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## SPATIAL DISTRIBUTION OF PETROLEUM OUTLETS IN KANO METROPOLIS, NIGERIA

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### ARTICLE INFO

### ABSTRACT

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*Distribution, Pattern, Petroleum outlet, Kano Metropolis*

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The paper identifies the location, pattern and distribution of petroleum outlets in Kano Metropolis. The list of petroleum outlets was obtained from the department of petroleum resources (DPR) Kano Office. A street map of Kano Metropolis was obtained from Kano State Ministry of Land and Physical Planning. Global Positioning System (GPS) Garmin 76X was used to capture the coordinates of the petroleum outlets. ArcGIS 10 was used to produce the distribution map and to determine the distribution pattern using nearest neighbour analysis. The findings revealed that there were 214 petroleum outlet located along the 43 roads in the study area, of which 69% are owned by independent marketers, 26% owned by Major Marketers and 5% owned by the NNPC. There is significant correlation between the number of petroleum outlets and the road hierarchy. While Zaria, Maidugure and Katsina Roads have the highest number of petroleum outlet, Short roads like Sabo Bakin Zuwo and Zungero Roads have the highest density of petroleum outlets. Although the petroleum aligned in linear form, the overall pattern of the distributions of petroleum outlets is clustered and there is significant difference between the pattern observed and expected (random) pattern at both 95 and 99% level of significance. The major factors governing the location of petroleum outlets are the traffic flow, exit site from the city and closeness to motor park. There is no spatial database for petroleum outlets that can enable one access the site hence this study could help the customers locate the petroleum outlet at ease.

### INTRODUCTION

Filling Station, petrol station, gas station or petroleum outlet refers to any land, or building used for the sale or dispensing of petrol and petroleum related products. The term is applied to this land whether the petroleum products is the only sold or is combine with other products. It is also applied where the sell is legal or illegal (Mohammed et al., 2014). In Nigeria, most petrol outlets sell petrol or diesel, some carry specialty fuels such as liquefied petroleum gas (LPG), natural gas, hydrogen, biodiesel, kerosene, or butane

while the rest add shops to their primary business (Ayodele, 2011).

As noted by Mohammed et al. (2014) the petroleum industry in Nigeria has been categorized into the upstream and the downstream. Exploration, production and delivery of crude oil or gas to the terminals constitute the upstream section. While the downstream encompasses loading, transportation, supply, refining distribution and marketing (Asada, nd; and Mohammed, Musa and Jeb, 2014).

The history of petrol stations in Nigeria dated back to 1907 when the Socony Vacuum brought the first cargo of sunflower kerosene to the country and since then upto the Nigeria independence in 1960, oil companies had been in full control of arrangement for supplying petroleum products (Agbola, 1979 and Udoh, 2013). After the independence construction of more roads, school, and factories sky rocketed leading to the demand of all grades of petroleum products (Agbola, 1979) and this led to proliferation of petroleum outlets throughout the country (Mohammed, 2015). According to Ambituuni, Amezaga and Emeseh, (2014) Nigeria has over 26,000 retail stations, owned by three operators that dominate the industries: the major marketers, the independent marketers and the NNPC. Six major marketers controls 25.47% share of the fuels retail market; over 3800 Independent Marketers control 51% of the fuels retail market; while the NNPC controls only 23.43% of the retail market.

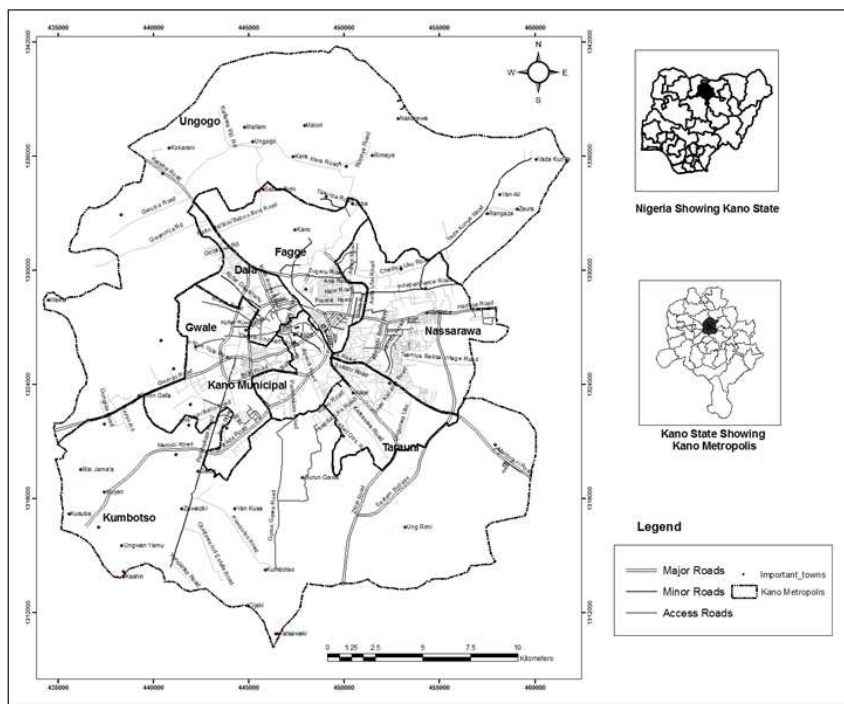
Studying petroleum outlet distribution cannot be overemphasize, as a result a lot studies were conducted. These studies are especially getting more momentum in the recent years due to availability of free and low cost GIS applications (Olusankanmi, 2017). Some of the GIS-based studies of petroleum outlet distribution in Nigeria include that of Sule, Shebe, Bichi and Atiyon, (2006), Ayodele (2011) and Olusankami (2017). Also studies were conducted on petroleum outlet site selection (Adsavakulchai and Huntula, 2010), evaluated the extent to which petrol stations affect their surrounding (Morales Terrés *et al*, 2010) and related with other land use (Ioj and Tudor, 2011; Blamah, Vivan., Tagwi and Ezemokwe, 2012) and for evaluation the location of filling stations with planning standards (Oetomo and Sesulihatien, 2012; and Mohammed *et al*, 2015). The study area, Kano metropolis is the second largest city in Nigeria (Isa *et al.*, 2016) and has high population density and vehicular movement (KUTPO, 2010), as result there is high proliferation petroleum outlet to satisfy the increasing demand of petroleum products (Mohammed, 2015). Hence there is need for

study on petroleum outlet distribution and for creating database that will help customers to locate the outlets. More so knowing the pattern of the distribution pattern and factors governing the distribution will help in policy formulation. Therefore, this study aims at identifying the spatial distribution of petroleum outlet in Kano Metropolitan.

#### Study Area

The study area, Kano metropolis lies between latitude 11° 50' to 12° 07' north of the Equator and longitude 8° 22' to 8° 47' east of prime meridian. The climate of the area is Tropical wet and dry climate (Mohammed, Abdulhamid, Badamasi and Ahmed, 2015), coded Aw by the Koppen's Climatic Classification System (Olofin, 1987). Kano city is one of the ancient Hausa settlements founded in 9<sup>th</sup> Century and around Dala Hill (Olofin 1987, Dankani 2013). Barau (2006) argued that Kano city became the centre of commerce of the *Bilad* (state of) *sudans* since the reign of Sarkin Kano Rumfa in 15<sup>th</sup> century. Dankani (2013) is of the view that the spatial planning and development of the area started with the building of the first city wall between 1095 and 1134 that stretched east of the Kurmi market near the Jakara stream. After independence, Kano witnessed an unprecedented urbanization and rapid population growth due to socio-economic transformation in the state. Kano metropolis made up of 60 km<sup>2</sup> declared urban area of which 40 km<sup>2</sup> is built-up (Dankani, 2013). Presently the metropolis constitutes eight local governments with a total population of 2.8 million in 2006 and 4 million in 2016 (Hassan, 2016).

Kano metropolis is major commercial hub and the largest industrial city in northern Nigeria. In addition to its various craft industry, the city houses hundreds of manufacturing industries located in the five industrial areas of Bompai, Challawa, Dakata Gunduwawa and Sharada (Liman and Adamu, 2003; and Liman, 2015). The city also has over twelve commercial centres (major markets) and various formal and informal residential areas (Liman, 2015).



Source: KUTPO (2010) and Quicbird satellite image (2011)

**Figure 1: Kano Metropolis**

**MATERIAL AND METHODS**

Data for this research were obtained using both primary and secondary sources. A street map of Kano Metropolis was obtained from Kano State Ministry of Land and physical planning. This map was georeferenced, digitized and updated using Quickbird image of 2011. The lists of filling stations were obtained from the Department of Petroleum Resources (DPR) Kano office. Global Positioning System (GPS) Garmin 76X was used to obtain and record the coordinates(latitude and longitude) of the petrol filing stations. The survey was conducted in 2014. The list of filling stations, including their names, addresses and locations (latitude and longitude) were prepared in Microsoft Excel application. The data was saved in dbf format and then import to Arcmap environment of ArcGIS 10 for the analysis. The field data, street data and metropolitan shape files were merged together for the analysis. The length of each road in kilometer was determined after creating field and by the use of calculated geometry function in Arcmap.The road were categorized into major, minor and access hierarchy and value of 3, 2 and 1 were assigned to them. Correlation analysis was used to

measure association between number of petrol filling stations and road hierarchy. Maps showing the spatial distribution of filling stations were drawn in the Arcmap environment. The pattern of the distribution was determined using nearest neighbourhood analysis. Data were presented in forms of maps, charts and tables.

Unstructured interview was conducted with the officials of Independent Petroleum Marketers Association of Nigeria (IPMAN), Kano chapter at their head office in Maiduguri Road and with Director Planning Kano Urban Planning Development Agency (KNUPDA) to find out first-hand information about filling station operation and factors consider in locating of petrol filling station in the area.

**RESULTS AND DISCUSSION**

There exist two hundred and fourteen (214) petroleum outlet at the time of study located along the forty four (43) roads in the area (Table 1). However the filling stations are not equally distributed between the roads as can be observed from the table, Zaria Road has the highest number of stations followed by Maiduguri and Katsina Road.

These three roads account for more than one-third of the filling stations in the area. These three roads are all major, longest and linked Kano with major cities of Nigeria. Also Gwarzo Road, Eastern Bye-pass and Hadejia Road have significant number of filling stations as can be observed from the table. On the other hand short and access roads have least number of filling stations. Of the total filling stations, 78%, 13% and 9% are located along major, minor and access roads respectively. This finding corroborate that of Baichie and Wallimsi (2000) which reported that filling stations are not built in town centres but rather on major roads.

Another feature of the distribution of petrol filling station is that they tend to be dominant on the exit side of the town. For example out of twenty-eight filling stations along the Zaria Road 65% were located on exit side. Katsina Road and Maiduguri Road have 64% and 52% of their petroleum stations respectively located on exit side from Kano. This is attributed to the fact most drivers fuel their vehicle when moving out of the city.

The density of petrol filling station per road length was calculated and the results revealed that there is wide variation in the density between roads. The study discovered that although Zaria, Maiduguri and Katsina Roads have the highest number of filling stations, minor roads like Sabo-Bakin Zuwo,

Zungero and IBB Way topped in the case of density per kilometers (Table 2). Indeed the density of petrol filling stations per kilometer in roads like Sabo-Bakin Zuwo, Zungero, IBB, Bello, Dambatta/Daura among others exceed the minimum of Kano Urban Planning Development Agency, KNUPDA (2007) that says there must be at least 3 station in every two kilometer. The lowest densities of petrol filling stations per road were found at Kumbotso Secretariat Road, Murtala Muhammad Way and Abdullahi Bayero Way having the density of 0.14, 0.19 and 0.22 respectively (Table 2).

The number of petrol filling stations in a road was correlated with road hierarchy using Spearman's rank correlation analysis. The result of the analysis revealed gave a positive correlation indicating that as the higher hierarchy of a road the more the number of petroleum outlets. The correlation result indicated a significant association between road hierarch and the number of petrol outlet at 0.05 and 0.01 alpha levels with  $p=0.001$ . In other words the higher rank of the road the more the number of filling stations located along it. The findings of the study also shows that majority of the station in Kano Metropolis are owned by independent marketers followed by major marketers and then NNPC (figure 2).

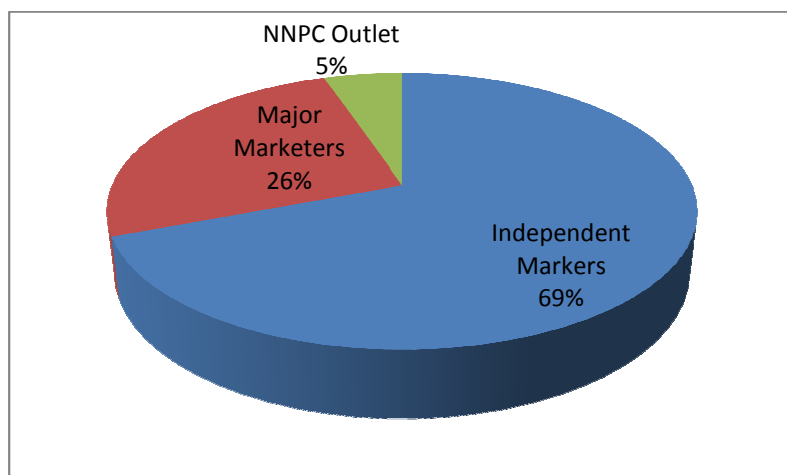


Figure 2: Filling Station Ownership in Kano Metropolis

**Table 1: Distribution of Filling Stations by Road**

S/N	Road	Type	Length of Road (Km)	Stations		Density (per Km)
				Number	%	
1	Abdullahi Bayero Way	Major	4.52	1	0.5	0.22
2	Bompai Road	Minor	2.66	1	0.5	1.5
3	Enugu Road	Access	0.9	1	0.5	3.33
4	Ibb Way	Minor	0.85	1	0.5	1.18
5	Jakara Qtrs	Minor	6.87	1	0.5	0.73
6	Kofar Mazugal Road	Major	2.67	1	0.5	1.12
7	Kofar Wambai	Access	0.91	1	0.5	2.2
8	Kumbotso Secreteriate Road	Access	2.14	1	0.5	1.4
9	Lagos Street	Access	0.77	1	0.5	3.91
10	Lawan Danbazu Link	Access	13.22	1	0.5	1.06
11	Middle/Court Road	Access	0.77	1	0.5	1.29
12	New Road	Access	9.18	1	0.5	1.85
13	Old Katsina Road	Minor	15.79	1	0.5	1.52
14	Sabo Bakin Zuwo Road	Access	0.26	1	0.5	3.86
15	Tafawa Balewa Road	Minor	1.53	1	0.5	3.27
16	Tudun Yola Road	Access	5.66	1	0.5	0.53
17	Waika-Dawanau Road	Minor	1.12	1	0.5	0.89
18	Zango Road (Dakata)	Minor	14.27	1	0.5	1.75
19	Court/Middle Road	Access	1.45	2	0.9	0.69
20	Link Road	Access	-	2	0.9	-
21	Yahaya Gusau Road	Minor	0.47	2	0.9	2.14
22	Zungero Road	Minor	7.38	2	0.9	0.14
23	Bello Road	Major	1.09	3	1.4	0.91
24	Club Road	Major	0.51	3	1.4	1.95
25	Dala Hospital Road	Major	1.55	3	1.4	1.29
26	Dambatta/Daura Road	Major	8.33	3	1.4	0.84
27	Independence Road	Minor	11.17	3	1.4	2.42
28	Zoo Road	Minor	0.78	3	1.4	1.28
29	Aminu Kano Way	Major	3.37	4	1.8	1.19
30	Murtala Moh'd Way	Major	1.26	4	1.8	0.8
31	Sharada Ind. Estate	Major	2.3	4	1.8	0.43
32	Buk Road	Major	11.5	5	2.3	0.61
33	Ibrahim Taiwo Road	Minor	0.18	5	2.3	5.45
34	Kofar Ruwa Road	Access	3.81	6	2.8	2.1
35	Madobi Road	Major	6.83	7	3.2	0.59
36	Panshekara Road	Minor	1.51	7	3.2	0.66
37	Sani Abacha Way	Major	5.28	8	3.7	0.19
38	Hadejia Road	Major	2	9	4.1	0.5
39	Eastern Bypass	Major	1.8	14	6.5	1.11
40	Gwarzo Road	Major	1.33	17	7.8	0.75
41	Katsina Road	Major	14.07	25	12	1.99
42	Maidaguri Road	Major	2.51	27	12	1.19
43	Zaria Road	Major	0.34	28	13	5.93
<b>Total</b>				<b>214</b>	<b>99</b>	<b>1.57</b>

Source: Author's Field Survey (2014) and Mohammed, Musa and Jeb (2014)

The results of the filling station ownership corroborated DPR (2014) which reported that independent marketers owned most of the filling station in country between year 2008 and 2012. Equally the result agreed to some extent with the findings of Sule *et al.* (2011) in Kaduna metropolis, where he discovered that

more than 60% of the stations are owned by the independent marketers.

The number and percentage of petroleum stations owned by the six Major Petroleum marketers in the study area is presented in Table 2.

**Table 2: Major Petroleum Marketers and their Stations in Kano Metropolis**

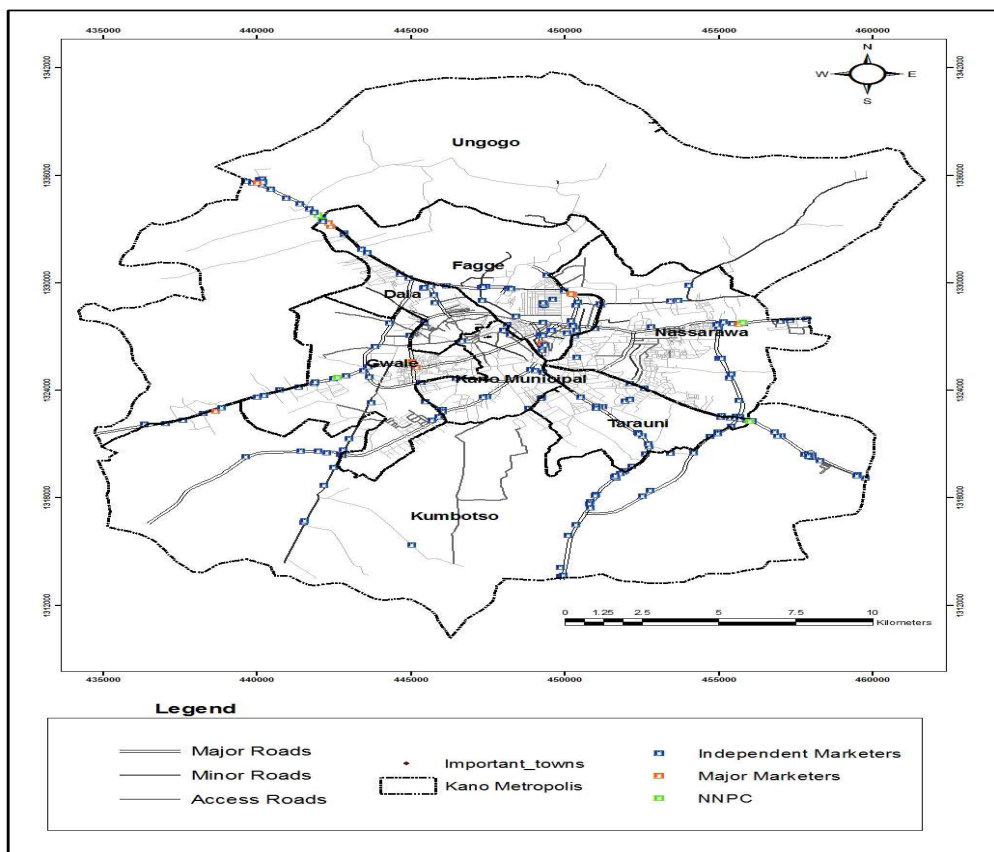
Name	No. of Station	Percent
African Petroleum Plc/ Forte Oil Company Limited	8	14.5
Con Oil Nigeria Ltd	9	16.4
M.R.S Oil & Gas Company Limited	9	16.4
Mobile Oil Nigeria Ltd	6	10.9
Oando Nigeria Plc	13	23.6
Total Finaelf Nigeria Plc	10	18.2
<b>Total</b>	<b>55</b>	<b>100</b>

Source: Field Survey (2014)

From the results in Table 2 Oando Nigeria plc has the highest number of petroleum outlets among the six major marketers (23%) while Mobile has the lowest (account for 10%) of filling stations. M.R.S and Con Oil have 16% each.

In the case independent marketers there were about 108 companies doing business in Kano Metropolis. Most of the companies (comprising of 78%) have only one petroleum outlet in the area. Only twelve percent (12%) owned multiple stations. A.A. Rano Nigeria Ltd topped the list of independent marketers with eight filling stations, followed Azman Oil and Gas Ltd with

six stations, and Criss Cross Petroleum marketing, Biram Oil and Gas marketing ltd owned four stations each. Alfatashir Nigeria ltd and ABY petroleum have three stations each. A significant number of the companies owned two stations, but the great majority have only one station. Other petrol filling stations (5%) are owned by NNPC. Almost all the NNPC stations were located on the major roads like Zaria, Maiduguri and Gwarzo roads. The list of independent marketer's petrol stations and NNPC's with their addresses are presented in appendix I and II respectively. Figure 3 shows the general distribution of the filling stations.



Source: Fieldwork, 2014

**Figure 3: Distribution of Petroleum Outlets by Type**

The results of the nearest neighbour analyses revealed that the pattern of distribution is perfectly clustered with the nearest neighbour index ( $R_n$ )  $< 1$  and  $z = -15.87$ , less than  $-1.96$ . Also there is significant difference between the distribution of filling stations in the area and random distribution at both 95 and 99 percent because the p-value is less .001. The reason for clustered distribution of the filling stations in the area is related to the fact that filling stations are located mainly on the road side and researches had shown that they mostly tend to concentrate on the highways and major roads, typical of their distribution in Kano Metropolis.

Petroleum outlet business has spatial dimensions due to the fact that it is done in a geographic space and that for a place to be used for doing the petrol business it has to fulfill certain criteria. While the DPR is responsible for clearing the site, issuing of license to operate and ensure standards are complied with, marketers consider some factors in the choice of business location.

These factors are

1. **Traffic Flow:** this is one of the most important factors considered in citing petrol station. Marketers built their stations along major roads that have heavy and continues traffic flow because they are likely to attract more customers. In other words the more the traffic flow the more the fuel demand.
2. **Exit Roads:** Filling stations were mostly built along the exit roads which linked the City (Kano) with other important cities. Such roads like Zaria, Katsina, Maiduguri, Hadejia and Gwarzo Road have the highest number of petrol stations partly because they are the exit road from Kano to all parts of Nigeria. Petroleum had been compare to food as such anyone driving out of the town has to full his tank (with fuel). Most filling stations are built on the exit side where customers would find it easier to enter the station and fuel their vehicles. The marketers assumed that vehicle driving into the town (Kano City)

had already fuel their vehicle at their

3. **Closeness to Motor Park:** Because the target of filling station business were drivers, especially public transport drivers, filling stations were built close to motor park especially those for intercity or international transport. For example four stations were operating inside Kofar Motor Park (which is not only intra urban but international Motor Park in Kano). Also about four stations were built along and very close to Unguwa Uku Motor Park in Zaria Road. In fact along motor parks such as Hedejia road motor park, Kofar Wambai Motor Park, Kabuga Motor Park and Mariri Motor Park along Maiduguri Road.
4. **Convenience:** This is another factor considered by the marketers when choosing their business location. Even though marketers are attracted by heavy traffic flow, they prepare to built-in their stations in places away from traffic jam heart were the passengers may find it convenience to park and fuel their vehicle. Hence petrol stations are built where there is enough space for customers to maneuver the vehicle when entering or exiting after fueling.
5. **Near Nodal Towns/Junctions:** petrol filling stations are also built close to nodal towns or junction because nodal towns are potential markets for the station. However this is more applicable to peri-urban stations because vehicles are coming from different side of the junction and therefore likely to stop and gate fueled.

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source/origin.

## 5. Conclusion and Recommendations

This paper analysed the location and distribution patterns of filling station in Kano Metropolis. The paper concluded that the filling stations in Kano metropolis are not evenly distributed, rather they are more concentrated along the major roads (high ways) especially Zaria road, Katsina road and Maiduguri Road. These three roads account for more than one-third of the filling station in the area. Petrol station retailers prepare highways linking the Kano City with major Nigerian cities like Zaria, Kaduna, FCT, Maiduguri, Katsina among others where the people mingle all the time. Finally the paper made the following recommendations:

1. That there is need for more studies on filling station especially issues related to site selection and optimization. Also issue like people's perception on the location of the filling station can be investigated.
2. Filling stations perform many subsidiary businesses like servicing, car wash, mini mart and so on; this can be a potential area for investigation.
3. This paper has not studied the discrepancies with regards to compliance with standards, this area need investigation because it is common to see station sitting side by side.
4. There is no spatial database for petrol filling stations that can enable one access the site (for filling station). This study could help the customers locate the filling station at ease.

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## Appendix I: Independent Marketers Filling Stations in Kano Metropolis

S/N	Company Name	Address
1	A. A. Babura	Dala Hospital Road, Kofar Ruwa, Dala Lga, Kano State
2	A. A. Dangwaida	Kofar Ruwa M/Park, Dala Lga, Kano State
3	A.A Rano Nigeria Limited	Airport Road, Nassarawa Lga Kano
4	A.A Rano Nigeria Limited	Along Bompai Road, By Central Hotel, Nassarawa, Kano
5	A.A Rano Nigeria Limited	Maiduguri Road, Farawa Village, Kumbotso Lga, Kano State
6	A.A Rano Nigeria Limited	Kano-Challawa Road, Dukawuya
7	A.A Rano Nigeria Limited	11, Tafawa Balewa Road, Nassarawa Lga, Kano State
8	A.A Rano Nigeria Limited.	Along Zaria Road Gyadi-Gyadi, Tarauni Lga, Kano State
9	A.A Rano Nigeria Limited.	Along Zaria Road
10	A.A. Rano Nigeria Limited	Along Hadejia Road, Yankaba, Nassarawa Lga, Kano State
11	A.A. Ibrahim & Co Nigeria Limited	Kano-Gwarzo Road Opp Buk New Site, Kumbotso Lga, Kano
12	A.A.S Marmro Nigeria,Limited.	Gwarzo Rd, Dorayi Babba, Gwale Lga, Kano
13	A.B Radda	Kurnar Asabe
14	A.B.Y Petroleum Nigeria Limited	Ibb Way, Opp K/Waibai Market, Fagge Kano
15	A.B.Y. Petroleum Nigeria Limited	Airport Road, Nassarawa Lga Kano
16	A.B.Y. Petroleum Nigeria Limited	Along Aminu Kano Way, Dala Lga Kano
17	A.G.Y.L Merchandise Nigeria Limited.	Along T/Yola Road, Dala, Kano State
18	A.Y Maikifi Oil & Gas Company Limited.	Katsina Road, Bachirawa, Fagge Lga, Kano
19	A.Y Maikifi Oil & Gas Company Limited.	Along Maiduguri Off Zaria Road
20	A.Y Rimi Venture Limited.	Along Katsina Road, R/Lemo, K/Jajira, Kano State
21	A.Y Suleman	Opp. Digital Bridge Institute
22	Aa Goron Dutse	Along Zaria Road
23	Absa Nigeria Limited.	Km-7, Maiduguri Road, Kumbotso Lga, Kano State
24	Ado Abdullahi Petroleum Ltd	Katsina Road Rijiyar Lemo
25	Advance Link Petroleum Limited	Abdullahi Bayero Way Opp Kano State Poly
26	Advance Link Petroleum Limited.	Zaria Road, Amaryawa Village, Kumbotso Lga, Kano
27	Agyl Merchandise Nigeria Limited	Along Ibrahim Taiwo Road, Fagge, Kano State
28	Aire Integrated Services Nigeria.	No-1, Mile 9, Katsina Road, Ungogo Lga, Kano State
29	Alaj Petroleum Company Limited.	110 Dala Hosp Road, K/Ruwa, Dala Lga, Kano State,
30	Alaj Petroleum Company Limited.	Km-2 Katsina Road, Kadawa, Ungogo Lga, Kano State
31	Alasan Ahmad & Sons Petroleum Nig. Ltd	Kano-Challawa Road, Kumbotso Lga, Kano State
32	Alasan Shuaibu	Along Zaria Road
33	Alfatashir Nigeria Llimited.	Dala Hospital Road, Kofar Ruwa, Dala Lga, Kano State
34	Alfatashir Nigeria Llimited.	Along Madobi R/About, Kumbotso Lga, Kano State
35	Alfatashir Nigeria Llimited.	Plot 2 &3, Zaria Road, Tarauni Lga, Kano State
36	Alh Nababa Abdulmumini	Airport Road, Nassarawa Lga Kano
37	Alh. Bukar Makoda & Sons Limited.	Along Eastern Bye-Pass Rd, Tunshama, Kano
38	Alh. Bukar Makoda & Sons Limited.	Along Eastern Bye-Pass Rd, Hotoron Nassarawa, Kano
39	Alh. Sale Ali Nagero & Sons Limited.	At No-C2, Na'ibawa Quarters, Zaria Road, Kumbotso, Kano
40	Alh. Usman Abdullahi Doka & Sons.	Kano-Daura, Sabon Gari Doka, Ungogo Lga, Kano
41	Alhaji Shehu Yaro Haske Nigeria Limited	Sharada Industrial Area, Phase II, Gwale Lga, Kano
42	Ali Musa Nigeria Limited.	Along Waika-Dawanau Road, Dala Lga, Kano

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| 43 | Al-Ihsan Transport Nigeria Limited.      | Sharada Industrial Area, Phase Ii, Gwale Lga, Kano<br>Along Zaria Road, Malikawa Qtrs, Kumbotso, Kano<br>State |
| 44 | Allah Na Nan Nigeria Limited.            | Katsina Road, Opp Army Barrack, Dala Lga, Kano   |
| 45 | Almoda Petroleum Limited.                | Opp Orion Cinema, K/Wambai, Municipal Lga, Kano  |
| 46 | Almoda Petroleum Limited.                | Gwarzo Road, Dorayi Babba M/Park, Gwale Lga, Kano  |
| 47 | Atlaslim Petroleum Nigeria Limited.      | Zaria Road, U/Uku, Tarauni, Kano State   |
| 48 | Ammasco International Limited.           | Along Zaria Road   |
| 49 | AMG                                      | Km 1 Madobi Road, Kumbotso Lga, Kano State   |
| 50 | Aminco International Nigeria Limited.    | 50, Kofar Mazugal Road, Dala Lga, Kano   |
| 51 | Ammasco International Limited.           | Airport Round About  |
| 52 | Aona Zuma                                | Along Daura Road, Doka Village, Ungogo, Kano State   |
| 53 | Asab Oil & Marketing Company<br>Limited  | Along Eastern Bye-Pass Road, Unguwa Uku, Tarauni,<br>Kano  |
| 54 | Asaija Oil Nigeria Limited.              | Unguwa Uku Motor Park, Tarauni Lga, Kano State   |
| 55 | Ascon                                    | Maiduguri Road, Mariri Village, Kumbotso Lga, Kano   |
| 56 | Audu Manager & Sons Nigeria Limited.     | Along Maiduguri Road   |
| 57 | Audu Manager & Sons Nigeria Limited.     | Airport Road, Adjacent To Eldrado Cinema   |
| 58 | Azman Oil & Gas Limited.                 | Along Club Road, Bompai, Nassarawa Lga, Kano   |
| 59 | Azman Oil & Gas Limited.                 | At Plot131, Ibrahim Taiwo Road, Fagge Lga, Kano State  |
| 60 | Azman Oil & Gas Limited.                 | Along Katsina Road, R/Lemo, Dala Lga, Kano   |
| 61 | Azman Oil & Gas Limited.                 | Along Maiduguri  |
| 62 | Azman Oil & Gas Limited.                 | France/Murtala Mohd Way, Fagge Lga, Kano   |
| 63 | Azman Oil & Gas Limited.                 | Gwarzo Road, Motor Park, Km-5, Gwale, Kano   |
| 64 | B.I. Petroleum Nigeria Limited.          | Kano-Challawa Road, Kumbotso Lga, Kano State   |
| 65 | B.I. Petroleum Nigeria Limited.          | Km-12, Kano-Zaria Road, Wailari, Kumbotso, Kano State  |
| 66 | BA Bello                                 | Eastern Bye-Pass Road, Kumbotso, Kano  |
| 67 | Bamzy Limited                            | Km 2, Gwarzo Road, K/Kabuga, Gwale Lga, Kano   |
| 68 | Bataiya Enterprises Nigeria Limited.     | Panshekara Rd, Madobi R/About, Kumbotso Lga, Kano  |
| 69 | Bbsy General Merchant Limited.           | Along Gwarzo Road, Kabuga, Gwale Lga, Kano   |
| 70 | Biram Oil & Gas Mktg.Company<br>Limited. | Eastern Bye-Pass Road, Kawaji, Nassarawa Lga Kano  |
| 71 | Biram Oil & Gas Mktg.Company<br>Limited. | Km-7, Hadejia Road, Nassarawa Lga, Kano State  |
| 72 | Biram Oil & Gas Mktg.Company<br>Limited. | Along Maiduguri Road   |
| 73 | Biram Oil & Gas Mktg.Company<br>Limited. | Km 10, Zaria Rd, Na'ibawa Qtrs, Tarauni Lga Kano State   |
| 74 | Bulsawa Petroleum Nigeria Limited.       | Along Eastern Bye-Pass, Hotoro, Nassarwa Lga, Kano   |
| 75 | Chula Oil Company Limited.               | 13, Court/Middle Road, Sabon Gari, Fagge Lga, Kano   |
| 76 | Criss Cross Pet. Mktg. Co. Nig. Ltd.     | 1c, Enugu Road, Sabon Gari, Fagge Lga, Kano State  |
| 77 | Criss Cross Pet. Mktg. Co. Nig. Ltd.     | 42, Ibrahim Taiwo Road, Fagge Lga, Kano State  |
| 78 | Criss Cross Pet. Mktg. Co. Nig. Ltd.     | Km 5, Zaria Road, Kumbotso Lga, Kano State   |
| 79 | Criss Cross Pet. Mktg. Co. Nig. Ltd.     | Yahaya Gusau Road, Gwale Lga, Kano   |
| 80 | Danmarna                                 | Along Kabuga-Gwarzo Road, Ungogo, Kano State   |
| 81 | Dankano Oil & Chemical Marketing Co.     | Along Zaria Road, U/Uku, Tarauni, Kano State   |
| 82 | Danlami Petr. & Trans. Nigeria Limited.  | Old Katsina Road, Federal Sect, Dala Lga, Kano State   |
| 83 | Farhan Oil Ltd                           | 2 Zaria Road, Na'ibawa, Kumbotso Lga, Kano Stae  |
| 84 | Fari Oil Limited.                        | Kumbotso Secreteriat Road, Gadama Village, Kano  |
| 85 | Gasau Petroleum Limited.                 | No-1, Coca-Cola Junction, Challawa Road, Kumbotso  |
| 86 | Gasau Petroleum Limited.                 |  |

- 87 I. B. S. Kofar Ruwa M/Park, Dala Lga, Kano State
- 88 Idris Makole & Sons Along Maiduguri Road, Mariri, Kumbotso, Kano
- 89 Imad Oil& Gas Limited. Along Maiduguri Road, Farawa, Kumbotso, Kano
- 90 Insibal Along Kano-Gwarzo Road, R/Zaki, Ungogo Lga, Kano State
- 91 Ismariya Comapany Nigeria Limited. Eastern Bye-Pass, Hotoro, Maraba, Tarauni Lga, Kano
- 92 J.Inkande Nigeria Limited. Plot 103a, Katsin Rd, Opp Nitel Training School,
- 93 Jahun Petroleum Nigeria Limited. Eastern Bye-Pass Road, Tarauni Lga, Kano
- 94 Kajtraco Nigeria Limited. 90 Maiduguri Road, Nassaraw Lga, Kano State
- 95 Kamaras Global Merchant Limited. Along Danbatta-Daura Road, Sabon G/Doka, Ungogo, Kano
- 96 Lamohd Petroleum Marketing. Independence Road, Bompai, Nassarawa, Kano
- 97 Lifur Oil & Gas Limited. Zungeru Road, Sabon Gari, Fagge Lga, Kano State
- 98 M.K Ahmad Along Maiduguri Road
- 99 M.K.K. Oil Company Limited. Katsina Road, Bachirawa, Ungogo, Kano State
- 100 Magarsiku Internationa Company. Along Maiduguri Road Hotoro Round About
- 101 Maiburgami Oil And Gas Kano-Challawa Road, Kumbotso Lga, Kano State
- 102 Majiya Petroleum Nigeria Limited. Along Eastern Bye-Pass Road, Hotoro, Nassarawa Lga, Kano
- 103 Malikawa Petr. Nigeria Limiited. Kofar Ruwa M/Park, Dala Lga, Kano State
- 104 Malikawa Petr. Nigeria Limiited. Kofar Ruwa M/Park, Dala Lga, Kano State
- 105 Mansur Yusuf Nigeria Limited. Along Madobi Road, Gezawa Village, Kumbotso, Kano
- 106 Matrix Along Zaria Road
- 107 Murna Oil And Gas Limited Katsina Road Bachirawa
- 108 Musa Aminu Petroleum Enterprises. Km 11 Maiduguri Road, Mariri, Kumbotso Lga, Kano
- 109 Musa Mailafiya Petroleum Nigeria. Katsina Road, Rijiyar Lemo, Dala Lga, Kano
- 110 Musbahu Garba Nigeria Limited. Challawa Road, Panshekara, Kumbotso Lga, Kano
- 111 Na'adade Petroleum Limited. No-3zaria Road, Nassarawa Lga, Kano State
- 112 Nabila Oil Mill Limited Hadejia Road
- 113 Nana Petr. & Allied Prod. Limited. Yahaya Gusau Sharada, Ind Est Phase I, Gwale Lga, Kano
- 114 Nazalco Enterprises Eastern Bye-Pass Road
- 115 Nicabon Petroleum Limited. Km 12, Zaria Road, Wailari Village, Kumbotso, Kano
- 116 Nipco Plc Along Gwarzo Road, Kabuga, Gwale Lga, Kano
- 117 Nipco Plc Along Maiduguri Road Hotoro Round About
- 119 Pic Oil Nigeria Limited. Km 4, Kano-Madobi Road, Kunyan-Ta-Inna, Kano
- 120 Premier Oil & Gas Company Limited. Zoo Road, Tarauni Lga, Kano State
- 121 Pure Oil & Gas Limited. Buk Road, Kofar Kabuga, Gwale Lga, Kano
- 122 Rahamaniyya Oil & Gas Limited. Km-2, Zaria Road, U/Uku, Tarauni Lga, Kano
- 123 Rimi Holdings Nigeria Limited. Km-5, Hadejia Road, Nassarawa, Kano
- 124 Rimi Holdings Nigeria Limited. Along Katsina Road, Tudun Bojuwa, Fagge Lga, Kano
- 125 Rimi Holdings Nigeria Limited. Along Link Road, Unguwa Uku, Tarauni Lga, Kano State
- 126 Rimi Holdings Nigeria Limited. Along Maiduguri Road Hotoro Round About
- 127 Ruqee Petr. Co. Ltd Kano-Challawa Road, Kumbotso Lga, Kano State
- 128 S.D.Y. Engrg. & Constrc. Co. Limited. Along Independence Road, Bompai, Nassarwa Lga, Kano
- 129 S.G Petroleum Marketing Company. Kofar Ruwa M/Park, Dala Lga, Kano State
- 130 S.G Petroleum Marketing Company. Kofar Ruwa M/Park, Dala Lga, Kano State
- 131 Sadan Petroleum Limited Eastern Bye-Pass Road, Kumbotso, Kano
- 132 Sahas Company Limited Eastern Bye-Pass Road
- 133 Salisu Garba & Sons. Km-9, Hadejia Road, Nassaraw Lga, Kano State

134	Sanduff Oil & Gas Limited.	Maiduguri Road, Kumbotso Lga, Kano
135	Sani Brothers Transport Limited.	Along Buk Road, Sharada, Gwale Lga, Kano State
136	Sani Brothers Transport Limited.	Katsina Road, Bachirawa, Ungogo, Kano State
137	Sansul Integrated	Katsina Road
138	Shaheed Petroleum Ltd	Along Zungeru Road, Fagge Lga Kano
139	SID	Along Zaria Road
140	T.B.F. Nigeria Limited.	No1 Jakara Qtrs, Kano Municipal Lga, Kano Along Lawan Danbazau/Off Buk/Zaria Rd, Municipal, Kano
141	T.S.G. Oil & Gas Limited.	Kano-Gwarzo Road Opp Buk New Site, Kumbotso Lga, Kano
142	Tambari Zango Nigeria Limited	Along Link Road, Unguwa Uku, Tarauni Lga, Kano State
143	Uralo Petroleum Limited.	Along Aminu Kano Way Goron Dutse
144	Uramco	Along Aminu Kano Way Goron Dutse
145	Yar Sarki Nigeria Limited.	Along Maiduguri, Mariri, Kumbotso, Kano
146	Yasara International Oil Service Limited	Kano-Gwarzo Road Opp Buk New Site, Kumbotso Lga, Kano
147	Yasara International Service Limited	41 Ibrahim Taiwo Road, Fagge Lga, Kano Madobi Road Kunyan Tasidi Village, Kumbotso Lga, Kano
148	Zahab Nigeria Ltd	Kano

Source: DPR and Author's Fieldwork (2014)

#### Appendix II: NNPC Filling Stations in Kano Metropolis

S/N	Company Name	Detailed Location Address
1	NNPC	Plot-12, Buk Road, Gwale, Kano
2	NNPC (A.U Future Invest. Limited)	Along Kano-Gwarzo Road, R/Zaki, Kano
3	NNPC (Magarsiku INTn. Company)	Along Gwarzo Road, Kabuga, Gwale Lga, Kano
4	NNPC	Hadejia Road Opp Rimi Holdings
5	NNPC	Hadejia Road
6	NNPC (Danlami Petr. & Trans. Limited)	Katsina Road, Bachirawa, Dala, Kano
7	NNPC (HAAB Investment Limited)	Along Katsina Road, Bachirawa, Ungogo Lga, Kano
8	NNPC (Kamaras Global)	Along Katsina Road, Kurnar Asabe, Dala Lga, Kano
9	NNPC Kano Mega Station	Along Maiduguri Road, Hotoro, Nassarawa, Kano
10	NNPC	Along Maiduguri Road
11	NNPC	Gyadi-Gyadi Round About