

## **Evaluation of Private Refineries and Depots in Distribution of Petroleum Products in Nigeria**

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### **ABSTRACT**

The study evaluates the performance of private refineries and depots in distribution of petroleum products in Nigeria. Ninety (90) questionnaires were randomly distributed to the selected five major and ten independent privates' depots while sixty (60) questionnaires were distributed to the public within Lagos metropolis. The data collected were tabulated and analyzed by using statistical graphs and charts. The results show that 90% of the public make use of petroleum products in their daily activities while 77% of the respondents agreed that the establishment of private refineries and depots have improved distribution of petroleum products across the country. 70% of petroleum products used in Nigeria was imported into the country due to low performance of local refineries while 85% of the respondents rejected total deregulation of downstream sector without putting the local refineries in good condition. 75% of the respondents rated the performance of private depots above average while 65% demand for more in order to ensure steady supply and distribution of petroleum products to the teeming population of Nigeria.

**Keywords:** *Petroleum distribution, petroleum products, private depots, private refinery*

### **1. INTRODUCTION**

Over the years, the supply of petroleum products, mainly white products into the Nigeria market has been through the private and public organizations. The public organizations are the government agents and functionaries such as the Nigerian National Petroleum Corporation (NNPC) and its subsidiaries, the Department of Petroleum Resources (DPR), the Petroleum Products Pricing Regulatory Authority (PPPRA) and Pipeline Product and Marketing Company (PPMC) while the private sectors are the indigenous and foreign organizations [1]. The indigenous sector was introduced in 1978 with more than 20 private independent marketers after a year of operations. The foreign (major) oil marketers operating in the country are Mobil Oil Nigeria Plc, MRS Nigeria Plc, Total Nigeria Plc, Con oil Plc, Oando Nigeria Plc and African Petroleum Plc. These six major oil marketers control about 60 percent of the market while indigenous independent marketers control 40 percent of the markets [2]. The indigenous independent marketers with 7948 outlets are competing with their counterparts of major oil marketers with 2218 outlets [3]. Despite all these, the domestic supply and distribution of petroleum is loaded with a lot of problems which include the occasional product shortages, inefficient product distribution and irregularity of pump price. These problems are compounded by ethnic and civil disturbances in the Nigeria Delta which sometimes leads to destruction and vandalization of oil pipelines, disturbances in operation of the oil explorations and damage to life and properties [4]. As a result of the shortcomings in the domestic supply and distribution of petroleum products in Nigeria, the

study evaluates the performances of private refineries and depots in supply and distribution of petroleum products using Lagos state metropolis as a case study.

#### **1.1 Overview of Oil Refineries and Depots in Nigeria**

An oil refinery is an industrial processing plant where crude oil is processed and refined into more useful petroleum products, such as gasoline, diesel fuel, asphalt base, heating oil, kerosene, and liquefied petroleum gas. The four owned government refineries are Port Harcourt Phase 1 and 2, Warri and Kaduna. These refineries were built between 1965 and 1989 with a total installed refining capacity of 445,000 barrels per day [5]. Before 1997 these refineries accounted for about 57 to 89% of total Premium Motor Spirit consumed within the country. After 1997, the importation of petroleum products commenced due to poor state of these refineries. Currently the refineries are producing below 25% of the 30 million liters daily local PMS demand in the country which is very low when compared with the 180million Nigerian population [6].

The incident led the federal government to grant licenses to 17 private refineries and 117 depots between 2004 - 2007 in order to raise daily production and distribution of petroleum products. Out of these private refineries only five (5) revalidated their licenses as at November, 2011 of which Niger Delta Petroleum Resources is only functioning [7]. The depots are categorized as

major oil marketers' depot, NNPC /PPMC depot and Independent marketers' depot. Major oil marketers are owned by private individuals who are members of Major Oil marketers Association of Nigeria (MOMAN). They have twenty six depots of which Lagos has (13), Abuja (2), Jos (3), Kano (5), Port Harcourt (4) and Warri (1). The NNPC / PPMC depots are owned by the Federal Government of Nigeria. They are the major importer of petroleum products in Nigeria with 22 depots located across the country [7]. Independent Marketers are importers of petroleum products under the umbrella of Independent Petroleum Marketers Association of Nigeria (IPMAN). They have a total numbers of sixty nine depots across the country to store petroleum products with Lagos has (39), Abuja (3), Port-harcourt (11), Warri (4), Calabar (10), Kaduna (1) and Akwa-Ibom (1). Meanwhile other private Associations / Agencies that supported the importation of petroleum products in Nigeria are the Depot and Petroleum Products Marketers Association (DAPPMA) and Jetty and Petroleum Tank Farm Owners Association (JEPTFON) [7].

## **1.2 Supply and Distribution of Petroleum**

### **Products in Nigeria**

Over the year the supply and distribution of petroleum products in Nigeria were characterized with series of protest and crises, irregularity in supply of products, acute product shortages, hoarding, smuggling, adulteration and long queues [6]. The situation became pathetic by the low performance of the domestic refineries, which resulted in excessive dependence on importation. There was also limited inflow of investments into the downstream due to low margins, uncompetitive pricing structure and prior incentive mechanism [8]. This led the government to introduce the independent marketer's scheme in 1978 in order to break the dominance of the six multinationals oil companies operating in Nigeria [8]. Distribution of petroleum product is movement of crude oil from the point of exploitation to the final point where these refined petroleum products is consumed. Crude oil is transported from the oil field to refining plant, from the refining plant to oil depot and from the oil depot to the final point of consumption [6]. The major marketers are responsible for the movement of the products from the refineries to their branded station while independent marketers transport the products from the depots to the service stations [9]. The movement of the products can be done by pipelines, rails, coastal vessel and road trucks. Nigeria has a total network of 5120 km which cut across the country, forming a mesh that interlinks to 23 storage depots, 8LPG depots, 24 pump stations, 4 refineries (Port-Harcourt (I and II), Kaduna and Warri), 2 offshore jetties (Atlas Cove and Escravos) and 4 jetties (Apapa, Calabar, Okrika and Warri) [10]. The Pipeline and Product Marketing Company (PPMC) a subsidiary of Nigeria National Petroleum Corporation (NNPC) uses the oil pipelines to transport crude oil to the refineries in Port-Harcourt, Warri and Kaduna at a total distance of 719km. The

products will be transported from the refineries through the linked pipelines to the 23 loading depots of combined installed capacity of 266890MT (PMS), 676400MT (DDK), 1007900MT (AGO) and 74000MT (ATK) [10].

## **2. RESEARCH QUESTIONS**

The following sets of questions were asked to evaluate the performance of private refineries and depots in the distribution of petroleum products in Nigeria.

- (i) What are the available distribution links of petroleum products in Nigeria?
- (ii) Do you support the deregulation of downstream sector?
- (iii) What are the causes of petroleum products scarcity?
- (iv) Does the establishment of private depots reduce petroleum scarcity in Nigeria?
- (v) How often are your depot supply petroleum products?
- (vi) Do you think we need more private depots in Nigeria?
- (vii) What are the challenges of private refineries and depots in distribution of petroleum products in Nigeria?

## **3. MATERIALS AND METHODS**

Questionnaires were used to obtained data for this study. The questionnaires were randomly distributed to the selected public and owners of Major/Independent Marketers of petroleum products within the Lagos metropolis. Also, participant observation was also adopted in collecting data which gave the researcher an opportunity to critically assess the performance of private refineries and depots in distribution of petroleum products within the Lagos metropolis. The questionnaires contain both open and closed ended questions which were distributed by simple random sampling method. Five major and ten independent privates depots were selected with ninety questionnaires administered to them while sixty (60) questionnaires were administered to the public. The data collected were tabulated and analyzed by using statistical graphs and charts.

### **3.1 Validity and Reliability of the Questionnaire**

The questionnaires were distributed to public and private depot owners of all the categories of sex, age, marital status, educational qualification, occupation and work experience. It means that the study cut across all the people who make use of petroleum product and who supply and distribute petroleum products. As a result of this, the study is truly representing the mind of people on the performance of private depots in supplying and distribution of petroleum products in Nigeria. The questionnaires were also perused by professional scholars and facilitators in the field of oil and gas sectors.

#### 4. RESULTS ANALYSIS

The responses obtained from the public are presented in Table 1 to 6 while that of Major/Independent private depots are presented in Table 7 to 13.

##### 4.1 Public Responses

**Table 1: Demography (Questions 1 – 2)**

Sex	F	%	Age	F	%
M	41	68.0	18-25	16	27.0
F	19	32.0	26-33	19	32.0
			34-41	17	28.0
			42 and Above	8	13.0
TOTAL	60	100.0	TOTAL	60	100.0

Source: Field data survey (2012)

**Table 2: Educational Qualification and Occupation (Questions 3 - 4)**

Educational Qualification	F	%	Occupation	F	%
WASC/GCE/SSCE	8	13.0	Student	11	18.0
AL/OND/ NCE	16	27.0	Civil servant	24	40.0
HND/PGD/ BSc/B.Eng	25	42.0	Self employed	19	32.0
Masters and above	11	18.0	Retiree	6	10.0
TOTAL	60	100.0	Total	60	100.0

Source: Field data survey (2012)

**Table 3: Martial status and uses of petroleum (Questions 5 - 6)**

Marital status	F	%	Do you use petroleum products in your daily activities?	F	%
Married	27	45.0	Yes	54	90.0
Single	23	38.0	No	6	10.0
Divorced	3	5.0			
Widowed	7	12.0			
TOTAL	60	100.0	TOTAL	60	100.0

Source: Field data survey (2012)

**Table 4: Private Depots Effectiveness (Questions 7 - 8)**

How the supplies from private depots reduce petroleum products scarcity?	F	%	If yes, how often do you get it?	F	%
Very rapid	24	40.0	Very regularly	12	20.0
Rapid	33	55.0	Regular	33	55.0
Not rapid	3	5.0	Not regularly	15	25.0
Total	60	100.0		60	100.0

Source: Field data survey (2012)

**Table 5: Deregulation and demand for more depots (Questions 9 - 10)**

Do you support deregulation of downstream sector?	F	%	Do we need more private petroleum products depots?	F	%
Yes	18	30.0	Yes	41	68.0
No	42	70.0	No	19	32.0
TOTAL	60	100.0	TOTAL	60	100.0

Source: Field data survey (2012)

**Table 6: Petroleum products scarcity and private depots performance (Questions 11 - 12)**

What are the major causes of petroleum products scarcity?	F	%	What is the general performance of private depots?	F	%
Corruption	33	55.0	Above Average	27	45.0
Vandalization	9	15.0	Average	12	20.0
Poor performance of refineries	13	22.0	Below Average	21	35.0
Government policy	5	8.0	-	-	-
TOTAL	60	100.0	TOTAL	60	100.0

Source: Field data survey (2012)

## 4.2 Private Depots Responses

**Table 7: Demography (Questions 1 – 2)**

Sex	F	%	Age	F	%
M	53	59.0	18-25	10	11.0

F	37	41.0	26-33	36	40.0
			34-41	29	32.0
			42 and Above	15	17.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

**Table 8: Educational Qualification and Cadre (Questions 3 - 4)**

Educational Qualification	F	%	Cadre	F	%
WASC/GCE/SSCE	12	13.0	Junior Staff	35	39.0
AL/OND/NCE	25	28.0	Senior Staff	28	31.0
HND/PGD/BSc	43	48.0	Supervisor	19	21.0
Masters and above	10	11.0	Management	8	9.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

**Table 9: Source of petroleum products and mode of distribution (Questions 5 - 6)**

Where do you obtain your petroleum product?	F	%	What is the mode of your distribution?	F	%
Local Refineries	20	20.0	Pipelines	23	26.0
Importation	70	70.0	Road trucks	64	71.0
others	10	10.0	Coastal vessels	3	3.0
-	-	-	Rail	0	0.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

**Table 10: Utilization and supply from depot (Questions 7 - 8)**

Is your depot working?	F	%	How often do you distribute petroleum products?	F	%
Yes	32	22.0	Very regular	33	37.0
No	48	78.0	Regular	47	52.0
			Not regular	10	11.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

**Table 11: Private Depots Effectiveness and performance (Questions 9 - 10)**

How the supplies from your depots reduce petroleum products scarcity?	F	%	Grade the performance of your depots?	F	%
Very rapid	28	35.0	Above average	54	60.0
Rapid	35	44.0	Average	17	19.0
Not rapid	17	21.0	Below Average	19	21.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

**Table 12: Deregulation and demand for more depots (Questions 11 - 12)**

Do you support deregulation of downstream sector?	F	%	Do we need more private petroleum products depots?	F	%
Yes	74	82.0	Yes	65	72.0
No	16	18.0	No	25	28.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

**Table 13: Private depots performance and challenges (Questions 13 - 14)**

What are the major causes of petroleum products scarcity?	F	%	What are the major challenges of private depot in Nigeria?	F	%
Corruption	46	51.0	Insecurity	45	50.0
Vandalization	16	18.0	Government regulation of pump price	20	22.0
Low performance of refineries	20	22.0	Instability of government policy	15	17.0
Government policy	8	9.0	Indirect access to crude oil	10	11.0
TOTAL	90	100.0	TOTAL	90	100.0

Source: Field data survey (2012)

## 5. DISCUSSION OF THE RESULTS

Fig.1 shows that 90% of the respondents make use of petroleum products in their daily activities. They argued that the use of petroleum products is a must because is an essentially

commodity that one's cannot do without it. Fig. 2 shows that 55% of the public and 44% of the private owners agreed that the establishment of private depots have rapidly reduced the scarcity of petroleum products when compared with the past while Fig. 3 shows that 55% of the public have regular access

to petroleum products and 52% of private owners supply the products regularly but still below the expectation of Nigerian.

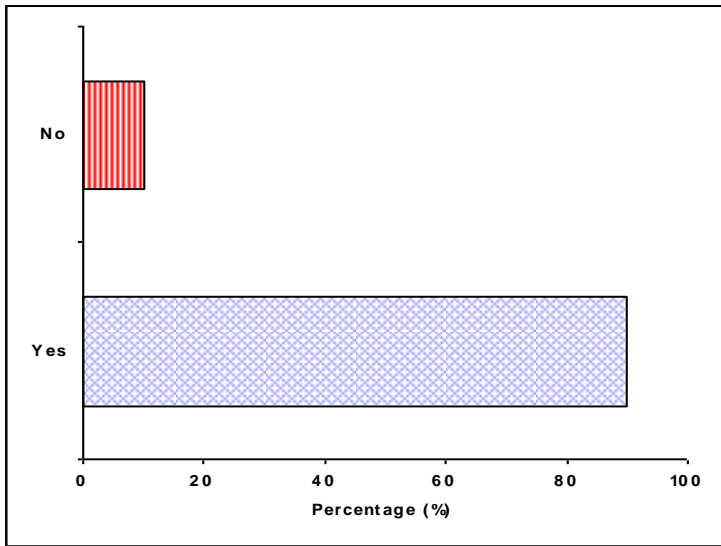


Figure 1: Uses of petroleum products

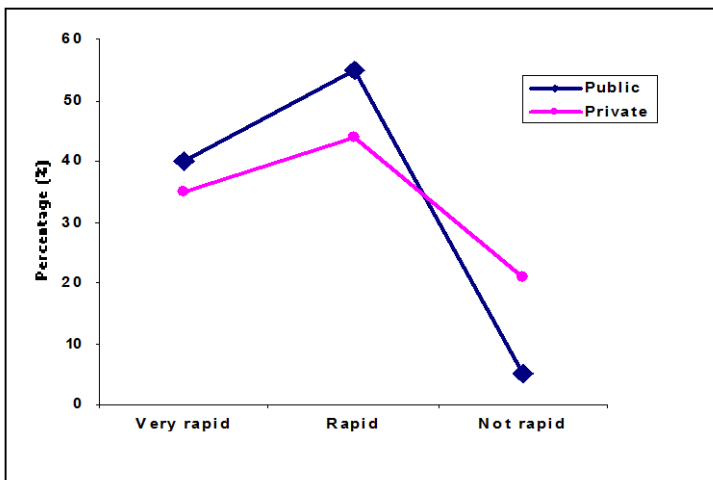


Figure 2: Level of petroleum products scarcity reduction

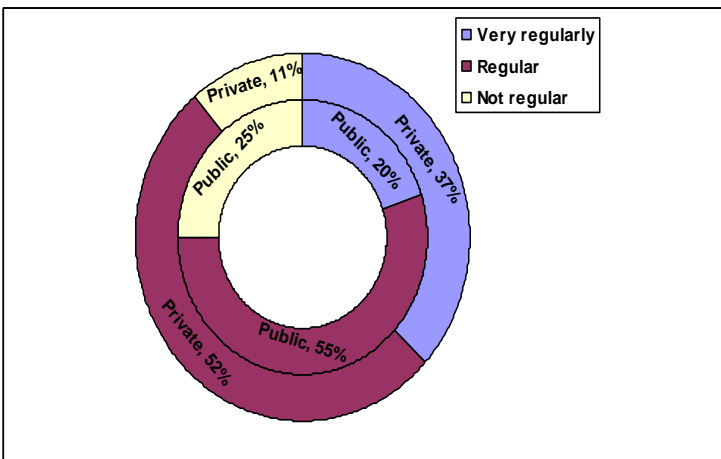


Figure 3: Distribution of petroleum products

Fig. 4 shows that 70% of petroleum products used in Nigeria was obtained through importation while only 20% were obtained from local refineries. The reason for this is not far from poor condition of local refineries while Fig. 5 shows that 71% of private depots distribute their products through road trucks because is the fastest and easiest route available in the country. Pipeline which is supposed to be the safest and best are being avoided due to constant vandalization and stealing of the products while rail network in Nigeria is not functioning. 53% of the private depots are functioning very well while only 36% were underutilization due to disagreement between them and government.

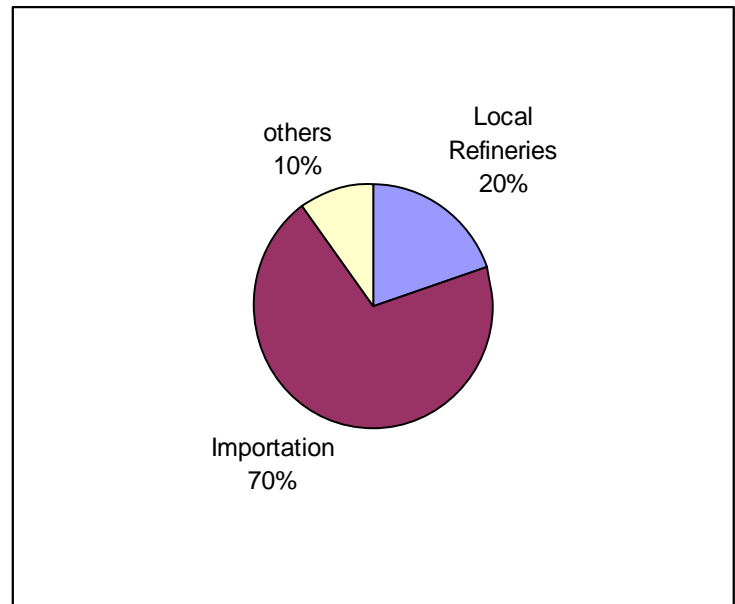


Figure 4: Sources of Petroleum Products in Nigeria

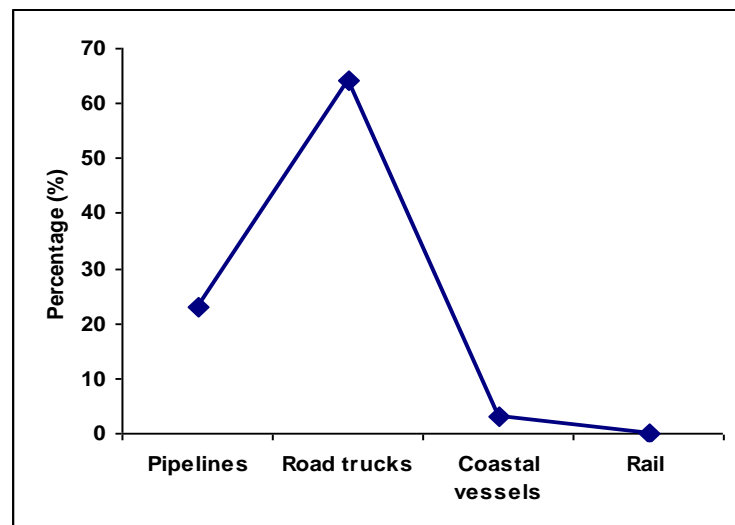


Figure 5: Mode of petroleum products distribution

Fig. 6 shows that 82% of private depot owners want complete deregulation of downstream sector while 70% of the public disagreed with the complete deregulation of downstream sector. The private owners believed that deregulation will give them the autonomy to sell the products at international market price that will ensure adequately supply and distribution of the products in every part of the country while the public believe that deregulation will not guarantee the availability of the products but will result into inflation. The public stated further that the money accrued from partial deregulation has not been used for the development of the nation but instead, it has become the national cake for our leaders. They therefore advised government to put all the four government owned refineries functioning before commencing complete deregulation of downstream sector. Both of the respondents agreed that the country needs additional effective private depots that will complement the effort of existing ones.

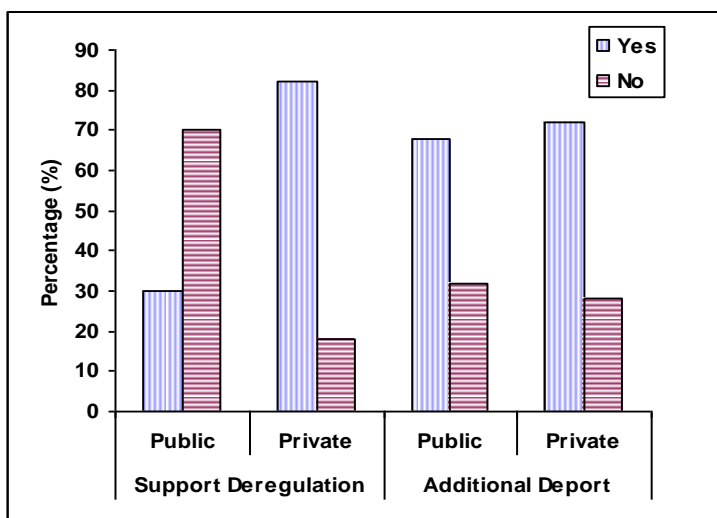


Figure 6: Respondents opinions about deregulation and additional depots

Fig. 7 identified that corruption is the main causes of scarcity of petroleum products in Nigeria. The respondents argued that it was corruption aggravated by poor performance of local refineries, vandalization of petroleum infrastructures and ineffectiveness of government policies. They all agreed that the availability of petroleum products is only hanged on the readiness of the concern authority in the petroleum sectors to eschew corruption. Despite of this, the respondents still rated the general performance of the existing depots above average as shown in Fig. 8.

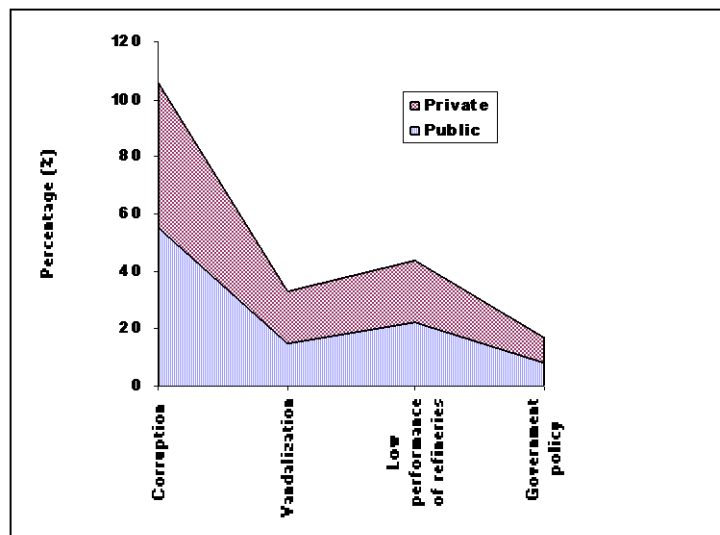


Figure 7: Causes of petroleum products scarcity in Nigeria.

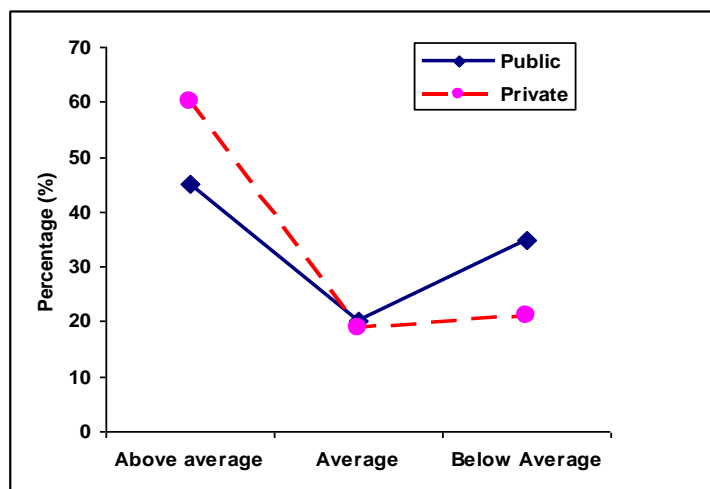


Figure 8: Rating of private depot performance

Fig. 9 shows the various challenges facing private refineries and depots in Nigeria with the insecurity rated highest. This is because the private investors fear of being kidnapped by militants or killed by Boko Haram. As a result of this, the involvement of private investors most especially the foreigners in building refineries and depots are being dashed by incessant insecurity in the country. Also the involvement of government in regulation of the price of petroleum products creates fear in the mind of the private investors. They fear of not being able to recover their investment. As a result of this, they show little interest in putting their money on building of refineries and depots. Instability of government policy and lack of direct access to crude oil also discourage investors to build refineries and depots in Nigeria.



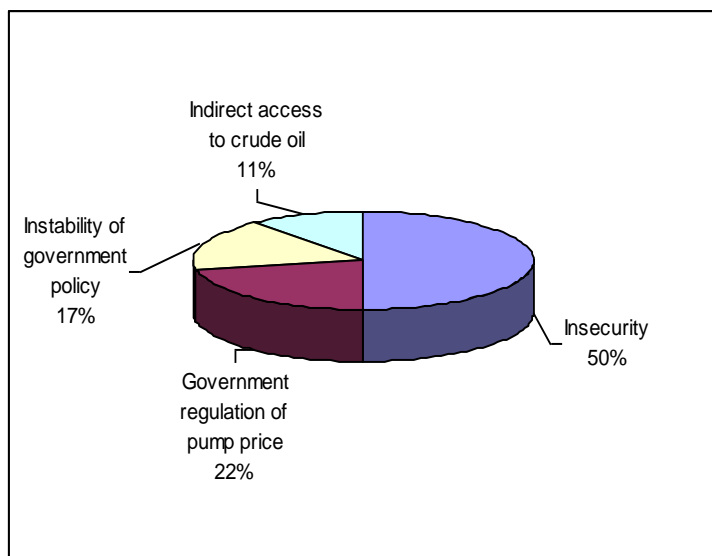


Figure 8: Challenges of Private Depots in Nigeria

## 6. CONCLUSION AND RECOMMENDATION

It was observed that distribution of petroleum products have been improved when compared with the past due to the involvement of private investors. This has reduced the scarcity of petroleum products but not as being expected by Nigerian. The over dependant of government in importation of petroleum products has led to neglect of local refineries which aggravated to constant scarcity of petroleum products. As a result of this, Nigerian has out rightly rejected total deregulation of downstream sector and accused government for not using the money generated from the partial deregulation for the betterment of Nigerian. Corruption has been identified as major causes of petroleum products scarcity which has aggravated to other menaces. Nigerian agreed that the availability of petroleum products is only hanged on the readiness of the concern authority in the petroleum sectors to eschew corruption. Insecurity, government regulation of petroleum product price and instability of government policies are the identified major challenges facing the private refineries and depots in Nigeria. Despite of all these odds and cons, Nigerian still appreciate the involvement of private refineries and depots in supply and distribution of petroleum products. They therefore recommended that government should establishments more private refineries and depots to enhance steady supply and distribution of petroleum products to the teaming population of Nigeria. They also urged government to look into private depot owners challenges and ensure that their own local refineries are functioning in order to reduce cost of importation of petroleum

products which led to rise in price of petroleum products in Nigeria.

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