due to sabotage (table 6) in 2016 ($170,653.7836), shows that the estimated pale in comparison to the estimated revenue. With the estimated loss standing at around 0.2% of the total revenue, the loss is insignificant when compared to the gross revenue. When the total revenue was also compared to the 2017 revenue losses (table 7), the losses also paled in significance.

The calculated loss of revenue is not the actual loss of the company (NAOC), but it is projection based on data available and obtained from Join Investigation Visit (JIVs) report published by companies on their websites.

Association between Job Loss and Artisanal Refining

This aspect of the research was conducted through a focus group discussion and personal interview with key informants (managerial and human resource department staff) from the selected oil companies in the Niger Delta. The two companies were designated A, and B. The summary of the insights presented by the respondents are discussed in the subsequent subsections.

Assessment of the relationship from the perspective of Company A

A focus group discussion was organized with selected staff with knowledge of the personnel situation across the company and the decision of the company in the cases of sabotage to their oil facilities and infrastructure. From the discussion, the respondents are of the opinion that the activity of artisanal refiners should ultimately lead to job losses for some staff since these activities impact the company's revenue. However, they admitted that this is not often the case. They pointed out the legal implication for the company when they lay off workers as these staff are not responsible for these acts, therefore it would be difficult for the company to justify legality of staff downsizing after incidents of sabotage. A different approach is often adopted by the company to cope with the extenuating circumstances caused by the illicit activities.

Beside the legal implication, the respondents also argued that the trend of artisanal refining which involves sabotage of pipelines and stealing of crude oil for local refining may create jobs rather than job loss. They reported that the company may have a need to mobilize or employ certain casual staff for the repair of damage caused by these activities, thus creating a new line of temporary job for some people in the area of operation of the incidents.

In addition to this, the company may also engage the services of a local contractor for repairs. Such contractors employ indigenes of communities impacted by the incident of sabotage, thus, creating job for the local economy. They also speculated on the possibility of local contractors sponsoring vandals in order to gain contracts for the repairs. They highlighted anecdotal evidence that this may be the case in some places across their areas of operations.

Moreover, they asserted that, in case of sharp drop in profit and there is often a compelling case for laying off some staff, and when such need arises, it is those who are close to retirement age that are usually considered first for severance. They opined that there are other factors that are of greater significance and that could result in major job losses in the oil and gas sectors than the scourge of artisanal refining and related illicit activities. The factors highlighted includes

i. Political factor
ii. Security factor
iii. Economic downturn

On the political factor, they argued that, oil companies need a favourable political environment to carry out their operations. They cited adverse tax policy that may result in paying increased tax to government not minding the dwindling global price of oil. They reported that if the government of the day refuses to approve license for exploration on a field after expiration, there are usually job losses in such situation. They pointed out the possibility of a company's operation been shut down over for a period by the government of the day, if the owner of such company is having a serious conflict of interest with the government. Such conflicts of interest could result in loss of jobs.

On security, they cited the case of insecurity in the Niger Delta which has resulted in constant operation disruptions across the region. They highlighted that there are some situations when the company may permanently suspend operation in certain locations if the safety of the company's personnel can no longer be guaranteed. A prolonged period of stoppage of operation may result in laying-off of less important staff to such operation pending resumption. This may result in permanent or temporary job loss. Artisanal refining from the perspective of this study is said to be a rallying point between security operatives, MNOCs staff and economically motivated youths, a situation that calls for the complete overhaul of the security apparatus in the region. This is corroborated by the findings of Watts (2008), who noted that there are huge smoke plumes above the location of these refining operations all day, thus making it possible to find these locations even from a distance. The questions therefore are: Why are there no actions taken by the local and regional authorities (police, army or navy) in controlling such illicit activities? Is stringent control measures not taken because they are in collusion with the artisanal refiners or because the security agents are incapable of doing so? These questions however are currently beyond the scope of this study.

The third factor which is economic downturn usually presents itself in form of lower global oil price and production quota. They argued that the unstable global oil price and production quota affects the revenue of the company more significantly than artisanal refining or insecurity. In the face of lower oil price which leads to a sharp drop in revenue, the company may lay-off few staff that area not very significant to its operations.

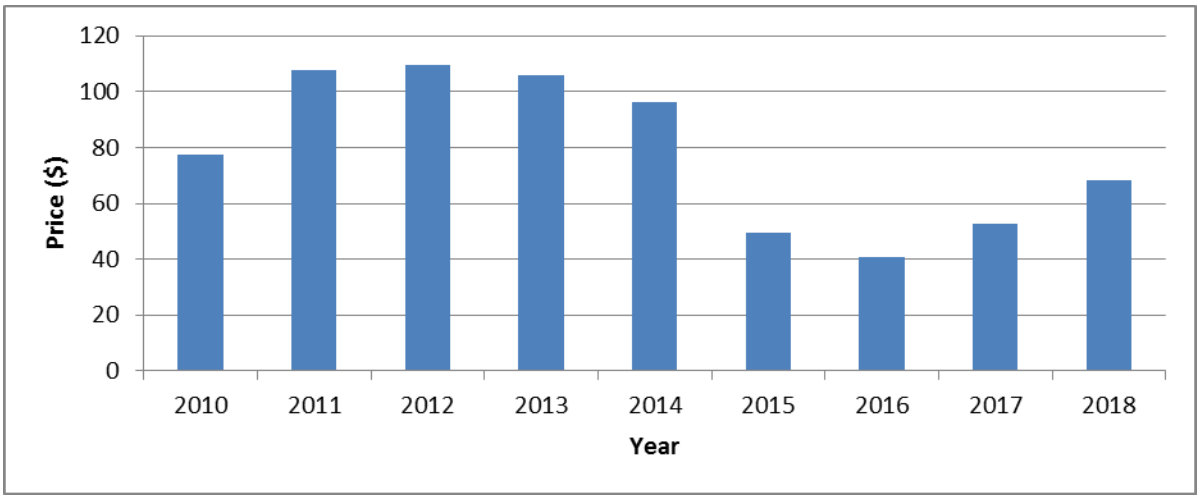

Figure 1: Trends of global oil prices in recent times

A look at the annual average price ($) of crude oil as collated by the Organization of Petroleum Exporting Countries (OPEC), presented in figure 1, give an insight into the trend of oil prices in recent times. There was a sharp decline in price from 2015 to 2016 followed by an increase in 2017 and 2018. During this period the highest price of crude oil was between 2011 and 2013. For instance, Company A has a monthly production capacity of 100,000 barrels of crude in 2012, considering the average price of crude for that year, the company would have made a gross income of $10,945,000 (at the rate of $109.45 per barrel). With the same capacity in 2018, the company would make a gross income of $6,831,000 (at the rate of $68.31 per barrel). The difference in income would be slightly over $4 billion which is the estimated loss of revenue due to change in price. The argument therefore is that even if production cost remains the same over this period, there is a highly plausible that the company may be forced to lay-off less significant staff and look to reduce cost across many areas of their operations.

Assessment of the relationship from the perspective of Company B

From the Focus Group Discussion and interviews with key informants across the company with the knowledge of the situation around job losses and artisanal refining, respondents were very concise with their response to the questions presented. From the discussion, they asserted that the activities of artisanal refining leads to loss of revenue for the company, but the losses were not significant to lay-off any staff. They claimed that the impact of artisanal refining is relative to each company. They suggested that only a sharp drop in revenue will force a company to lay-off some of their staff, but it is usually the last option to take by most companies.

Furthermore, they pointed out that, in the situation were some staffs are laid off as a result of sharp drop in revenue, which may be attributed to artisanal refining activities; most of the companies may not want to admit to it even if that was the major factor. They argued that most companies will rather give other reasons for retrenchment than loss of revenue due increased artisanal refining activities. This is because they do not want to be viewed as having weak financial base or lack good coping capacity.

DISCUSSION OF FINDINGS

In order to achieve the first objective of the study, a comparison of the incidents of artisanal refining against company's revenue loss was carried out. From the number of cases, and the volume of crude loss, it is evident that the volume loss constituted a huge financial loss to the company and the nation. The comparison of this loss to the overall revenue of the company gave an indication that the impact is not significant. This finding corroborates the assertion of Ahmed (2013) who noted that:

"…there is constant loss of revenue by oil companies and government …the grand total volume of crude oil lost by major oil companies like SPDC, Chevron, and NAOC from oil theft and sabotaging during the audit period of 2009 – 2011 was 136,409,573 billion barrels with monetary value of over$10,992,776,474".

From the foregoing, the constant vandalization of oil facilities for the purpose of extracting crude for artisanal refining has brought hardship to the oil and gas companies and the subsequent reduction in the companies' production from time to time is causing shutting down of oil wells as well as loss of manpower in some cases.
Examining the relationship between job loss and incidents of artisanal refining, the respondents affirmed that there are sometimes job losses as a result of artisanal refining in the Niger Delta region, but such is at a very low level. The respondents highlighted three key factors that engender job loss in the sector. These are government policies, security and global oil prices. However, it follows that most of the respondents are of the view that artisanal refining has impact on job security though not on a significant level, as Oil Companies have developed strategies to cope with it. This finding is in consonance with the studies of Asokan (2009); Edward (2007); Ikpatt (2001) and Armstrong (2000) when they noted that one of the indices of job security or threat to job security is the adoption of redundancy measures. Oil infrastructure cannot easily be disposed of because they may not be readily needed by other companies, thus, leaving only the option of the reduction of manpower cost for oil companies.

CONCLUSION

The phenomenon of illegal bunkering and artisanal refining is a major factor constraining the operations of oil and gas companies in the Niger Delta region of Nigeria. It has not only resulted in revenue loss for the companies but has also caused damage to the environment. Findings from the study shows that the constant sabotage or vandalism of oil pipelines for the purpose of stealing oil for artisanal refining forces the major oil companies to stop operations in certain areas as a result of incurred loss of thousands of barrels of oil and consequently losses in revenue. The study has demonstrated that the illicit activities of artisanal refining impact the revenue of the companies although on a very small degree. More so, the impact of artisanal refining on job loss is evident from the study although not significant but it has the potentials of threatening job security in the oil companies.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are therefore put forward:

i. The oil companies should closely work with the government to develop strategies that would halt or abate artisanal refining in the region
ii. The local artisanal refiners should be incorporated into the formal oil industry through the licensing and establishments of artisanal refineries across the region.
iii. Youth unemployment need to be adequately addressed in the region as it is the major cause of proliferation of artisanal refining in the region.

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