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IMPACT OF NNPC STRATEGIC POLICIES ON CRUDE OIL PRODUCTION IN NIGERIA: 2013-2017

Edeoga, G. I., Emerole, O.B. and Dialoke, I

Department of Industrial Relation and Personnel Management,
College of Management Sciences, Michael Okpara University of Agriculture, Umudike
Corresponding Authors' email: edeogagina@gmail.com

Abstract
The study analyzed the impact of strategic polices on crude oil production with reference to Nigerian National Petroleum Corporation (NNPC) from 2013 to 2017. The study employed both primary and secondary data to identify the NNPC subsidiaries, ascertain the impact and effect of NNPC strategic policies on crude oil production using descriptive statistics and OLS regression analytical model. The result shows that NNPC strategic policies such as focusing on cost reduction and transparency, deploying cutting edge technologies, reviewing key performance indicators, holistic rehabilitation of refineries, strengthening internal control mechanism, intensifying exploration efforts, infrastructural development, building local content capabilities and efficiencies have a significant impact on crude oil production within the years. The study therefore recommends that strategic management policies should be sustained and fine-tuned to amplify crude oil production, enhance the production capacity of the corporation to meet up with the ambitious targets of achieving 4 million barrels of crude oil production per day by the year 2020.

Key words: Management, Organization, Barrels and Development

Introduction

Agriculture has been the main stay of the Nigeria economy right from the time of independence (1960), but due to relevance of oil as a major contributor to the GDP over the years led to its relegation by government. However, due to fall in international price of oil in the third quarter of 2014 resulting to a decline in revenue thereby, leading to contraction of economic activities which subsequently plunged the economy into recession. The shock experienced as a result of the fall in oil price severely affected the Nigerian economy (Inusa, 2018). NNPC evidently remained the mainstay of Nigerian economy and the supreme foreign exchange earner funding above 80% of government revenues and enhance growth of Nigeria's infrastructure and other industries (Abims, 2013).

Human and animal powers provide the bulk of the energy requirement for agricultural production. Evidence of the use of petroleum products for agricultural production has been recorded. This, though small when compared with human and animal powers, is significant because it shows the use of motorized irrigation pumps and diesel powered tractors for mechanized agricultural activities (Sambo, 2005 cited in Oluwatayo and Ukpe, 2005).

The NNPC was floated with the mandate to obtain optimal value from the country's hydrocarbon resources for the benefit of the Nigerian people, and all stakeholders (Nwokeji, 2007). They have the responsibility of securing national interest in both the upstream and downstream sector of the oil and gas industry, through the pursuit of both commercial and socio-economic development objectives of government (Pargendler *et al.,* 2013). The NNPC were to be in the forefront in the implementation of government policy objectives, relating to oil resources' exploitation through effective participation, investment, and acquisition of technical and managerial skills, in order to derive maximum benefits for the sustenance of the economy and to meet its social needs of the people (Nwokeji, 2007; Hosman, 2009).

NNPC has a role to determine the long run direction and performance of this sector by ensuring careful formulation, proper implementation and continuous evaluation of strategies known as strategic management. Strategy is a long-term orientation an organization with the purpose of attaining their goals

(Johnson *et al.,*2008). It is the formulation of a plan that brings together organization objectives, policies and actions, with the assumption of creating an unrelenting competitive advantage (Freire, 2008).

However, NNPC irrespective of their appellation are affected by complex business environments, competitive dynamics orchestrated by globalization of trade, technological advancement, challenging economic, political circumstances and the rise in the strategic importance of stakeholder's relationships. The competitive business environment has ensued into complexity and sophistication of business decision-making which requires strategic management policies. Sharabati and Fuqaha (2014) noted that in the globalization era, the strategic management has been considered as the most important practice which extricates organizations from each other and it is the key process to attain organizational vision, strategy and intentions. In recent times, the management of NNPC fine-tuned strategies to enhance its position as a fully integrated national energy company, ready to prosper despite the changing dynamics of the global petroleum Industry.

Espousing strategic management tenets, the corporation's management centre on the downstream sub-sector orbited around absorbing world-class culture, executing best practices, concentrating on cost reduction, improving competence, deploying cutting-edge technologies and having a clean balance sheet that reflects NNPC's corporate business vision. The corporation's strategic management team considered key strategies encompassing: reviewing Key Performance Indicators (KPIs) of the corporation, setting achievable targets for instantaneous sign-off, and spending items capable of optimizing the corporation's bottom-line. Expediting action on the holistic rehabilitation of refineries; consolidating internal control machineries and intensifying exploration efforts in the frontier Basins. Venturing into renewable energy and power sectors, repositioning from an intervention engine for the nation, to one that is ready to make profit, grow and create value for teeming stakeholders. However, the strategic management policies of NNPC is designed to reposition the corporation in building a virile institution, creating a conducive regulatory and statutory environment for investment and growth, technology acquisition, development, and building strong human, institutional and business local content capabilities. Therefore, this study analysed the impact of these strategic policies on crude oil production in Nigeria from 2013-2017.

Methodology

The study was conducted in Nigeria. The study adopted both primary and secondary sources of data using expo-facto research and survey research designs. This entails that in gathering data for the study, documented data from Nigerian National Petroleum Corporation (NNPC) Statistical Bulletin were used, and primary data were also elicited through structured questionnaire, and oral interviews conducted with the aid of structured interview schedule. Some of the subsidiaries of the corporation were contacted via email, through which they completed the questionnaire mailed to them. Purposive and simple random sampling techniques were used to collect sample size, purposively all the top and middle level management staff of NNPC and its subsidiaries were considered because of the content and scope of the study. The study used Taro Yamane's formula to determine the sample size of 290 respondents. Random technique was also used to select the 290 respondents out of 1046 staff that constitutes the sampling frame. The study randomly selected 35 staff from Nigerian Petroleum Development Company (NPDC), 34 from Nigerian Gas Company (NGC), 28 from Products and Pipelines Marketing Company (PPMC), 16 from Integrated Data Services Limited (IDSL) and 31 each from Warri Refinery and Petrochemical Co. Limited (WRPC) and Kaduna Refinery and Petrochemical Co. Limited (KRPC). The study also randomized and selected 27, 24, 30 and 34 staff of National Engineering and Technical Company Limited (NETCO), Hydrocarbon Services Nigeria Limited (HYSON), Port Harcourt Refining Co. Limited (PITRC) and NNPC Retail respectively.

Analytical Procedure

The study adopted descriptive statistics and inferential statistics. Descriptive statistics such as frequency and mean were used to describe the respondents and mean impact of strategic polices on crude oil production, while Multiple Regression analyses were used to estimate the impact of the NNPC strategic policies on the crude oil production. Five points Likert Scale analysis were used to determine the mean of each strategic polices agreement within the years sampled. The likert made use of Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD) to determine the mean impact of the subsidiaries on the crude oil production. Respondents with mean score of 3.0 and above imply they are in agreement that the policy is effective while respondents with mean score of less than 3.0 were not in agreement. To determine the mean likert level = Xs = ΣX. Xs of each item was computed by multiplying the frequency of each response pattern with its appropriate nominal value and dividing the sum with the number of respondent to the items. This can be summarized with equation below.

$Xs = \Sigma fn/N$ ..... (1)

Where Xs =mean score

Σ = summation

f= frequency

n = likert nominal value

N= number of the respondents

Xs=1+2+3+4+5/5 = 15/5 =3

The equation for Multiple Regression analysis is stated thus;

Linear; $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \ldots\ldots + b_8X_8 + \mu$.....(2)

Where;
b_0 is the intercept, $b_1 - b_8$ are the coefficients to be examined
Y = Crude oil production (Number of barrel produced annually), X_1 = Focusing on cost reduction and transparency (mean score), X_2= Deploying cutting-edge technologies (mean score), X_3 = Reviewing Key Performance Indicators (mean score), X_4 = Holistic rehabilitation of refineries (mean score), X_5 = Strengthening internal control mechanisms (mean score), X_6 = Intensifying exploration efforts (mean score), X_7 = Infrastructural development (mean score), X_8 = Building local content capabilities and efficiencies (mean score), and μ = error term.

Results and Discussion

The results in Figure 1 show the percentage distribution of the respondents according to the NNPC subsidiaries used in the study. The figure shows that out of 290 respondents sampled, about 12.07% (35) were staff of Nigerian Petroleum Development Company (NPDC), 11.72% (34) Nigerian Gas Company (NGC), 9.66% (28) Products and Pipelines Marketing Company (PPMC), and 5.52% (16) from Integrated Data Services Limited (IDSL). About 9.31% (27), 8.28% (24), 10.34% (30) and 11.72% (34) were staff of National Engineering and Technical Company Limited (NETCO), Hydrocarbon Services Nigeria Limited (HYSON), Port Harcourt Refining Co. Limited (PITRC) and NNPC Retail respectively. The figure also shows an equal distribution of 10.69% (31) each for Warri Refinery and Petrochemical Co. Limited (WRPC) and Kaduna Refinery and Petrochemical Co. Limited (KRPC).

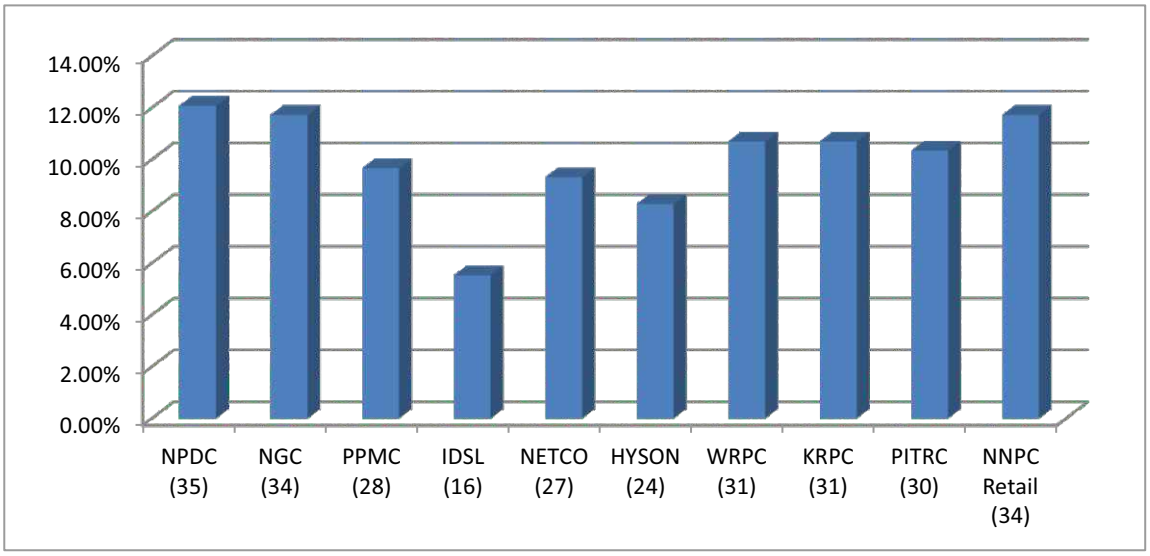

Fig. 1: Percentage Distribution of NNPC subsidiaries used for the study
Figures in Parenthesis are frequencies

The result in Table 1shows the descriptive statistics of NNPC strategic policies on crude oil production used from 2013 to 2017. The result shows an average crude oil production per barrel of 662014409, 609310618, 53235845, 442294236 and 530440859 in 2013, 2014, 2015, 2016 and 2017 respectively. The result also shows that focusing on cost of reduction and transparency (X1) as one of the strategic policies had a higher mean in 2013 (3.50), followed in 2015 (3.20), 2017 (3.00), 2016 (2.90) and 2014 (2.74). Deploying cutting edge technologies (X2) had a highest mean score in 2017 (3.91),followed by 2015 (3.50), 2019 (3.41), 2013 (3.20) and the least in 2014 (2.99).The result reveals that X3 (reviewing key performance indicators) had a mean score above 3.00 only in the year 2017 (3.71), and less than 3.00 in 2013 and 2015 (2.70 each), 2016 (2.61) and 2017 (2.30). The result also shows that holistic rehabilitation of refineries (X4) as a strategic policy had a mean of 2.71, 2.60, 2.50, 2.31 and 1.80 in the year 2013, 2017, 2015, 2016 and 2014 respectively. The result presents an infrastructural development (X8) with mean score of 3.20 (2013), 2.60 (2017), 2.39 (2015), 2.30 (2016) and 1.79 (2014) while building local content capabilities and efficiencies recorded a low average of 2.30 (2015), 2.10 (2013), 1.70 (2017), 1.60 (2016) and 1.29 (2014).

Table 1: Statistics Result on Impact of NNPC Strategic Policies on Crude Oil production (2013-2017)

Strategic Policies	2013	2014	2015	2016	2017
Crude oil production	662014409 (129641624)	609310618 (192314296)	532358245 (225710810)	442294236 (174483869)	530440859 (160314037)
X_1	3.50 (0.922)	2.79 (0.74)	3.20 (1.08)	2.90 (1.05)	3.00 (1.08)
X_2	3.20 (1.25)	2.99 (0.77)	3.50 (1.03)	3.41 (1.11)	3.91 (0.82)
X_3	2.70 (0.902)	2.30 (0.64)	2.70 (1.27)	2.61 (1.11)	3.71 (0.89)
X_4	2.71 (1.19)	1.80 (0.74)	2.50 (1.37)	2.31 (1.19)	2.60 (0.91)
X_5	2.80 (1.17)	2.58 (0.92)	3.30 (1.11)	2.30 (1.10)	2.80 (1.07)
X_6	3.50 (1.03)	3.30 (0.78)	4.30 (0.78)	4.00 (0.77)	4.41 (0.66)
X_7	3.20 (1.02)	1.79 (0.59)	2.39 (1.12)	2.30 (1.01)	2.60 (1.02)
X_8	2.10 (0.54)	1.29 (0.45)	2.30 (1.11)	1.60 (0.80)	1.70 (0.78)

Source: Field survey, 2018. Figures in parentheses are the std. deviation

Acceptable Mean score $\bar{x}$ = 3.00 and above (agreed asstrategic policies impacted positively on crude oil production)

Considering the agreement mean score of 3.00 and above, the result implied that variables with the mean score of 3.00 and above has positive impact on crude oil production. The result also implies that intensifying exploration efforts was the common NNPC strategic polices that had impact on crude oil production over the years. The policy on deploying cutting-edge technologies also impacted positively in all the years studied expect in the year 2014 were it had low impact. The findings indicated that strategic polices focusing on cost reduction and transparency had a high and positive impact on the crude oil production in 2013, 2015 and 2017 compared to 2014 and 2016 where they had low impact. The result also revealed that infrastructural development, strengthening internal control mechanism and reviewing Key Performance Indicators are the NNPC strategic policies that impacted positively on crude oil production in 2013, 2015 and 2017 respectively.

The result in Table 2 shows the impact of NNPC strategic policies on crude oil production in Nigeria from 2013 - 2017. The result shows an R-square value of 99.0, 99.2, 99.4, 99.6 and 99.2 for year 2013, 2014, 2015, 2016 and 2017 respectively. This shows the proportion of variation in the dependent variable that was explained by the independent variables as explained by the model was quite high. The F-ratios (23464.450, 3223.15, 4980.34, 6556.76 and 3365.24 for 2013, 2014, 2015, 2016 and 2017 respectively) were highly significant at 1% level, indicating that the model has a good fit; the independent variables are well explained and fitted by the independent variables.

The result shows that the variable X_1 (focusing on cost reduction and transparency) was significant with the coefficient regression of 79137075.816 (2013), 22547398.11(2014), 20851685.86 (2016) and 24347386.28 (2017) and positively related with NNPC strategic policies on crude oil production in Nigeria at 1% level (Sig < .01). This implies that focusing on cost reduction and transparency by NNPC as a strategic policy led to increase in crude oil production in Nigeria within the years under review. The findings agree with study of James, *et al.,* (2015) who examined strategic management and firm performance in selected manufacturing companies in Nigeria and found cost reduction effective. Effective management and result delivering organization depends on effective transparency and accountability system following Kamaruddin and Indra (2013).

The coefficients of deploying cutting-edge technologies (X_2) were positive and significant in all the years studied at 1% level of probability. This indicates that increase in deploying cutting edge technology as NNPC strategy policy led to a corresponding increase in crude oil production in Nigeria from 2013 to 2017.

The result also shows that the variable X_3 (reviewing key performance indicators) had a significant and positive coefficients in 2014 (232859603.7) and 2015 (20892420.63) and negative in 2017 (160630335.55) at 1% level (Sig < .01). This implied that increase in the use of this policy led to increase in crude oil production in Nigeria in 2014 and 2015 but decrease in 2017.The low impact in 2017 indicated the low involvement of stakeholders in reviewing the progress. According to Muogbo (2013), constant review of organizational progress had been indicated to have impact on strategic management, organizational growth and development. Pearce and Robinson, (2008) also observed that communicating progress of implementing the strategy to the stakeholders will assist them in determining if corrective action is required. .

Holistic rehabilitation of refineries (X_4) as NNPC strategic policy had a positive coefficient in 2013 (18338594.93) and 2016 (82782348.28) and negative in 2017 (-30517064.17) and significantly related with NNPC strategic policies on crude oil production in Nigeria at 1% level (Sig < .01). This indicated that holistic rehabilitation of refineries by NNPC as a strategy plan led to increase in crude oil production in 2013 and 2016 but a decrease in 2017.

The coefficients for strengthening internal control mechanisms(X_5) were negative in 2015 (-60583662.41) and 2016 (-31756813.57) but positive in 2014 (65935515.79) and significantly related with impact of crude oil production in Nigeria. This implies that the use of strengthening internal control mechanisms by NNPC

as strategic policy had a high and positive impact in 2014 and low and negative impact in 2015 and 2016. The low impact recorded in 2015 and 2016 is a clear indication of poor and weak control mechanisms probably because of poor management. Nwokeji (2007) and Gboyega *et al.* (2011) reported that the NNPC was not able to efficiently and effectively carry out their functions due to its lack of finance; technical know-how; control mechanism and unnecessary administrative interference by the Federal Ministry of Petroleum Resources (FMPR). The successful impact of strategic policies is fully dependent on involvement of all the stakeholders in an organization (Pearce and Robinson, 2008).

Table 2: Regression Estimates ofthe Impact of NNPC Strategic Policies on Crude Oil Production (2013-2017)

Strategic Policies	2013	2014	2015	2016	2017
b_0	299450565.58 (126.669)***	-105195421.1 (-17.99)***	-226002955.9 (-11.65)***	-29472397.931 (-1.61)	-182784545.90 (-18.95)***
X_1	79137075.816 (30.436)***	22547398.112 (4.084)***	2150258.40 (0.282)	20851685.862 (6.42)***	24347386.28 (8.33)***
X_2	7018594.933 (4.892)***	298114597.49 (49.185)***	27019099.65 (5.75)***	48816314.138 (5.11)***	133349135.12 (24.89)***
X_3	58594.933 (0.041)	232859603.78 (26.484)***	20892420.63 (3.28)***	-6008685.86 (-1.85)	-160630335.55 (-34.09)***
X_4	18338594.933 (12.781)***	-3657078.589 (-0.941)	9902778.68 (1.41)	82782348.28 (6.98)***	-30517064.17 (7.70)***
X_5	-1250953.538 (-1.103)	65935515.79 (12.899)***	12312322.06 (0.98)	-60583662.41 (-5.76)***	-31756813.57 (-10.24)***
X_6	26273763.672 (26.688)***	-149038373.1 (-29.130)***	82449439.17 (17.24)	9441570.690 (1.63)	111481159.29 (33.74)***
X_7	54279612.041 (32.796)***	-56477199.11 (-8.450)***	57044822.711 (13.02)***	131664115.17 (10.76)***	60052427.856 (19.32)***
X_8	-103302924.18 (-46.292)***	-268714520.8 (2-9.366)***	37031040.556 (4.59)***	-82257743.45 (-10.19)	137982747.84 (30.46)***
R^2	99.9	99.2	99.4	99.6	99.2
R^-	99.9	99.2	99.4	99.6	99.2
F	23464.450	3223.151	4980.343	6556.756	3365.235

Source: Field Survey 2018.
***** = Significant at 1% level**

The coefficients for intensifying exploration efforts (X_6) had a significant and direct relationship with crude oil production in 2013, 2015 and 2017; and indirect relationship in 2014 at 1% level. This implied that intensifying exploration efforts as a policy had a high impact on crude oil production in 2013, 2015 and 2017 and low impact in 2014. The high impacts recorded are expected. The result also shows that the variable infrastructural development (X_7) had a negative coefficient in 2014 and positive in 2013, 2015, 2016 and 2017. This indicated that there was a high impact in production of crude oil in 2013, 2015 and 2017as a result of infrastructural development while in contrast, in 2014, there was low impact in production of crude oil in Nigeria. Lawal (2008) noted that available of physical materials that can be transformed into desirable goods and services will quicken organization's production. The study listed such materials as machines, equipment etc.

The coefficients of building local content capabilities and efficiencies(X_8) had a significant anddirect relationship with impact of crude oil production in 2015and 2017 but negative in 2013, 2014 and 2016 at 1% level (Sig < .01). This implies that building local content capabilities and efficiencies by NNPC as a strategic policy had a high impact on the crude oil production in 2015 and 2017 and low impact in 2013, 2014 and 2016.The high indication of low impact in these years may be because of lack of a conducive business environment, ineffective leadership, large staff population, cultural environment; low morale; inadequate training; customer dissatisfaction; and inactive corporate steering committee following Omoregie (2001).

Conclusion

The study analyzed the impact of NNPC strategic policies on crude oil production in Nigeria from 2013 to 2017. This result observed that focusing on cost reduction and transparency, deploying cutting-edge technologies, intensifying exploration efforts and embarking on infrastructural development are crucial NNPC strategic policies as they have high impact on crude oil production within the years under study.The study therefore, calls for strategic management team of NNPC to sustain and fine-tune the strategic policies amplifying crude oil production. These include: focusing on cost reduction and transparency, deploying cutting-edge technologies, intensifying exploration efforts and embarking on infrastructural development in order to enhance the production capacity of the corporation to meet up with the ambitious targets of achieving 4 million barrels of production per day projected by the year 2020

References

Agbim, K. C. (2013). The Impact of Organisational Structure and Leadership Styles on Innovation. *IOSR Journal of Business and Management (IOSR-JBM)*, 6(6):56-63.

Freire, A. (2008). Estratégia - Sucessoem. *Portugal, Verbo.*

Gboyega, A., Soreide, T., Minh L. E, T., and Shukla, G. P. (2011). *Political Economy of the Petroleum Sector of Nigeria. Policy research Working Paper* 5779.

Hosman, L. (2009). Dividing the Oils: Dynamic Bargaining as Policy Formation in the Nigerian Petroleum Industry. *Review of Policy Research*, 26:609-632.

Inusa, B.M., Daniel, P.C., Dayagal, D.F. and Chiya, N.S. (2018). Nigerian Economic Growth and Recovery: Role of Agriculture. *International Journal of Economics and Management Science*, 7(2):1-5

James U. M., Grace O. A., Patrick O. and Oluwatobilola K. A. (2015). Strategic Management and Firm Performance: A Study of Selected Manufacturing Companies in Nigeria. *European Journal of Business and Management. 7(2) ISSN* 2222-2839

Johnson, G., Scholes, K., and Whittington, R. (2008). Exploring Corporate Strategy. (8th Ed.). *Prentice Hall.*

Kamaruddin, K., and Indra A. (2013). Intellectual Capital and Public Sector Performance. *Studies in Managerial Financial Accounting Volume 27. Bingley: Emerald Group Publishing.*

Lawal, L. M. (2008). Decommissioning Accountability "Expectation Gap": The Perception of Stakeholders in the Nigerian Oil and Gas Industry. *A PhD Thesis submitted to the University of Dundee, Dundee.*

Muogbo U. S. (2013). The Impact of Strategic Management on Organisational Growth and Development: A Study of Selected Manufacturing Firms in Anambra State. *IOSR Journal of Business and Management (IOSR-JBM) ISSN:* 2278-487X. 7(1).

Nwokeji, U.G. (2007). The Nigerian National Petroleum Corporation and the Development of Nigerian oil and Gas Industry: History, Strategy and Current Directions. *Policy Report on the Changing Role of National Oil Companies in International Energy Markets, Houston: The James Baker III Institute for Public Policy, Rice University.*

Oluwatayo, I. and Ukpe, H. (2015). Effect of Petroleum Pricing on Agricultural Production in Nigeria: An Error correction Modelling Approach. International Journal of Agriculture and Environmental Information Systems, 6:17-28

Omoregie, F.O. (2001). Improving the Effectiveness of Total Quality Management (TQM) in NNPC Corporate Headquarters Abuja. *Unpublished NNPC Chief Officers' Management Development Programme Project Report.*

Pargendler, M., Musacchio, A. andLazzarini, S.G., (2013). In Strange Company: The Puzzle of Private Investment in State-Controlled Firms. *Harvard Business School Working Paper,* No.13–071.

Pearce. J. A. and Robinson, J. B. (2007). Strategic Management: Formulation, Implementation Control, (10th Ed.) *New York: Prentice-Hall.*

Sharabati, A. A. andFuqaha, S.J., (2014). Impact of Strategic Management on the Jordanian Pharmaceauticals Manufacturing Organisation Business Performance. *International Review of Management and Business Research, 3(2).*