LOCATION ANALYSIS OF FILLING STATIONS IN KANO METROPOLIS, NIGERIA

By

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DECLARATION

I hereby declare that the work in this thesis titled Location Analysis of Filling Stations in Kano Metropolis was performed by me in the Department of Geography Ahmadu Bello University, Zaria. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this work has been presented for another degree or diploma at any institution.

_____ _____

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CERTIFICATION

This dissertation titled Location Analysis of Filling Stations in Kano Metropolis meets the regulations governing the award of the degree of M.Sc. Remote Sensing and GIS in Department of Geography of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To my father Alh Uba Muhammad Dantima and my mother Hajiya Hauwa Ado Ya'u for whom owe everything I have in this life. Also to my elder brother Mal Hamza Umar Zango from whom I learnt the true meaning of a brother.

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ABSTRACT

This study analysed the location of filling stations in Kano Metropolis against the physical planning standards set by Department of Petroleum Resource (DPR) and Kano Urban Planning and Development Agency (KNUPDA).Namesand street addresses of the filling stations were obtained from the Department Petroleum Resource (DPR) Kano. Global positioning System Garmin 76X GPS was used to capture the locations of the filling stations. The Quickbird imagery, street map, and boundary map were obtained from the Kano State Ministry of Land and Physical planning and then imported to Arcmap environment of ArcGIS 10, integrated and georeferenced to the same coordinate system. The findings revealed that there are 214 filling stations 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 filling stations and the road hierarchy. While Zaria, Maiduguri and Katsina roads (all major roads) have the highest number of filling stations, the access roads like Sabo Bakin Zuwo and Zungeru roads have highest densityof filling station per km. Petroleum Motor Sprit (PMS) is major products trade by the stations, the overall pattern of the location of the filling stationsin the area is clustered, and there is significant difference between the pattern and random pattern at both 95 and 99% level of significance. The major factors governing the location of filling stations are the traffic flow, exit site from the city and closeness to motorpark. Most of the filling stations satisfied the minimum requirement of 15 metres distance from the road (96%). Equally 98% of the filling stations met the minimum distance of 100 meter from the health care facilities. However many stations had not meet the criteria of 400 meter minimum distance to other stations where located on same road side and when not separated by any road or street. The research recommends that the regulatory agencies should take appropriate which ensure that filling stations operators comply with the standards.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Maps are scales for measuring the property of location. Although maps may show objects with respect to attributes other than location, their principal purpose is to depict object in term of their location property. Location is seen as that property of objects which geographers consider central to their study and problems of understanding objects or phenomena which interest them (Lewis, 1977).

In geography the term location is used to identify a point or an area on the earth or elsewhere and this may be through the use ofabsolute or relative terms. Location is said to be relative when it is described in relation to other point or area. An absolute location uses a specific pairing of latitude and longitude in a Cartesian coordinate grid (Abler, Adam and Gould (1971).

The increase of urban population and the growth of the number of cars and other vehicle generate various kinds of demands, one of which is fuel. Harrison (1999) noted that a considerable amount of cars fuel is wasted due to the long urban paths and unnecessary trips. Increase vehicles triggered increasing demands for fuel and by extension fuel station, since engines are made to use petroleum products and filling station are the places were fuel are sold.

Filling Station, Petrol station, gas station or petroleum outlet is defined as any land, building or equipment used for the sale or dispensing of petrol or oil for motor vehicles or incidental thereto and includes the whole of the land, building or equipment whether or not the use as a petrol station is the predominant use or is only a part thereof.The American heritage dictionary of English Language (2011) defined filling station as a place where gasoline and oil are sold and facilities are available

forrepairing or maintaining automobiles.Most filling stations 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).

Petroleum is no doubt a predominant source of Nigeria's revenue and foreign exchange. It has occupied strategic importance in the Nigerian economy, accounting for as high as 78 percent of gross domestic product and up to 90 percent of the country's total annual revenue and foreign exchange earnings (National Bureau of Statistics, 2008).The petroleum industry in Nigeria is divided into two main segments, the upstream and the downstream sectors. The upstream refers to activities such as exploration, production and delivery to an export terminal of crude oil or gas. The downstream on the other hand encompasses activities like loading of crude oil at the terminal and its user especially transportation, supply trading, refining distribution and marketing of petroleum (Asada, n.d.). Activities of filling stations or petroleum outlets are part of the downstream sector.

According to Ehinomen and Adeleke (2012) the petroleum industry can be classified by type of actors or by sector. The actors in the Nigerian industry consist of both private and public organizations. The public actors 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), among others. The private segment consists of both indigenous and foreign actors. The indigenous actor consist of independent marketers which numbered about 1000 in 1979, a year after formulating the act which established them but increased to 7948 in 2010 and they are competing with the foreign or multinational marketers (referred to as major marketers) like

Mobil Oil Nigeria Plc., MRS Nigeria Plc., Total Nigeria Plc., Conoil Plc., Oando Nigeria Plc. and African Petroleum Plc.

Selecting a better site for business enterprise is at mind of every government and entrepreneurs who invests their capital to earn profit. Some of the variables considered when selecting location for utility are proximity to population centers, distance from neighboring stations, the easements of using existing utility, and the magnitudes of environmental pollution parameters **(**Alesheikh and Golestani, 2011). Other factors to take into account when making a decision about the location of business, including customers, transport, the neighborhood, finances and the longer term future (Oetomo and Sesulihatien, 2012).

Bolen (1988) stated that every location in the earth has its analyzable advantages and disadvantages. According to him the factors can be classified into two physical conditions. These are the real physical and analysis physical. Real physical is a visible condition in relation to area such as land condition, the width, and the distance from the highway. Analysis physical, on the other hand, is physical condition obtained from physical analysis such as population analysis, neighborhood factor, and competitor analysis. Both factors are important while locating business; this is because while the physical condition can affect the nature and type of business to be conducted, analysis physical can affect the business performance. For example, if the distance between one station and the other is too close, then it will lead to decreased turnover on each station (Oetomo and Sesulihatien, 2012).

This work focused on the location analysis of filling stations in Kano Metropolis, the second largest city in Nigeria and the commercial hub of northern part of the country. The study is triggered by the fact that a lot of filling stations in the area, and it seems there are problems as regard location and distributions of filling

stations in the city. Some of the implications of improper location of the filling station are traffic congestion, fire risk, inconviniences, and so on. In the word of Christeller (1933) in Abler, Adams and Gould (1973), there is some ordering principles unrecognized that governs the distribution of things and phenomena. Only when proper investigation is made that one can explain what is where and why, a question that geography holds since the epoch of Eratosthenes, since the beginning of geography.

1.2 Statement of the Research Problem

In all parts of the world cities are exposed to hazards such as traffic congestions, pollution, accidents, fire explosion and environmental problems. These problems are most common in developing nations like Nigeria where there is lack of coordinated planning for development and non-adherence to planning laws. These generally results to illegal conversion, leading to haphazard development and the deliberate location of land uses in unsuitable areas. As observed by Ayodele (2011), in highly urbanized areas filling station is a significant contributor to traffic problems such as traffic congestion, pollution, fire and explosion. The extent of these problems depends on the criteria or variable such as location, size and set back from road e.t.c.some hazards, such as traffic congestion, pollution and many more problems result from un-coordinated development. Apart from these hazards, cities are also confronted with other problems like accidents, explosionand fire. Studies have been done on filling stations in urban areas.

One of the common features of Kano City, which is the second largest industrial centre and largest commercial state in Nigeria, is traffic hold up, which sometimes may be attributed to the long queues in the nearby filling station especially in the period of fuel scarcity. Also filling stations result to reduction in width

of carriageway meant for the efficient movement of automobileand pedestrians; results to noice and air pollution and unpleasant odours in the neighbourhood. Filling stations are located anywhere along the city's road to the stage that one wonders whether there exist in place anyplanning standards to guide their establishment. It has been discovered in many instances when accident happened in the stations the neighborhoods are affected and these led to loss of life and properties.

Sule, Shebe, Bichi and Atiyon (2006) studied the spatial distribution of filling station in Kaduna Metropolis using ArcView GIS software. The results of the study showed that there are 193 filling stations in the area, and that indepent marketers dominate the business with 68% of the stations. Although the study aimed at inventory and showing the location of the filling stations, it did not show which stations is where or why, and did not examine the spatial pattern of the stations.

Ayodele (2011) examined the spatial distribution of filling stations in Kaduna North. The study identified the pattern and distribution problem in the area. The study found that there 22 filling stations in the area and the distribution is uneven as the stations are mostly concentrated along major roads. In addition the study looked at the set backs and locational situation of the stations and concluded that 69.5% did not conform to the standard. Though GIS was applied for mapping, it was not employed for measuring the standards conpliences. Similarly a study was carried out in Agege Local government Area of Lagos State by Abdullahi (2012). The study observed that filling stations are randomly distributed in the area. The study observed due to land shortage people build station wherever the land is available and this creates a pseudo development pattern.

Blamah, Vivan, Tagwi and Ezemokwe (2012) looked at the locational impact assessment of gasoline service stations along Abuja-Keffi road and environs in Karu,

Abuja, Nigeria. The study examine the location of petroleum filling station using Site Analysis Report (SAR) of the seventeen sampled (out fifty) station in the area, a questionnaire was also administered to solicit people's perception on the effects of the location of filling stations. The findings of the study revealed partiality and disregards of planning criteria in locating filling station, that about 82% of the stations have fallen short in meeting the standards of 450m distance in-between.

Kano is the most populated state in Nigeria (NPC, 2006), it has over 10million people out of which about 2-3million own different kind of vehicle which about 6-7million use vehicle to their work place (NIAF, 2011). The movement of this vehicle is powered by gasoline. To be able to maintain this number and movement of vehicles a number of gasoline selling points are established. Some have met the guide lines or planning while others have not. The points established for seeling gasoline and other petroleum products whether officially or unofficially are called filling stations. It was found out and as confirmed by other studies that traditional patterns are clustered, random or scatter (Ahmad, Mohammed, Mohammed and Idris, 2013). To the best knowledge of the researcher none has analysed the location pattern of filling stations in Kano Metropolis nor compare their present locations to the physical planning standards, which is the gap this study intend to address. Moreso there is lack of spatial data for the filling station in the area, and no study has been done see the extent of compliance.

From the foregoing discussion this study setout to address the following questions:

1. What is the number of filling stations in Kano Metropolis?
2. What is nature and pattern of the location of the filling stations in Kano Metropolis?

3. What are the factors governing the location of filling stations in Kano Metropolis?
4. To what extent does the distribution of filling stations in the area comply with the physical planning standards set by DPR (2007) and Kano Urban Planning Development Agency, KNUPDA (2013)?

1.4 Research Hypothesis

The study would test the following hypothesis:

H_o: there is no significant relationship between the distribution of filling station in Kano Metropolis and the physical planning standards set out by DPR (2007) and KNUPDA (2013).

1.3 Aim and Objectives

The aim of this study is to analyse the location of filling stations in Metropolitan Kano against the physical planning standards set by DPR and KNUPDA.

The specific objectives are to:

i. take an inventory and map out the filling stations in the area
ii. determine the location pattern(s) of the filling stations in the area
iii. examine factors influencing the location of filling stations
iv. compare location of the filling stations with the physical planning standards set by DPR (2007) and KNUPDA (2013)

1.4 Scope of the Study

This research focuses on the location analysis of filling stations in Kano Metropolis, which consist of eight local governments (Dala, Fagge, Gwale, Kano

Municipal, Kumbotso, Nasarawa, Tarauni and Ungogo). Location, distributions and patterns of the filling stations were determined by the study; and products sold by the filling stations have been examined. In addition the ownership of the filling stations was also identified by the study.The study also examined the factors influencing the location of filling stations in the area. Also the distance of the stations from the road, hospitals, and distance between station and its neighbors had been examined and compare with the standards of DPR and KNUPDA. The data were collected during the month of May 2014, thus the analysis were restricted to the stations existing at the time of study. However not all the physical planning standards were examine due to resource and other constraints.

1.5 Justification for the Study

Petroleum has found a central place among the energy resource. There is little or no exaggeration when one suggests that the name petroleum has become synonymous with Nigerian economy, but its supply and distribution has always been an acid test for successive government in the country. Due to urbanization, increase in population and vehicles for carrying goods and services there is general increase in petroleum demand. Filling stations are built to meet these demands.

The report submitted by the Petroleum Revenue Special Task Force (PRSTF) in 2012 outlined lack of adequate data record keeping, over reliance on manual method and inadequate data and IT infrastructure among industry players are the shortcomings of Nigeria's key agencies under the Ministry of Petroleum Resources/ Department of Petroleum Resources that are vested with the mandate to produce Oil and Gas licence, keep and update records, supervise petroleum industry operations and ensure payment of rent and royalties. As reported by Ehinomen and Adeleke (2012), Eromosele (1997) observed that after almost half a century of oil exploration

in Nigeria, the oil industry is earning a mature status in comparison to other industries in the country such that significant progress has been made in terms of oil exploration and sale of crude oil abroad. Unfortunately, the domestic management of petroleum resources is fraught with a number of problems. There are occasional product shortages, inefficient product distribution and contending pump price of petrol.

Kano Metropolis is the second commercial and most populous city in Nigeria and the largest city North Niger. The city has high vehicular movement and many filling stations and that one may wonder whether planning standards are considered when siting such station. In some instance traffic hold-on and accidents are associated with the filling station location.Hence the need to investigate the location of the filling station against the planning standard set by the regulation agencies.

This study may therefore play a role in creating database of the filling stations, identifying pattern and proposing some solution to problem associated with location problems such as long queues and reducing the damages that may result from poor locations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review was break into sections, that included the location analysis in geography; filling stations; physical planning; and GIS and spatial analysis. Each of the section was further subdivided into subheadings and review was done under subheadings.

2.2 Conceptual Framework

2.2.1 Location Analysis in Geography

Location analysis has been in practice long before now, for centuries before, people may have wondered in which cave to live, where to build houses, villages, churches, and other facilities and they solved these problems using some sort of heuristic methods.However location science formally begins with Pierre de Fermat (1601–1665), who used to tease his contemporary mathematicians with tricky problems (Eisalt and Marianov, 2012). Among the pioneers in location analysis are Evangelisca Torricelli (1608-1647) and Battista Cavallieri (1526-1597) whose studies on basic Euclidean spatial median problem in early seventieth century, however Weber's name struc0k most in the field of location sciencewith formulation of the model in his book's appendix written by Pick (Eisalt and Marianov, 2012; Şen, Önden, Gökgöza and Şen, 2013).

The 1930s saw contributions by Christaller, who founded central place theory and Weiszfeld (1916-2003) who developed his famed algorithm that solved Weber problems with an arbitrary number of customers. Later important contributions included those by Lösch (1906-1945) and the regional scientists Isard (1956) and Alonso (1964). The birth of modern quantitative location theory occurred in the mid-

1960s, when Hakimi wrote his path-breaking analysis of a location model on networks, which, in today's parlance, is a *p*-median problem (Eisalt and Marianov, 2012).

2.2.2 History of Filling stations

Filling stations are roadside facilities specially design to sell gasoline and other products that automobiles use. In addition many also offer other minor repair services such as motor tuning and tire alignment (Jackle, 1978).

Energy adequacy is universally recognized as a crucial parameter for the sustainable development of a nation. The constantincrease in oil and gas demand requires the exploration, developmentand distribution of new energy sources (Tavana *el al*., 2012).Ambituuni, Amezaga and Emeseh (2014) argued that petroleum consumption has been on the increase in Nigeria since the early 1980s. This upward trend is evidenced in the energy consumption data of 2006, 2007 and 2011 where petroleum products represents 53%, 67.3%, and 68.5% respectively of the total energy consumed in the country (Energy Information Administration, 2012).

Since principal function of the filling station is to supply the need for the automobile and truck owner, its history is related to that of the automobile. While the first passenger cars were sold in 1895, filling station begin operation in 1905 (Beckman, 1957). However Beckman maintained that then specialized outlet for selling gasoline and lubricant were unknown. Rather motorist then purchase their product from number of kind retailing stores and service establishments that sell petroleum product together with other business activities.James 1953 argues that the first fuel dispensing stores with underground tank appeared in 1910 and even then most pumps were adjacent to other stores. These specialized stores specialized in selling motor fuel and lubricant and form large portion of their revenues, and often

have physical space for motorist to derive in and receive service off the street. Beckman (1957) and Pees (2004) noted that the first derive in station was opened in Chicago by Standard Oil Company of Indiana in 1913.

According to Pees (2004) Standard of Indiana was the first specialized filling station. They argue that the company (Standard of Indiana) opened a pump station for automobiles in Minneapolis in 1911, however then the gasoline was pumped into cans and then poured into the vehicle's tank. Imperial Oil had a service station in Vancouver, Canada, in 1908. Standard also opened a curbside station having a rotary pump in Rockford, Illinois, in 1914.

2.2.3 Filling Stations in Nigeria

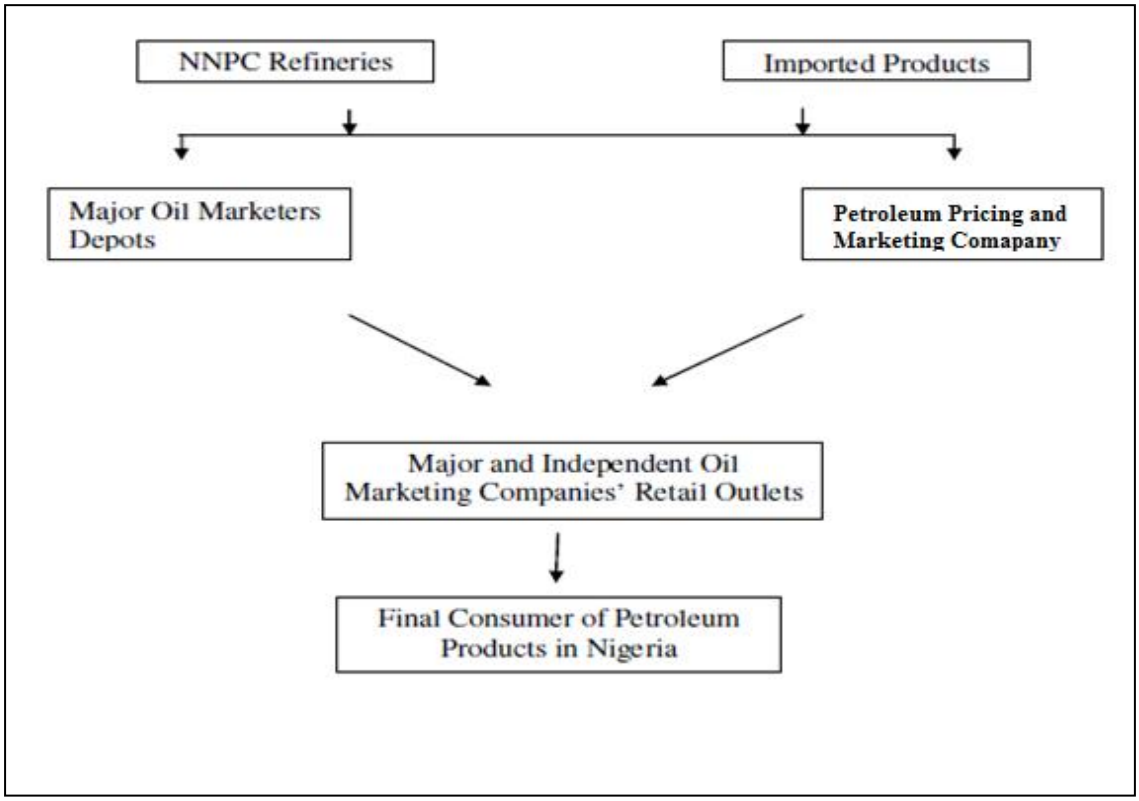
The history of filling station in Nigeria dated back to 1907 when the Socony Vacuum first brought the first cargo of sunflower kerosene to this country and since then upto the Nigeria independence in 1960, Oil companies had been in full control of arrangement for supplying petroleum products (Udoh, 2013).

Even though the filling stations operations began prior to independence, the business is nothing to write home about till 1960s. This is because till close to independence the mileage of motor able roads hardly increased and the vehicles plying these roads were quite few. However with the independence (1960), Construction of more roads, schools, and factories started and consumption of Petroleum Products sky rocketed. Demands for all grades of Petroleum Products started to overtake the supply and this became more manifested after the civil war (Udoh, 2013), hence leading to opening of many filling stations across the country. The filling stations operators are often reffered to as oil marketing companies.

According to NNPC bulletin (2006) the responsibilities of the oil marketing companies are:

1. To contract for petroleum products supply from refineries in line with prescribedregulations.
2. To import, supply and market petroleum products throughout the country.
3. To contract for capacities from logistics companies (jetties pipelines, depots) in line with regulations and pay prescribed tariffs
4. Ensure that marine tanker parcel size, quantity of products and conditions of vessel meet prescribed regulations
5. Ensure that onward delivery of petroleum products from regional depots to retail stations using road tankers comply with stipulated regulations.
6. Ensuring holding of strategic petroleum stocks in regional depots, refinery tank forms or company owned depots in line with regulations.

Petroleum distribution has been described as a complex task that involves transporting and storing across the country (Ehinomen and Adeleke, 2012). This process is done by a variety of players including the major marketers that transport products from the refineries to their branded station, independent distributors that transport products from the depots to the service stations. Indeed the process has been explained diagrammatically below.



Source: Ehinomen and Adeleke (2012) Adapted from NNPC/PPMC Bulletin (2010)

Nigeria has over 26,000 petroleum retail stations often called filling stations (PPPRA, 2006), owned by three operators that dominate the industries. These are the major marketers, the independent marketers and the NNPC. Six major marketers (Oando Nig. Plc, Mobil Oil Nig. Plc, Total Nig. Plc, Forte Oil Nig. Plc, MRS Nig. Plc, and Conoil Plc) 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 (Ambituuni, Amezaga and Emeseh, 2014).

Total marketing company began operation in June 1956 (with its first outlet in Yaba, Lagos), to market petroleum products in Nigeria. It became Total Nigeria Limited in 1967, and Total Nigeria Plc in 1978 after it went public in accordance with the Nigeria Enterprises Promotion Decree of 1977. The company has over 500 retail outlets.

Oando started business as a petroleum marketing company in Nigeria under the name Esso West Africaincorporated, subsidiary of Exxon Corporation of USA. In 1976the company was re-branded Unipetrol Nigeria Limited, having bought by the state. In 1991, Unipetrol became a public Limited Company. In 1999, Unipetrol acquired 40% in the equity of Gaslink Nigeria to facilitate Gas sale and purchase agreement with Nigeria Gas Company. By 2002, Unipetrol acquired 60% in the equity of Agip Nigeria Plc from Agip Petrol International and in 2003; Unipertrol Nigeria, through a merger deal with Agip Nigeria Plc and was rebranded Oando.

African Petroleum plc (Forte Oil since 2010), started business in Nigeria in 1954 with the name British Petroleum, changed to African Petroleum Nigeria Limited in 1979. Conoil began oil marketing operations in 1927 under the name Shell Company of Nigeria and later Shell Company of West Africa. It was incorporated as a private Limited liability Company in 1960 and registered with the Nigerian Stock Exchange (NSE) as a Public Liability Company in 1989. In April 1975, the federal Government of Nigeria acquired 60 percent shares of the company through the Nigerian National Petroleum Corporation and the company became known as National Oil and Chemical Marketing Company. In the year 2000, the Federal Government through the Bureau of Public Enterprises (BPE), bought 40% of the company held by Shell company of Nigeria (UK) Limited. Following the privatization of the company, Conpetro Limited acquired 60 percent issued shares while the Nigerian public held the remaining 25.6 percent.

Texaco, which gave birth to MRS Oil Nigeria plc, started marketing of petroleum products in Nigeria in 1913 under the Texaco brand name of CFAO a French multinational retail company. In 1964, MRS began direct marketing of petroleum products through service stations under the name Texaco Africa Limited.

And by 1978, 40% of Texaco Nigeria Limited was sold to Nigerian individuals and organisations by Texaco Petroleum Company following the indigenizationdecree. In 2001, Chevron Corporation and former Texaco Nigeria plc merged and in 2006, the company's name changed from Texaco Nigeria plc to Chevron Oil Nigeria plc; and in 2009, Chevron Oil Nigeria plc changed to MRS Oil Nigeria plc (Udoh, 2013).

Kupolokun (2006) observed that in the past years, the downstream sector of the petroleum products started under a market structure in which price were determined by the interplay of the forces of supply and demand. Then, the product market was dominated by the multinational oil companies until 1973 when the Government introduced uniform pricing of petroleum products in order to ensure even distribution of products nationwide. In 1975, the Petroleum Equalisation Fund (PEF) was established to deal with the problem of cost differentials arising from the transportation of petroleum products to various parts of the country, based on the uniform pricing policy. As observed by Kupolokun (2006), the introduction of the Independent marketer's scheme in 1978 as earlier mentioned broke the dominance of the multinationals and subsequent establishment of independents marketing companies

It its presentation before the Nigeria national assembly (2009), Independent Petroleum Marketers of Nigeria (IPMAN) claimed to have over ten thousand (10,000) memberships and about twelve thousand retailed outlets (filling stations) operating all over the country. In addition the presentation gave the IPMAN total investment in filling station and haulage business in Nigeria at over N1,098 trillion apart from the employment generations.

Eventhough petroleum indepent marketing was seen as a breakthrough in the process of retail and distribution of petroleum product, it not pre from any limitations.

Shikenan.com (2011) outlined the advantages and disadvantage of both independent and major marketing of Petroleum Company. The advantage of independent marketing is that one should get to choose any name for your filling station and brand it the way you like; not have worry about anything else in particular except the authorities; to choose a representative and an assistant representative to represent his company at the NNPC's Petroleum Products Marketing Company (PPMC) Depot nearest him; can get high profit as per as nine naira profit per liter on each petrol product lift. The disadvantage of Independent marketing is one need lift a full tank any time you need to load upwhich most marketers cannot afford; to own tanker for transporting the product; a depot Representative that has to physically take his bank draft which is issued in the name of NNPC to the Depot and has to be physically present when are picking the product up; to advertise his own brand; have insurance on these tankers, and this makes them incur heavy debts when accident happens; be a member of Independent Petroleum Marketers Association of Nigeria or IPMAN, you will have to pay a sum of 5,000 Naira each time he load petroleum product; and have to employ a company's personnel (Shikenan, 2011).

On the other hand major marketer has the advantages of which one will get to open up a filling station using the name of a major marketer; will use the brand name of an already established oil company; get to enjoy the support and the customers of his chosen marketer; will not have to worry about advertising campaign as his chosen established company will take care that; don't need to appoint a marketer as well, as the oil company already has a marketer representing them at the Depot; and Payment for petroleum products is trouble-free, as one will pay into the account of the company and they will bring the product to the station in time. The major

disadvantage however is that the profit is lower than for independent marketers (Shikenan, 2011)

In a feasibility study conducted by the one stop shop for the oil and gas industry in Nigeria in 2012, the Nigeria's demand of three petroleum products (PMS, DPK and AGO) on daily basis stood at an average of 60 million litres daily usage and has been attributed to increasing level of standard of living, more Nigerians are increasing the number of cars on the road, the need for constant power supply to aid uninterrupted production of goods and services and also for domestic use more Nigerians are increasing the demand for fuel in order to enjoy the usage of their generating sets and industrial plants. In essense this led to the establishment of a lot of petroleum products selling points, and to ensure that operators comply to standards regulators were created.

Ambituuni, Amezaga and Emeseh (2014) observed scarcity of petroleum products leading to long queues at service stations all over the country. As noted above, this has fuelled poor safety practices and high level of environmental pollution. Doublegist (2013) observed that despite the efforts aimed at efficient distribution of petroleum products in Nigeria, there are problem of inadequate and uneven distribution that threaten the markets.

2.2.4 Filling Station Regulation in Nigeria

The upstream petroleum sector involves the search for and production of crude oil and gas.It comprises such activities as; exploration, evaluation and appraisals, development, production and decommissioning (API, 1983; Charles, 1999). On the other hand, the downstream sector involves refining, product storage, transportation, distribution, and retailing. Filling station concerned with distribution and retailing of

petroleum products with or without other businesses attach to it. The location and the sitting of filling stations however need careful examination in regard to the control that requires to be exercised, the legal tools that may be required to enforce such control and the optimum conditions that should be created from the point of view of service to the general public. Filling station has been identified as one the major generator of traffic hazards, aestheticism reducing and potential fire causal agents (Ujjwal and Sokhi, 2006). It is on this basis that states and nations make laws and regulations on sitting and location of filling station so as to minimize and reduce the risk associated. In Nigeria the DPR is responsible for registering and regulating the downstream petroleum sector including the filling station business. Other agencies involve are the state ministries for town planning. Indeed one time the DPR blame the town planning ministries for foul play and lamented that Indiscriminate citing of filling stations in odd places across Nigerian cities would continue unless the town planning authorities are called to order (BusinessDay, November 2013).

2.2.5 Department of Petroleum Resources (DPR)

In the bid to strengthen its control over the industry, the Nigerian National Oil Corporation (NNOC) was established and given responsibility for both up-stream and downstream activities in the sector. The NNOC also looked after Government's participation in the activities of the oil companies. In 1977, the Ministry of Petroleum Resources (which also had regulatory functions) and operates side-by-side with the NNOC, were merged to form the Nigerian National Petroleum Corporation (NNPC). The NNPC combined the commercial functions of the defunct NNOC (that is, exploration, production, transportation, processing of oil, refining and marketing of crude oil and its refined products) with the regulatory functions formerly exercised by the Ministry of Petroleum Resources. In the Ministry of Petroleum Resources, there is

a Department of Petroleum Resources (DPR) which has four divisions: Resources Management Division, Inspections Division, Technical Control Division, and Service Division, which has three branches including Economics, Planning and Statistics. The DPR issues the certificates and regulates the activities of filling station (Proshare, 2013).

According to the DPR procedure guide for grant of approvals to construct and operate of a petrol products retail outlet (2007), before one begin petroleum retail outlet or filling station business one has to submit:

1. Three (3) copies of approved plan showing the building existing or proposed on the site and the relation to the roadways and adjoining properties.
2. A certificate signed by signed by the Chief Federal/ State Fire Officer, or by an officer authorized in that behalf, that the arrangements proposed for the prevention of fire at the site are satisfactory.
3. A certification by the Area/Town Planning Authority for the construction of a Petrol Filling Station on the proposed site.
4. A certificate signed by the divisional police Officer or a superior police officer in-charge of the police motor traffic that he is satisfied that the site and layout of the proposed filling station do not constitute an unnecessary traffic hazard.
5. Evidence that company applying is duly registered as a limited liability company by the appropriate Federal Ministry/Corporate Affairs Commission to deal in petroleum products.
6. Tax receipt and/or tax clearance certificate for the preceding three years.

According to the DPR manual before operating filling station one has to certify some physical planning standards. These standards are**:**

1. Land should be zoned for commercial/industrial use or be designated specifically for the purpose in a subdivision.
2. The parcel of land should not be less than 33 x 33 square meters or equivalent of two plots of land allow for the free flow of traffic
3. A petrol filling station should be sited 400 meters away from the next petrol station.
4. A petrol station should be sited 50 meters away in all angles of the build-up areas to create a buffer zone for the residential house-the buffer zone can be devoted to any non-residential land use.
5. That the distance from the edge of the road to the nearest pump will not be less than 15meters.
6. The total number of stations within 2 km radius of the site should not be more than four (4) including the one under construction
7. Filling station should not be located less than 100 meters from school, hospital, theaters, clinics and other public and semi-public buildings.
8. The site (for filling station) should not lie within NNPC/PPMC pipeline right of way or PHCN transmission or railroad lines (Procedure guide for grant of approvals to construct and operate of a petrol products retail outlet by DPR, 2007).

2.2.6 Kano Urban Planning Development Agency (KNUPDA)

According to Dankani (2013) Physical planning in Kano started as far back as 1095 and 1134, when the first city wall was build. He stated further affirmed that Kano has been witnessing urban planning and development control legislation based as the general legislation (Township ordinance of 1917, the Building regulations of 1940 and Town and country planning laws 1946).

In order toensure a healthy urban development and expansion Kano Urban Development Agency (KNUPDA) is established and given mandate to approved, monitors and ensure planning compliance for all land projects in the urban Kano. The KNUPDA dates back to 1962 when the Greater Kano Planning and Development Board was established to primarily ensure the orderly physical development of Kano Township. It was then renamed Metropolitan Kano Planning and Development Board in 1969. In 1976, the defunct Kano State Urban Development Board was created to plan and provide infrastructural facilities necessary for healthy and orderly physical development of all the designated urban centers in the State. Following the establishment of Federal Environmental Protection Agency (FEPA) by the Federal Government in 1989 and the subsequent directives to all State Governments to establish similar bodies that would be responsible for environmental protection and pollution control activities, Kano State decided to restructure and enlarge the function and jurisdiction of the former Urban Development Board. It was against this background that the Kano State Environmental Planning and Protection Agency (KASEPPA) was established based on Edict No.15 of 1990. KASSEPA was given duties to ensure urban planning and additional duties of Environmental Protection which included Refuse Disposal. Again, following the creation of the Ministry of Environment in 1999, the Environmental Protection and Pollution Control activities were transferred to the Ministry, returning the Agency to its former status quo of planning and provision of infrastructures in the designated Urban Centres of the State. However, the name was retained until its transformation into KNUPDA (Tsakuwa 2013; KNUPDA, 2013; and Dankani, 2013).

According to the KNUPDA home page (2013) the present functions of the agency are provision of planning scheme for the state urban centres (Master Plans

etc); providing planning permission/advice to the state ministry of land and physical planning; development control (control use of land, granting building/development permits and monitoring); provision of amenities and convenience including recreational facilities; Construction and Maintenance of roads and drainages; designing of layouts for various purposes; and Coordinating the efforts of other major providers of urban infrastructure and services, utilities, refuse Management, etc.

2.3 Literature Review

2.3.1 GIS for Location Analysis

Geographic Information System (GIS) is define as a set of tools for collecting, storing, retrieving, at will, transforming, and displaying spatial data from the real world for a particular set of purposes (Burrough, 1986). It is used to design service areas to meet specified criteria by integrating layers of information. The methods of analysis have been implemented in GIS to support the search for optimum locations for such central services as retail stores, hospitals, or fire stations.

Understanding the spatial distribution of phenomena that occur in space today constitute a great challenge to the elucidation of central questions in many areas of knowledge. Studies are becoming more and more common, due to the availability of low cost Geographic Information System (GIS) with user-friendly interfaces. To achieve that it is enough to have a database and a geographic base (like a map of the municipalities), and the GIS is capable of presenting a colored map that allows the visualization of the spatial pattern of the phenomenon (Ahmed *et al*, 2013).

Example of these studies includes Camelli (2010) on location of petrol station in Abidjan whose aim is to enable motorist find nearest station using GPS. The finding of the study indicate that GIS can allow consumer locate the station within the

Central Business District and outskirt of the Abidjan without encountering any difficulty. A similar study was conducted by Ayodele (2010) in Kaduna Metropolis that aimed at exploring the capalilty of GIS based technology for locating filling station. Emwandongo (2013) worked on the use of GIS in the management of information about services offered in petrol station in Mumbasa Road, Kenya; the project is based on the integration of GPS and GIS technology for comprehensive database linked to digital map for efficient and effective management of information.

Adsavakulchai and Huntula (2010) in Bankok analysed the optimum site selection of natural gas vehicles (NGV) station using geographic information system. Layers of information system were integrated in a GIS environment for selecting best sites. These layers were population, road networks, vehicular population and data for existing natural gas station. The result of the study revealed that there are 76 filling station in the area and the optimal district site location for NGV station in Bangkok is Nongjok distric about 50m from uturn. The study concluded that GIS plays a vital role in decision making such as gas station selection.

2.3.2 Filling Stations Distance to Public Building

Even though filling stations are very important and petroleum products were compared to food, stations have to maintain some distance from the public places. This is due to their vulnerability, bad odours and air pollution. Scientists from the University of Murcia in Spain studied the effects of contamination at petrol stations and found dangerous airborne pollutants from garages contaminated buildings as far as 100m away. The study concluded that a minimum distance of 50 metres should be maintained between petrol stations and housing, and 100 metres facilities such as hospitals, health centres, schools and old people's homes (Daily Mail reporter, 2011).

Morales *el al.,* (2010) evaluated the extent to which petrol stations affect their surroundingsin Murcia, located in the south-east of the Iberian Peninsula in Spain. The method is based on the fact that the ratio of the concentrations of aliphatic andaromatic hydrocarbon pollutants in the air of the petrol stations and their surroundings (basically determined by vapor emissions from unburned gasoline) differs from the ratio found in urban air, which is mainly influenced by traffic emissions. The study involves multipoint measuring campaigns of the air at the studied petrol station and built-up area in general and processing the data with software capable of providing isoconcentration contours. The procedure should help local authorities in terms of land management, so that a "belt" can be established around petrol stations where housing or vulnerable populations and activities such as those in schools, hospitals and community centers should be restricted.The finding revealed a very good linear correlation (R^2> 0.9) between the different pairs of pollutants in the city

2.3.3 Complience of Filling Stations to Planning Standard

Ioj and Tudor (2011) examined the temporal changes in proximity of residential land use to filling stations in Bucharest suburban, Romania. Coordinates of the stations were obtained using GPS, aerial photographs and google earth imageries were used to digitize the residential areas. Buffer zones were created in map to see the encroachments of the residential areas. The results of the study revealed that 21 gas stations are located in residential areas and 39 gas stations are located in non-residential area. There are 10 gas stations (half of the total of 21) located in residential areas. However the study limited itself mainly to buffer analysis and only one land use (residential), distance of filling stations to other conflicting landuse like public buildings, hospitals and the likes were not analyse by the study.

Ujjwal and Sokhi (2006) applied GIS for petrol station vulnerability assessment in New Delhi, India. In their study land uses within the 200m radius from each filling station were identified using high resolution Ikonos image and coordinate of the station were obtained using GPS. Stations were categorized into vulnerability classes on the bases of the use, density and population with200 meter buffers.

Nwanjo and Ojiako (2007) investigate the potential health hazards of petrol stations on attendends in Owerri, Nigeria. Attendents from twenty fillig stations were assessed in the area and another twenty that were not exposed to its vapour were used as conrol. The result show a significant increase in the activities of alkalin phosphatase, analine and aspartate aminotransferasses for those exposed to patrol vapour from 6-10 years. Also the concentrations of serum urea, creatinine and urinary protein for those exposed to petrol vapour were significant based on the study. The study concluded that these effects are directly related to the duration of the exposure. However the sudy did not look at the role of distance in determining the concentration those chemical which may give another interesting picture, since not only attended are exposed to petrol vapour, but also the stations' neighbor.

2.3.4 Gaps Filled By the Study

In Nigeria, many studies were carried out on the analysis of location of filling station in relation to physical planning standards. Examples of these studies include Blamah, et al. (2012) which looked at the locational impact of gasoline service stations along Abuja-Keffi road and environs in Karu. Even though GIS was not involved in the study, side reports submitted were used in assessing the location of the filling stations. The study found out that many station in the area did not complied with the standards set by the regulator. Abdullahi (2012) found out that most filling

stations Agege Local government Area of Lagos State did not consider standards in citing their station. The study did not apply GIS, focused mainly on the use chats and frequency tables to show the distribution of filling stations.

Ayodele through the use of GIS concluded 69.5% of the filling station in Kaduna did not conform to the planning standards; however the study did not explained the actual method employed for and which of the standards were not achieve. Although ArcGIS software was used for the analysis, the study did used the tool available for spatial pattern analysis such nearest neighbor analysis and karnel density analysis. In addition there were no attempt to identify the factors consider in sitting filling staions in the area.

This study focuse on location analysis of filing stations in Kano Metropolis using GIS tools. Comparison of location to physical planning standards set by the regulators is employed to see the extent of compliances. Studies in other Nigeria cities like Kaduna (Ayodele, 2011), part of Lagos (Abdullahi, 2012) and Karu in Abuja (Blamah, et al., 2012) already found that some filling stations did not comply with planning standards. Among the three, only Ayodele used GIS to show the spatial distribution and nothing on location pattern. Also this study would use GIS to identify the spatial pattern of the location of filling stations in Kano metropolis.

CHAPTER THREE

STUDY AREA AND METHODOLOGY

3.1 Introduction

This chapter discussed the study area and the methods used to source and analyse the data for the study. The chapter is divided into sections: these are the study area, reconnaissance survey, types and sources of data, scanning, georefetrencing and digitizing of the maps, detailed field work, data integration and data analysis.

3.2 The Study Area

3.2.1 Location

The study area, Kano metropolis lies between latitude $11^0 50'$ to $12^0 07'$ N and longitude $8^0 22'$ to $8^0 47'$ E and altitude 472 meters above sea level. The climate of the area is Tropical wet and dry climate, coded Aw by the Koppen's Climatic Classification System (Olofin, 1987). Kano Metropolis bordered by Minjibir LGA to the Northeast and Gezawa LGA to the East, Dawakin Kudu LGA to the South East and Madobi and Tofa LGAs to the South West.

According historical sources Kano citywas founded around Dala Hill in the 9^{th} century (Olofin 1987; and Dankani, 2013). Dankani is of theview that the spatial planning and development of the area started with the building of the first city wall between 1095 and 1134, which started east of the Kurmi market near the Jakara stream. After independence, Kano witnessed an unprecedented urbanisation and rapid population growth due to socio-economic transformation in the state.According to Marafa (1999) as cited in Na'aba (2002), by the time colonial masters came in early 20th century, what constitute Kano and virtually encompassed by the wall was contained within 17.5 km^2. Today metropolitan Kano (made up of the declared urban area in accordance with the Land Use and Allocation Committee) is contained within

60 km^2, while the built-up metropolitan Kano is contained within 40 km^2 (Dankani, 2013).

3.2.2 Historical Background

The Kano Metropolis is regarded as urban Kano, as the sprawling and the expansion of the city is swallowing the peripheral area vis-à-vis the surrounding lands is gradually taking over by urban structure and site acquire an urban character. Urban Kano is located at the central part of Kano closed settled zone, and therefore having the highest density, as a result of industrialization and other economic development, it has also through time become a cosmopolitan city with all the ethnic groups.

The study area includes the eight metropolitan local government of Kano State namely Dala Local Government, Fagge Local Government, Gwale Local Government, Kano Municipal Local Government, Kumbotso Local Government, Nassarawa Local Government, Ungogo Local Government, and Tarauni Local Government. The population of the Kano Metropolis based on 2006 is 2,826,307 (National Population Commission, 2006).

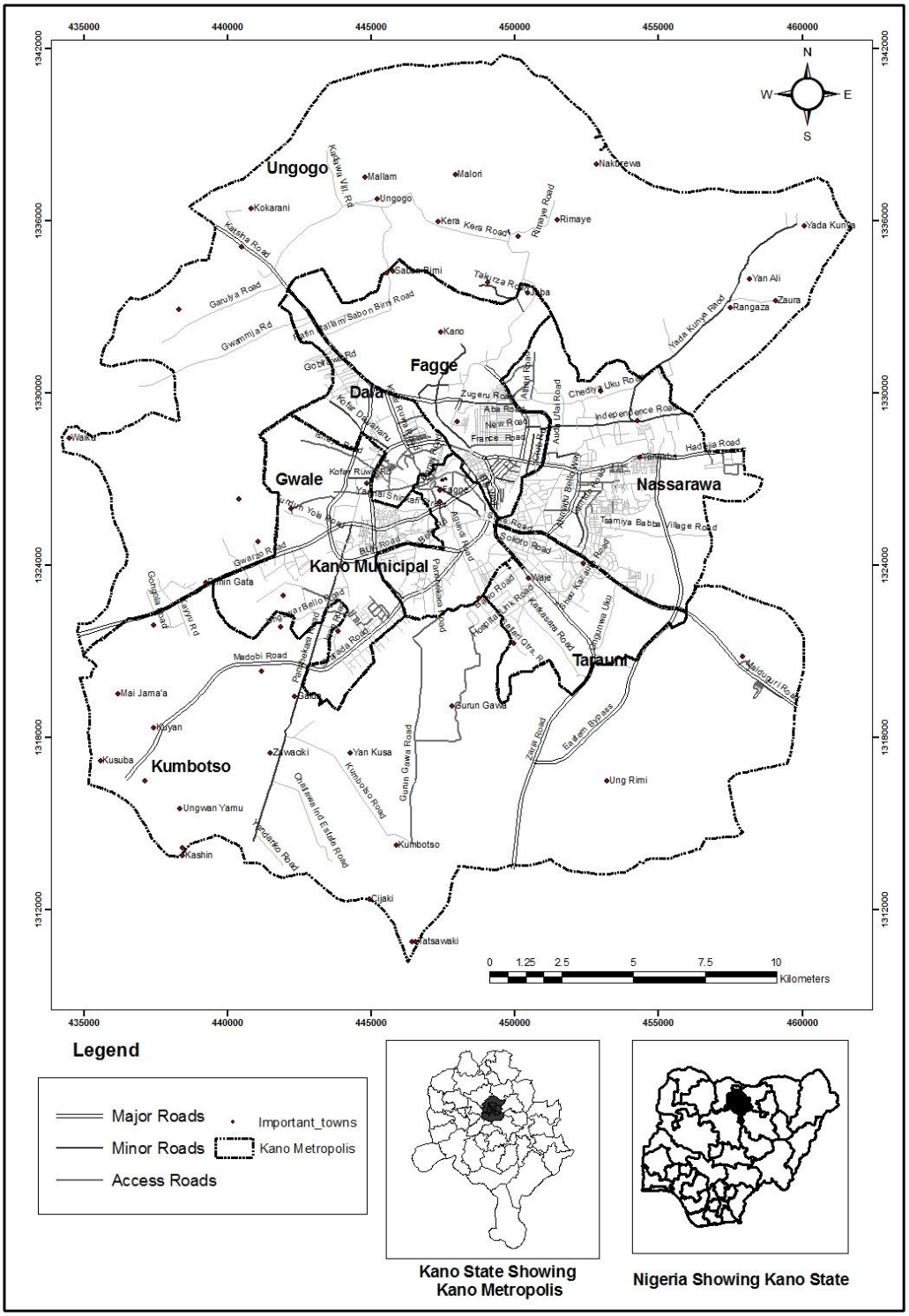


Figure 3.1: Kano Metropolis

Source: Adapted from Kano Min. of Land and Physical Planning (2011)

3.2 Methodology

3.2.1 Reconnaissance

A preliminary survey was carried out to identify and document filling stations in the area. This acquainted the researcher with the knowledge of the area and provide guide on how to source the data, types of data needed and preparation for the field work.

3.2.2 Types of Data

Types of data obtained for the study are:

1. Name of the area and street where the filling stations are located
2. Quickbird satellite imagery of 0.5m resolution and dated 24th April, 2013
3. List of the filling stations
4. Geographic location and name of the filling stations

3.2.3 Data Sources

Data for the study were obtained from both primary and secondary sources. They included:

1. Street maps of Kano State at a scale 1:2000 were sourced from Kano State Ministry of Land and Physical Planning. Quickbird imagery of 2013 wasalso sourced from Kano State ministry of Land and physical planning and integrated with street map in order to produce the update street map of the study area.
2. List of filling stationswere obtained from the Department of Petroleum Resources (DPR), a department under the Ministry of Petroleum Resources responsible for registering and regulating the filling stations. From the data filling station name, type

and area (street) of location were identified. This served as a guide for verification and collection of the coordinate data using Global Positioning System (GPS).

3. Interview was conducted with the officials of Independent Petroleum Marketers Association of Nigeria (IPMAN), Kano chapter at their head office at Maiduguri Road and with Director Planning Kano Urban Planning Development Agency (KNUPDA), to find outfirsthand information about filling station operation and factors considered in choice for locating filling station in the area.

3.2.4 Scanning, Georeferencing and Digitizing the Maps

Street map sourced was scanned, imported into ArcMap environment of ArcGIS 10.1 and then geo-referenced using map to image georeferencing method. Quickbird 2013 image of the area was used as a slave image for the georeferencing. Major land marks in the area like Silver Jubilee Round About, Katsina Road/Airport Round-about, Dawanau Junction and Aminu Kano Airport were used as reference points for the georeferencing.. The georeferenced maps were auto rectified and then given the same coordinate with image, Universal Transverse Mercator (UTM) Global Coordinate System (GCS) projection and Minna Zone 32N datum. UTM system was choosing because it is metric and has the capacity to enable the researcher calculate the length, distance and other measurement that may not be possible with geographic coordinate system. Two shape files were created in ArcCatalog environment and given same coordinate system with the maps and image. The shape files were later imported into the ArcMap environment and used to digitize the street map and land use map separately. Fields were created for name and the type of the road, and to calculate the length of the road in metre.

3.2.5 Detail Field Work

A simple checklist were drafted and used to source the detailed information on the filling station. Field visit were made to all the filling stations, and coordinate of the filling stations were obtain using GPS (Garmin 76X Model). The filling station were categorized into three (independent marketers, major marketers and NNPC stations) for comparison. In order to examine factor influencing the distribution of filling stationsinterview was conducted with officials of the Independent Petroleum Marketers Association Nigeria (IPMAN) at their head office in Hotoro along Maiduguri road, Kano. This is because they (the marketers) know reasons for choosing their business locations more than the managers who just employee at the filling stations.

3.2.6 Software and Hardware

The software and hardware used for the work include

1. Excel Microsoft Office Application of Microsoft office software (2007)
2. ArcGIS 10 Version
3. Computer hardware and related accessories like mouse, printer and scanner.

3.2.7 Data Integration

To achieve the goal of the study, different sets of data were used. These include the filling station data sourced from DPR and field survey, landuse map and road map. This data were imported, georeferenced to the same coordinate and datum, and integrated in the ArcGIS 10.1 environment for the analysis.

3.2.8 Data Analysis

Data obtained from the DPR were first entered in Excel Microsoft (2007) applications to create a simple database.Columns were used as field to store information on filling station. These fields are the company name, detailed address; Road location; LGA; capacity in term of Petroleum Motor Spirit (PMS), Automated Gas Oil (AGO), Dual Purpose Kerosene (DPK), Lubricated Oil (Lub oil) and Liquefied Petroleum Gas (LPG); type of station (whether major or independent marketer); latitude and longitude coordinates. The data were saved in the project folder (created in C drive) and exported to ArcMap environment of ArcGIS 10. The data was converted to shape file and used to perform all the analysis. Different symbolization was used to map out the filling stations.The numbers of filling station in each road were determined and the densities of the filling stations per roads were computed as ratio of the number of stations along the road to the length of the road in km. In addition tables and charts created in Microsoft Excel were used to present the inventoried data. These helped in achieving the first objective of the work i.e.to take an inventory and map out the filling stations.

In order to achieve the second objective of describing the location pattern(s) of the filling stationsin the area, pattern analysis were done using spatial statistics tools in ArcMap environment to identify the location pattern of filling stations in the area, a nearest neighbour analysis was used to compute the nearest neighbor index (NNI), the Z-Score and probability (p) value in order to determine the pattern of the distributions.

The nearest neighbour analysis was initially developed by Clark and Evans in 1954 to analyze the spatial distribution of plant species. The method compares the observed average distance between points and their nearest neighbours with the distance

that would be expected between nearest neighbours in a random pattern.The nearest neighbor statistics/index, Rn, is defined as the ratio between the observed and expected values Rn varies from 0 (when all points are in one location and distance between each point and its neighbour is equal to zero) and 2.14 (for a perfect uniform or symmetrical point pattern spread out on an indefinite large area).A values of Rn=1 indicate a random pattern since the observed distance between neighbours is equal to the one expected for random distribution.The nearest neighbour formula is

$Rn = 2 đ \sqrt{n} / A$

Where Rn= the discription of the distribution; đ = the mean distance between the nearest neighbours (km); n = the number of the points in the study area; A = the area under study (km^2) (Wough, 2007).

To achieve the third objective (ie examining the factors influencing the location of filling stations) interview was conducted with the Chairman and Secretary of the Independent Petroleum Marketers Association of Nigeria to find out the major reason marketers consider in building their filling stations and the reason(s) on way they (marketers) prepare one road over the other.

In order to achieve the fourth objective which is to compare location of the filling stations with standards buffer and proximity analysis were done inArcmap.Buffer of 15 meter were createdon the roads to identify stations that meet the criteria of fifteen (15) metre distance from the to the road, Query by location was performed using selection menu in ArcMap environment. In addition the data were queried to give all locations that are within 15m buffer. The selected stations were highlighted, right clicked was done on

the shape file (containing the station) and the software was commanded to create layer from the selected features.The stations selected were identified as those not meet the distance criterion of 15m from road. Chart was created to see the proportions of the stations not meet this criterion.

Another query operation was done using selection menu, the query is to give stations that are within distance of 400 metre from other station. The selected stations are identified as those not meet the criterion of 400 meter between stations. Shape file for these stations was also created, saved and used to compute the proportion not meet 400m criterion.

A hospital (being a public building) database was also imported into the ArcMap environment and a query by location was performed. The software was asked to find and highlight all stations that are within 100 meter from the hospitals. The selected stations were identified as those not meet the criterion of 100 meter from public place (hospitals). A similar operation was done using schools shape file to identify those not meet the distance of 100 meter from school.

Worshiping places (even though public and semi public) were not included in this work because their of lack of spatial data for them, also the fact that anyone familiar with thestudy area (Kano Metropolis)mosque are built everywhere in the city and that comparison with them will prove difficult and nearly impossible

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4. 1 Introduction

This chapter presents the analysis and discusses the major findings of the research, to achieve the objective stated at the first chapter. The result is presented and discussed under five sub-headings that include: inventory and mapping the filling station, distribution pattern of the filling station, factors governing the distribution of filling stations and comparison of the distribution of filling stations with physical planning standards set by DPR (2007) and adapted by KNUPDA (2013).

4.2 Inventory and Mapping of the Filling Station

4.2.1 Inventory of Filling Stations by Road

The findings revealed that there existed two hundred and fourteen (214) filling stations at the time of study. These filling stations are located along the forty three (43) roads in the area (Table4.1). However the filling stations are not equally distributedbetween the roads as can be observed from the table 4.1, Zaria road has the highest number of station (28) followed by Maiduguri and Katsina road with (27) and (25) each respectively, these three roads account for more than one-third of the filling stations in the area (representing36%). This result is not surprising because the three roads arethe major roads in the metropolis, they are the longest and linked Kano with major cities of Nigeria.Equally 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. This can be seen in roads like

IBB Way, Jakara Road, Kofar Wambai and many others with one filling station each. Indeed this finding has corroborate with that of Baichie and Wallimsi (2000)where they reported that filling stations are not built in town centres but rather on exit roads.

Another feature of the location off filling station is that they tend to be dominant on the exit side of the town. One major reason for that is most drivers fuel their vehicle when moving out of the city. For example out of twenty-eight filling stations alongthe Zaria road, eighteen (65%) are situated on the exit side along Kano to Zaria Way. Equally fourteen (52%) in Maiduguri road and sixteen (64%) in Katsina road are located on exit side from Kano (figure 4.1).

It was discovered that 78% of the filling stations are located on the major road, about 13% on the secondary or minor roads and only 9% on the access road (figure 4.1.2). Attempt was made to see if there exist any relationship between the road rank and the number of filling station using Pearson product moment correlation and it was discovered that there is significant relationship even at alpha=0.01 because the p-value for the relationship is 0.00110. In other words the higher rank of the road the more the number of filling stations located along it.

Table 4.1: Location of Filling Stations by Road in Kano Metropolis

S/N	Road	Type	No. of Stations	
			F	%
1	Abdullahi Bayero Way	Major	1	0.5
2	Bompai Road	Minor	1	0.5
3	Enugu Road	Access	1	0.5
4	Ibb Way	Minor	1	0.5
5	Jakara Qtrs	Minor	1	0.5
6	Kofar Mazugal Road	Major	1	0.5
7	Kofar Wambai	Access	1	0.5
8	Kumbotso Secreteriate Road	Access	1	0.5
9	Lagos Street	Access	1	0.5
10	Lawan Danbazu Link/Off Buk Road	Access	1	0.5
11	Middle/Court Road	Access	1	0.5
12	New Road	Access	1	0.5
13	Old Katsina Road	Minor	1	0.5
14	Sabo Bakin Zuwo Road	Access	1	0.5
15	Tafawa Balewa Road	Minor	1	0.5
16	Tudun Yola Road	Access	1	0.5
17	Waika-Dawanau Road	Minor	1	0.5
18	Zango Road (Dakata)	Minor	1	0.5
19	Court/Middle Road	Access	2	0.9
20	Link Road	Access	2	0.9
21	Yahaya Gusau Road	Minor	2	0.9
22	Zungero Road	Minor	2	0.9
23	Bello Road	Major	3	1.4
24	Club Road	Major	3	1.4
25	Dala Hospital Road	Major	3	1.4
26	Dambatta/Daura Road	Major	3	1.4
27	Independence Road	Minor	3	1.4
28	Zoo Road	Minor	3	1.4
29	Aminu Kano Way	Major	4	1.8
30	Murtala Moh'd Way	Major	4	1.8
31	Sharada Ind. Estate	Major	4	1.8
32	Buk Road	Major	5	2.3
33	Ibrahim Taiwo Road	Minor	5	2.3
34	Kofar Ruwa Road	Access	6	2.8
35	Madobi Road	Major	7	3.2
36	Panshekara Road	Minor	7	3.2
37	Sani Abacha Way (Airpport Road)	Major	8	3.7
38	Hadejia Road	Major	9	4.1
39	Eastern Byepass	Major	14	6.5
40	Gwarzo Road	Major	17	7.8
41	Katsina Road	Major	25	11.5
42	Maidaguri Road	Major	27	12.4
43	Zaria Road	Major	28	12.9
	Total		214	100.0

Source: Field Survey (2014)

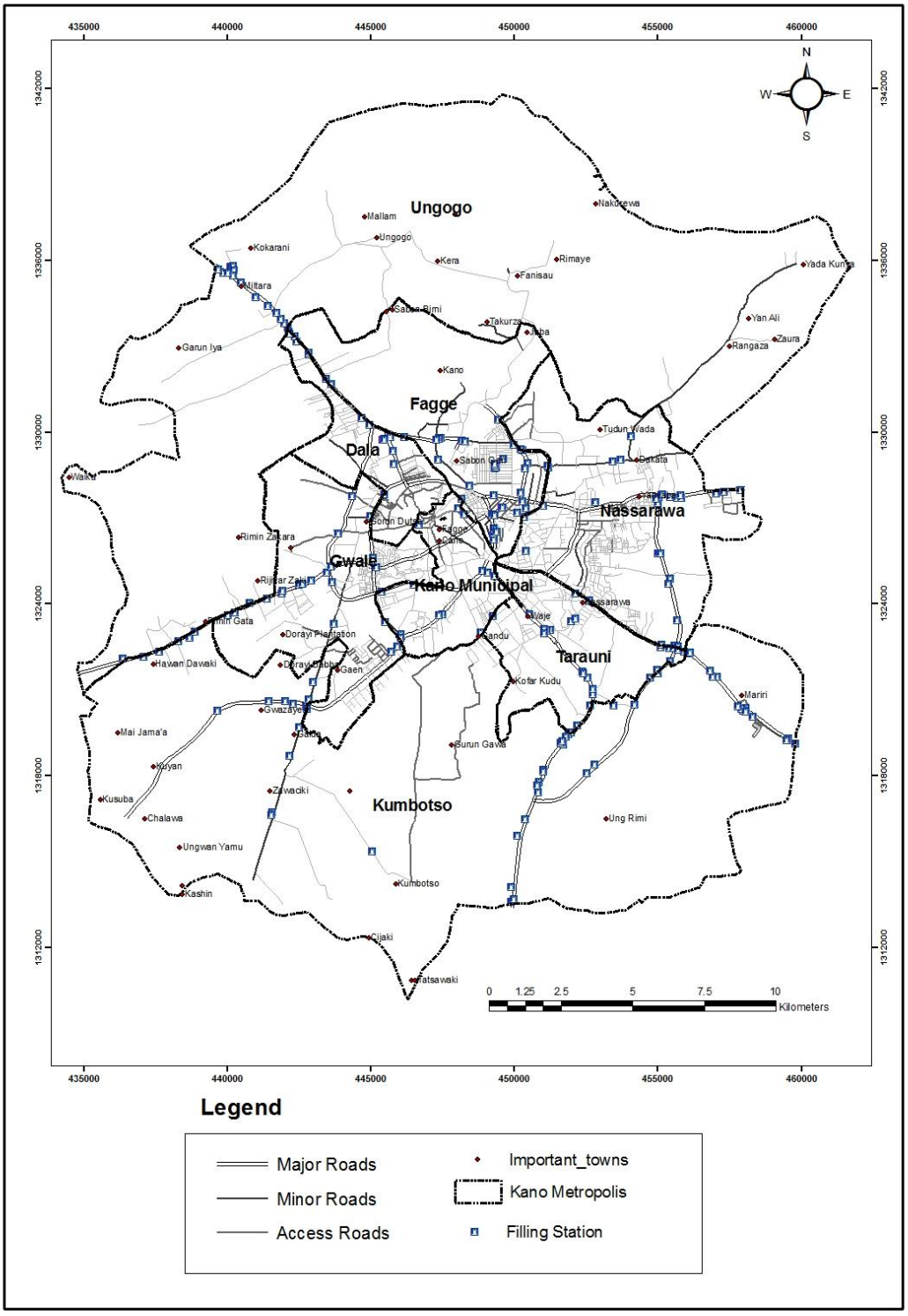


Figure 4.1: Spatial Distribution of Filling Stations in Kano Metropolis
Source: Field Survey (2014)

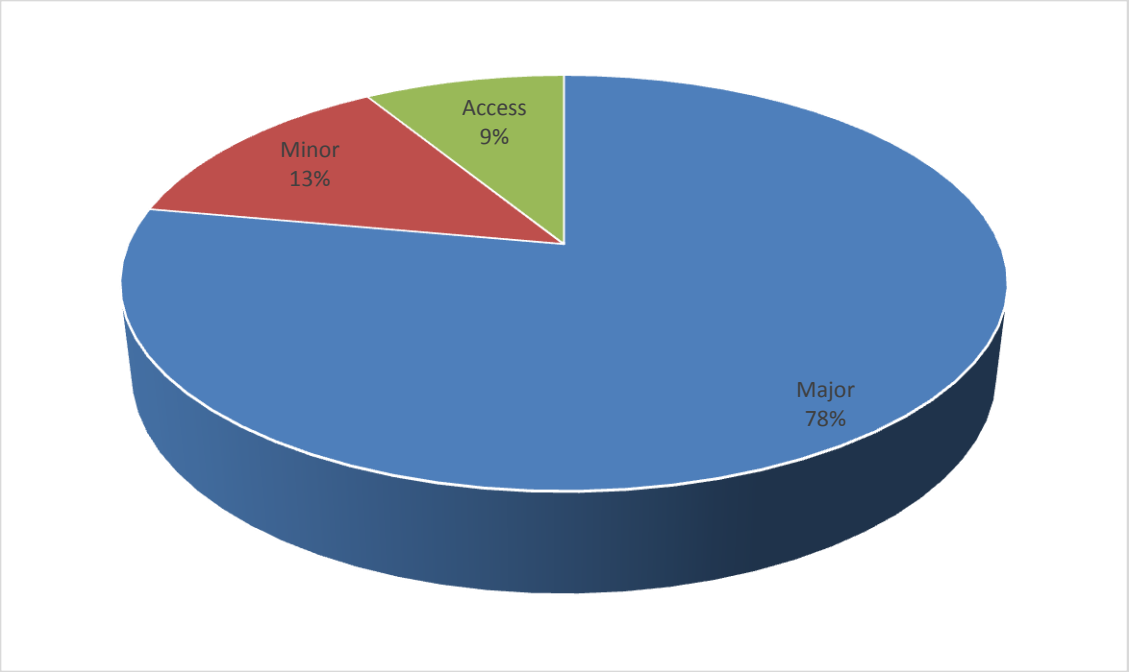


Figure 4.2: Filling Station Distribution by Road Type in Kano Metropolis

Source: Fieldwork (2014)

Furthermore the density of filling station per road length was calculated and the resultsrevealed that there is wide variation in the density of filling station between roads. The length of each of the road in km was determined and the density of filling stations per km of each was computed. It was found out thatalthough Zaria, Maiduguri and Katsinaroads have the highest number of filling stations, minor roads like Sabo-Bakin Zuwo, Zungero and IBB way topped in relation to density per km (Table 4.2). Indeed the density of filling stations per km 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 km.

Table 4.2: Density of Filling Stations per Road in Kano Metropolis

S/N	Road	Length of Road (Km)	No. of Filling Stations	Density (per Km)
1	Abdullahi Bayero Way	4.52	1	0.22
2	Aminu Kano Way	2.66	4	1.50
3	Bello Road	0.90	3	3.33
4	Bompai Road	0.85	1	1.18
5	Buk Road	6.87	5	0.73
6	Club Road	2.67	3	1.12
7	Court/Middle Road	0.91	2	2.20
8	Dala Hospital Road	2.14	3	1.40
9	Dambatta/Daura Road	0.77	3	3.91
10	Eastern Byepass	13.22	14	1.06
11	Enugu Road	0.77	1	1.29
12	Gwarzo Road	9.18	17	1.85
13	Hadejia Road	15.79	9	1.52
14	IBB Way	0.26	1	3.86
15	Ibrahim Taiwo Road	1.53	5	3.27
16	Independence Road	5.66	3	0.53
17	Jakara Qtrs	1.12	1	0.89
18	Katsina Road	14.27	25	1.75
19	Kofar Mazugal Road	1.45	1	0.69
20	Kofar Ruwa Road	-	6	-
21	Kofar Wambai	0.47	1	2.14
22	Kumbotso Secreteriate Road	7.38	1	0.14
23	Lagos Street	1.09	1	0.91
24	Lawan Danbazu Link/Off Buk Road	0.51	1	1.95
25	Link Road	1.55	2	1.29
26	Madobi Road	8.33	7	0.84
27	Maidaguri Road	11.17	27	2.42
28	Middle/Court Road	0.78	1	1.28
29	Murtala Moh'd Way	3.37	4	1.19
30	New Road	1.26	1	0.80
31	Old Katsina Road	2.30	1	0.43
32	Panshekara Road	11.50	7	0.61
33	Sabo Bakin Zuwo Road	0.18	1	5.45
34	Sani Abacha Way(Airpport Road)	3.81	8	2.10
35	Sharada Ind. Estate	6.83	4	0.59
36	Tafawa Balewa Road	1.51	1	0.66
37	Tudun Yola Road	5.28	1	0.19
38	Waika-Dawanau Road	2.00	1	0.50
39	Yahaya Gusau Road	1.80	2	1.11
40	Zango Road (Dakata)	1.33	1	0.75
41	Zaria Road	14.07	28	1.99
42	Zoo Road	2.51	3	1.19
43	Zungero Road	0.34	2	5.93
	Mean Density			**1.57**

Source: Field Survey (2014)

The lowest density of filling stations per road is found in Kumbotso secretariat road, Murtala Muhammad way and Abdullahi Bayero way having the density of 0.14, 0.19 and 0.22 respectively (table 4.2).

4.2.2 Filling Stations by Ownership

In Nigeria filling station is ownedeither by entrepreneur(s) (individual or partner) that form a company known asindependent marketers, or multi-national companies known as major marketers, or even a government own company named Nigeria National Petroleum Company (NNPC). The research findings shows that majority of the station in Kano Metropolis belongs to independent marketers followed by major marketers and then NNPC (figure 4.3 and 4.4).

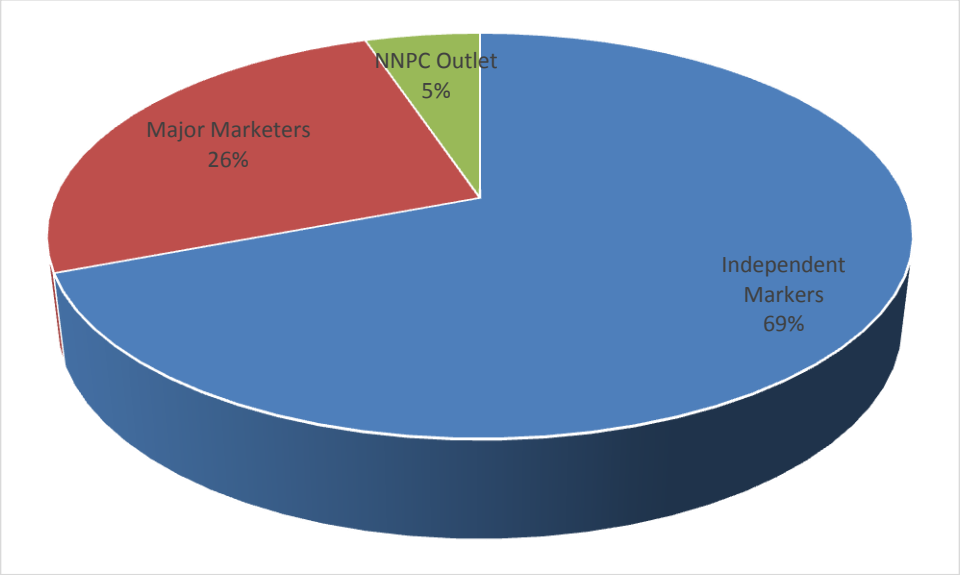


Figure 4.3: Filling Station Ownership in Kano Metropolis

Source: Field Survey (2014)

The results of the filling station ownership in Figure 4.3corroborated with that of DPR (2014) that showed that independent marketers owned most of the filling station in

country between year 2008 and2012. Equally the result agreed to some extent with the findings of Sule *el al* (2011) in Kaduna metropolis, where he discovered that more than 60% of the stations are owned by the independent marketers. However the result (in figure 4.3) contradicted the assertion made by Udoh (2013), that the petroleum products distribution/ marketing is dominated by six major marketers: Total Nigeria plc, Oando, AP (now Forte Oil), Mobil, Conoil, and Texaco now (MRS). According to Udoh these six majors form about 70% of the distributive trade while independent marketers take care of the rest.

In addition the number and percentage of filling station owned companies were determined. Table 4.3 shows the number of filling station owned by the Six Major Petroleum marketers in the study area.

Table 4.3Major Petroleum Marketers and their Stations in Kano Metropolis

Name	No. of Stations	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
Total	55	100.0

Source: Field Survey (2014)

From the results in table 4.3Oando 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 caseindependent 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 has only one station (Appendix I). Other filling stations (5%) are owned by NNPC (Appendix II). Almost all the NNPC stations were located on the major roads like Zaria, Maiduguri and Gwarzo roads (Figure 4.4).

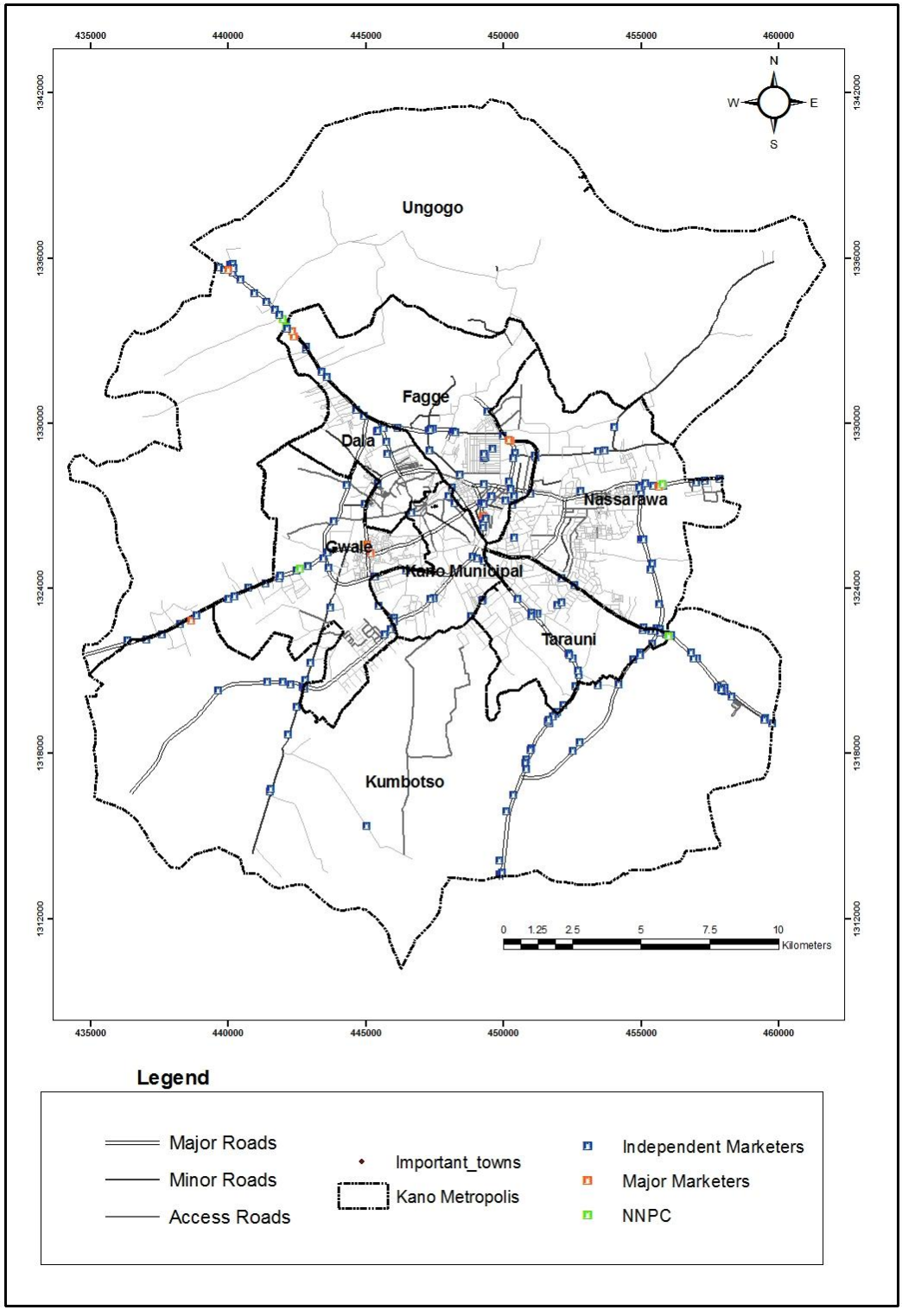


Figure 4.4: Distribution of Filling Stations in Kano Metropolis by Ownership

Source: Field Survey (2014)

4.2.3 Petroleum Products Sold by Filling Stations in Kano Metropolis

According the DPR guidelines before one get license to operate filling station business, he has to have at least three underground tanks for petroleum product for PMS, DPK and AGO (DPR 2014). The summary of the capacity of filling (in litre) station in the study area is presented in table 4.4.

Table 4.4: Petroleum Products Capacity (in Litres) for Filling Station in Kano Metropolis

STATISTICS	PMS	AGO	DPK	LUB OIL	LPG	Total Capacity
Total	18,289,676	8,675,711	6,262,700	209,300	28,500	32,511,467
Mean	94765.16	45661.64	33490.37	2012.5	1583.33	166725.47
STDV	46532.52	45547.5	11252.84	127.48	549.06	66215.35
CV	0.49	1	0.34	0.06	0.35	0.4

Source: DPR 2013

Table 4.4 revealed that PMS is most dominant product trade by the station. As observed from the table (in the study area) the stations have the highest total capacity of for PMS, followed by AGO, DPK, LUB Oil and LPG. Equally the mean capacity, standard deviation and Coefficient variation presented on the same table followed similar trend as in total production

4.3 Pattern of Distribution of Filling Stations in Kano Metropolis

Filling station business is governed by many factors among which are accessibility, market, government policy and so on. This was supported by Wough (2007) when he asserted that activities and events in geographic space tend to exhibit certain pattern. This pattern can be clustered, random or dispersed. There are many methods of pattern identification; nearest neighbor analysis is one of them. The results of the

analyses revealed that the pattern of distribution is perfectly clustered because the nearestneighbour index (Rn) value is less than 1 and Z-value is -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. However it is important to note that nearest neighbor analysis is just a technique that explained the distribution of phenomena but cannot explain the reason for the distribution (Wough 2007). The reason for clustered distribution of the filling stations in the area may be linked 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.

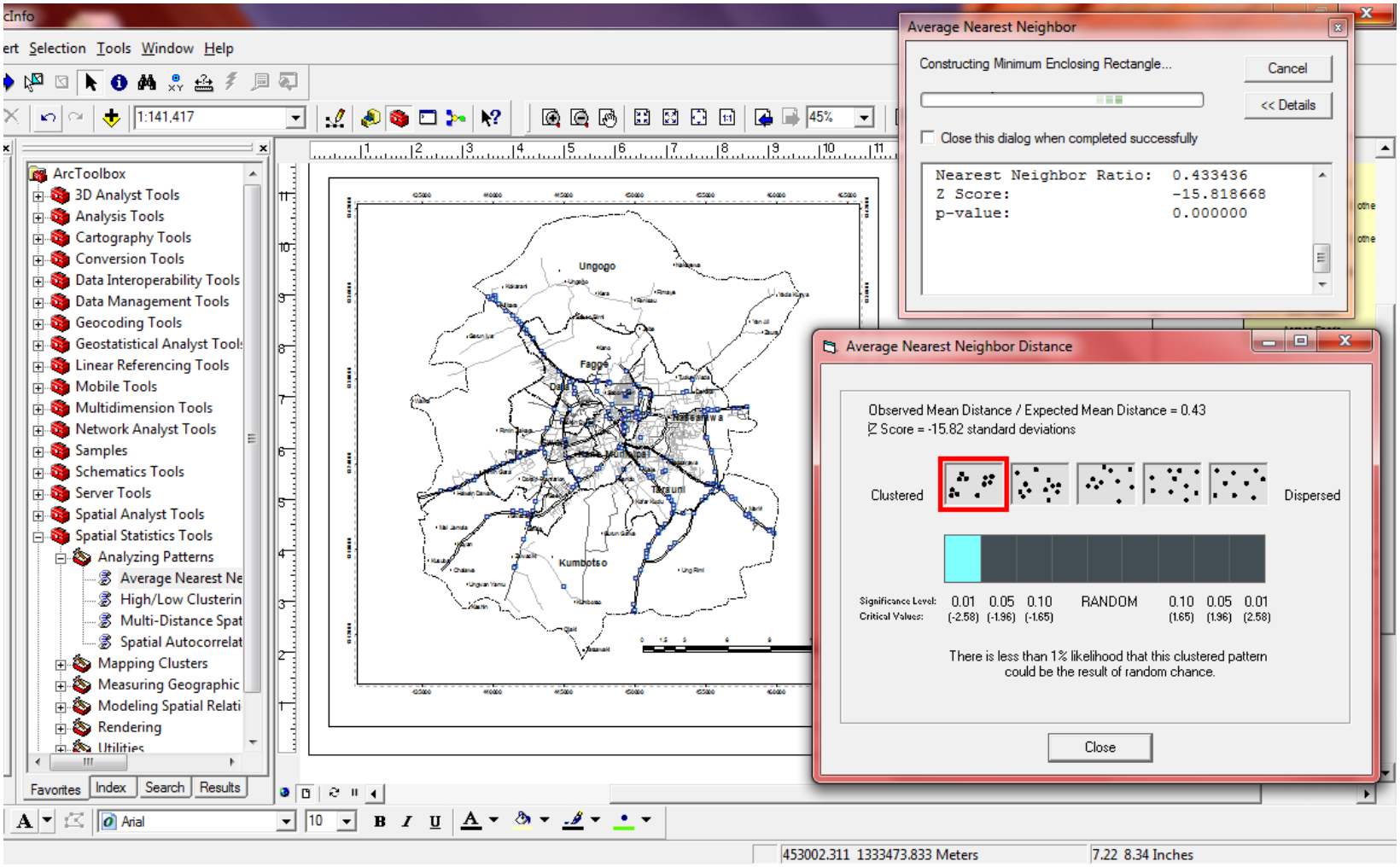


Figure 4.5: Nearest Neighbour Analysis of Filling Stations in Kano Metropolis

4.4 Factors Influencing the Distribution of Filling Stations in Kano Metroplis

Filling station business has spatial dimensions due to the fact that it is done in a geographic space and that a place to be used for doing the business has to fulfill certain criteria. While the DPR is responsible for clearing the site, issuingof license to operate and ensure standards are complied with, marketers consider some factors in the choice of business location. The result of the interview conducted by IPMAN official at Kano revealed the following as factors the operators consider in selecting site to build a filling station.

1. **Traffic Flow**: this is one of the most important factors considered in building station. Marketers built their station 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, Maidugure, Hadejia and Gwarzo road have the highest number of station 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). Indeed the finding has shown that most filling stations are built on the exit side where customers would find it easier to enter filling station and fuel their vehicle. In addition the marketers assumed that vehicle driving-in the town (Kano City) had already fuel their vehicle at their source/origin.
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 inter city 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 alongand very close to Unguwa Uku Motor Park in Zaria road. Infact along motor parks such as Hedejia road motor park, Kofar Wambai Motor Park, Kabuga Motor Park and Mariri Motor Parkalong Maidugri road.

4. **Convenience:** This was another factor consider by the marketers when choosing their business location. Even though marketers are attracted by heavy traffic flow, they prepare to built-in their station in places away from traffic jam heart were the passengers may find it convenience to park and fuel their vehicle.Hence station are built where there is enough space for customers to maneuver the vehicle when entering or exiting after fueling.
5. **Near Nodal Towns/Junctions:** Filling stations are also built close to nodal towns or junction. Because nodal towns are potential markets for filling station, filling station were built along them. However this is more applicable to peri-urban stations. Vehicles are coming from different side of the junction and therefore likely to stop and gate fueled.

4.5 Filling Station and Physical Planning Standards

Filling station business is regulated by DPR, a department under the Ministry of Petroleum Resources saddled with responsibility to register and regulate the downstream petroleum sector. In addition thereexists Kano Urban Planning Department Agency (KNUPDA) whose duty is to regulate all development within the metropolitan Kano. Filling stations has to meet the planning standard set by these agencies for their business

safety. This study correlate the planning standard (already discuss in chapter one) and current location of the filling station in the area. This was achieved using proximity analysis tools available in ArcGIS 10.

4.5.1 Distance from Road

According the physical planning Standards set by DPR (2007) Procedure guide for grant of approvals to construct and operate of a petrol products retail outlet, the distance from the road to filling station pump should not be less than 15meter. Since filling station were represented as point facilities and road as line feature, a buffer of 15m was created on the road and data query by location was made in ArcMap environment. The query assisted with "selecting all locations that are completely within 15meter road buffer. The result is presented in Figure 4.6 and 4.7.

The result revealed that only eight stations (4%) did not meet the criteria of 15m minimum distance from road (figure 4.7). These stations include those along the access road (e.g. Jakara and New road) and a few along the major roads (one station along Zaria, Katina, Daura/Dambatta road each.

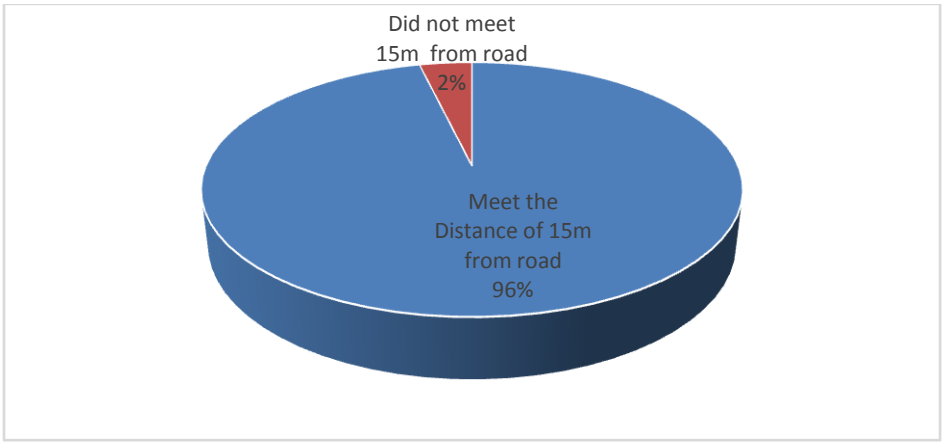


Figure 4.6: Filling Station and 15 metre Standard Distance from Road

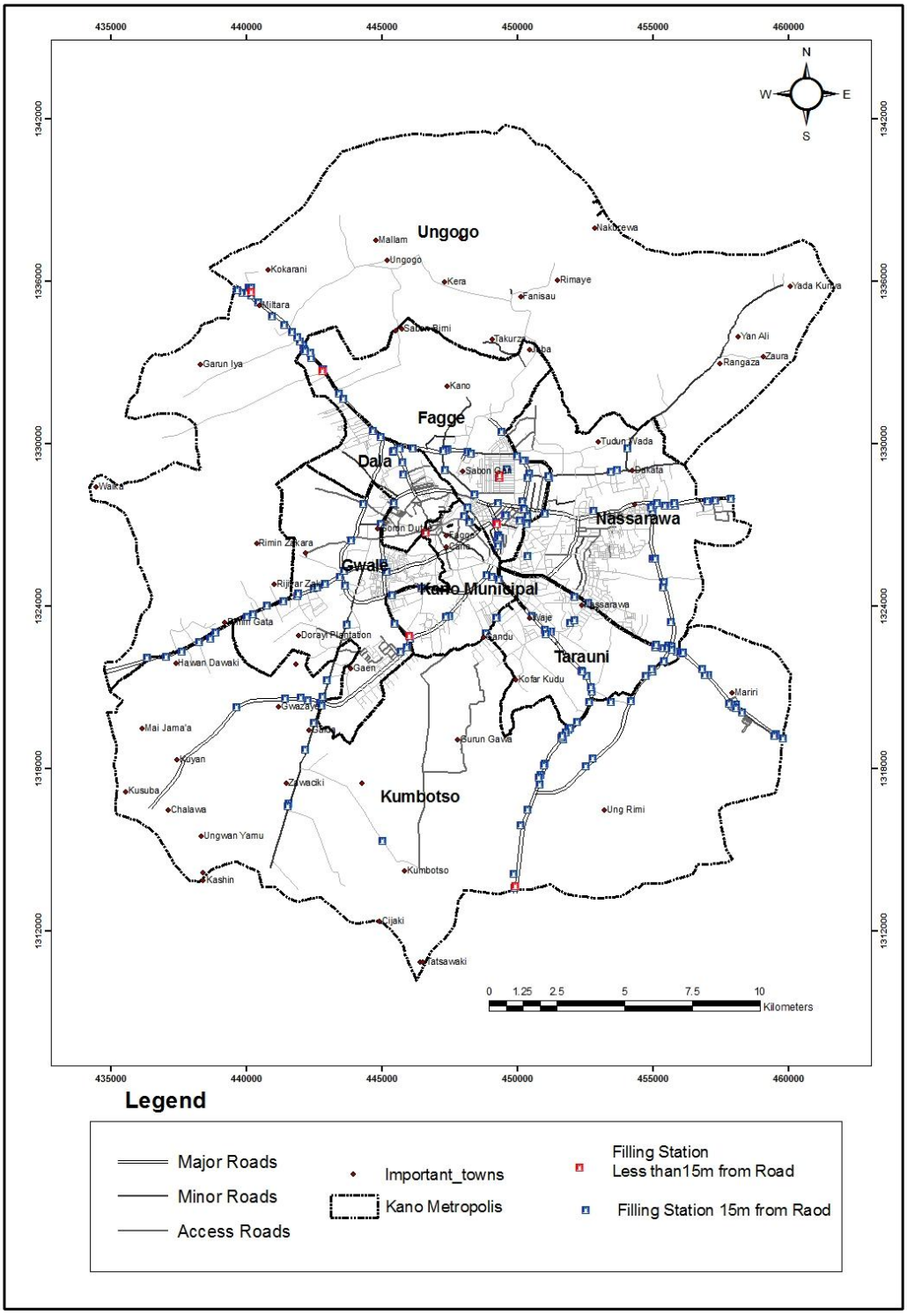


Figure 4.7: Location of Filling Station in Kano Metropolis against the 15m Standard Distance from Road

Source: Field Survey (2014)

This result confirms that majority of the filling stations meet the standard criteria of locating 15m distance from road. Among the fillingstations that did not meetthis criterion 62% are independent marketers, 38% are major markers and none is NNPC Appendix IV.

4.5.2 Distance between the Location of Filling Stations

Distances between stations in the area were determined in ArcMap environment using proximity operation of the analysis tool. The finding revealed that longest distance between neighbouring filling stations was about 3,700 metre. This was found between Gasau Petroleum along Kumbotso Secretariat and Misbahu Garba Nigeria ltd along Panshekara road. Apart from the two mentioned, the mean distance between neighboring filling stations was about 300 metres. The shortest distance of less than a metre and was observed were neighboring station lied back to back. The result also shows that more than half of the filling stations were less than 400 metres to their neighbours. However about only 24% of the station could not meet the minimum distance of 400 metres from their neighbours (with no road separation).

In a nut shell more one-quarter of the filling station did not to satisfy the standard of 400 metre distance from the nearest neighbour (figure 4.8). The filling station that had not satisfy this standard were found in most roads. The highest number of those not meet the minimum standard of 400m distance between the location of filling station was observed in Katsina and Gwarzo road,which are major road linking Kano to other major Nigeria's cities (figure 4.9). The likely reason for these playout may be due to the market along these areas and the fact that regulator bend to this rule and give waver to the filling stations (as regard the standards) in heavy traffic roads.

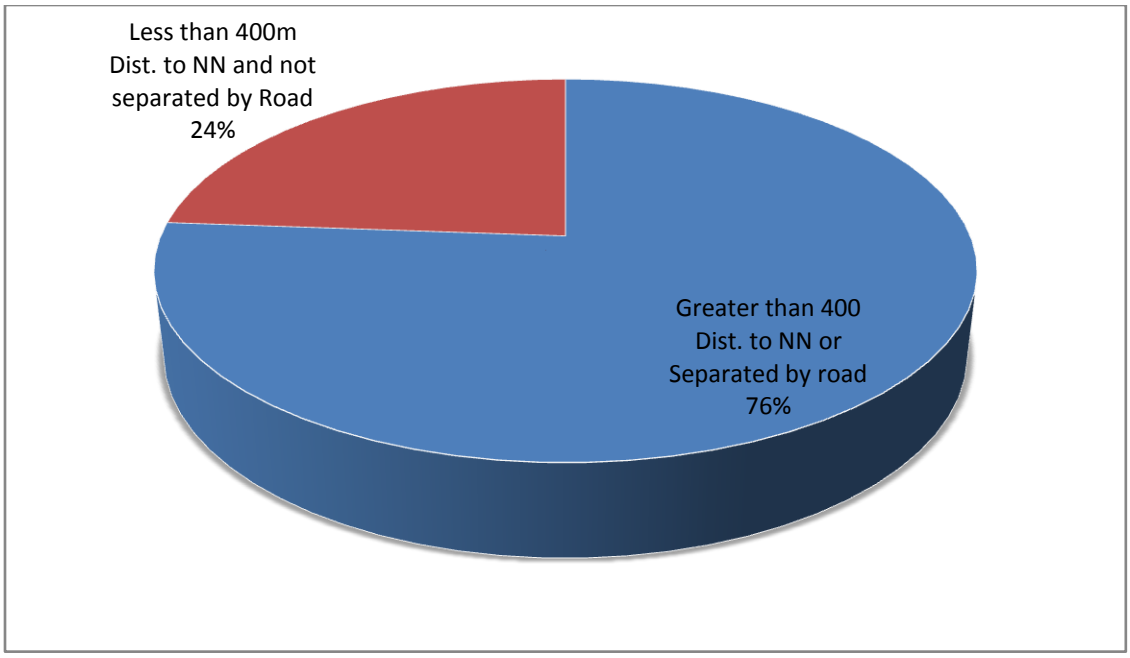


Figure 4.8: Filling Stations in Relation to 400 metre Distance to Nearest Filling Station in Kano Metropolis

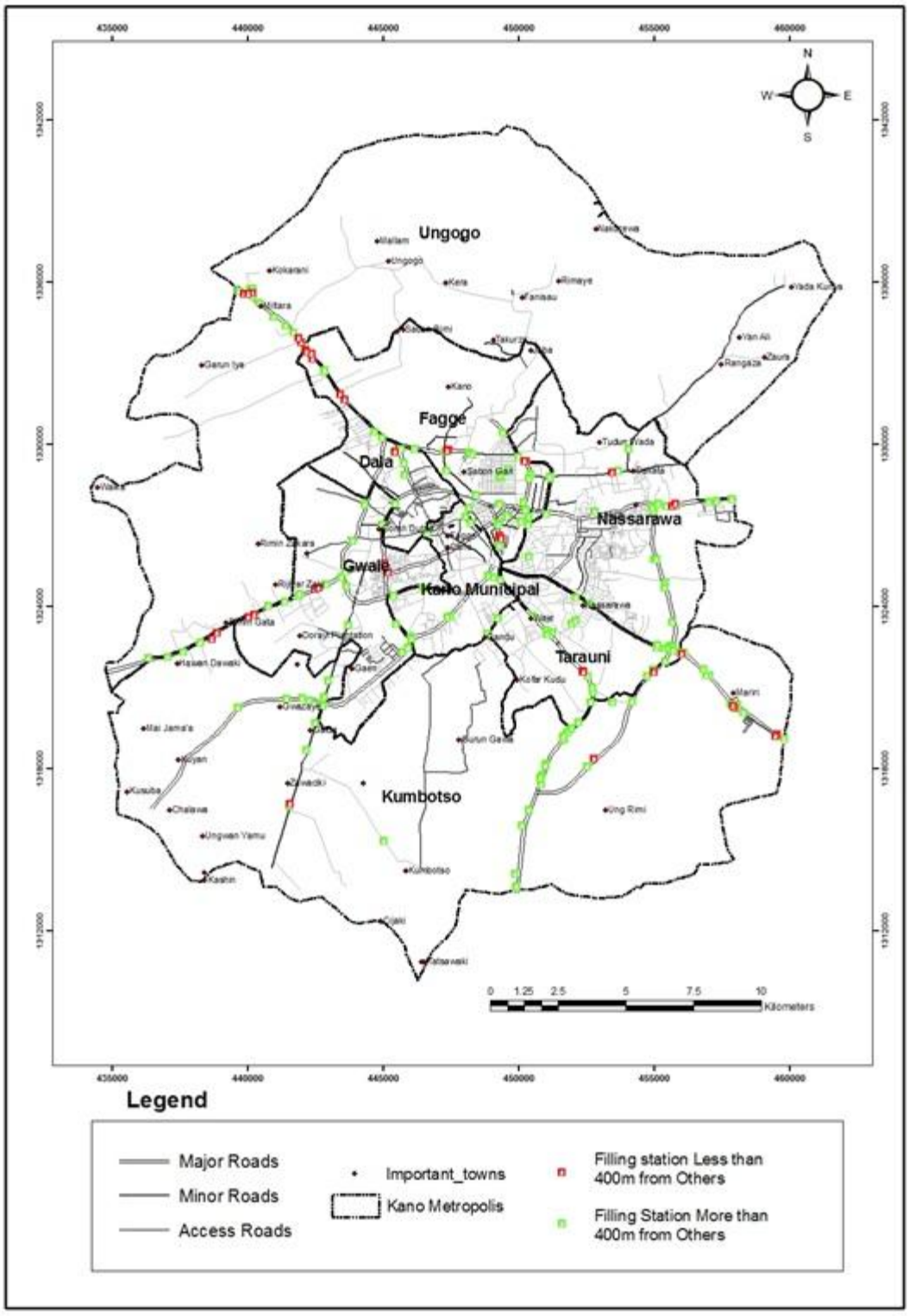


Figure 4.9: Location of Filling Stations in Relation 400m Distance from Other Filling Stations in Kano Metropolis

Source: Field Survey (2014)

4.5.3 Distance of Filling Stations to Health Facilities

According the criteria set by the DPR filling station are not allow to operate adjacent to public institution like hospitals. In case they are to operate, the minimum distance of 100meter has to be maintained. Thus a comparison was made between the location of filling station and their distance to the hospital. The findings revealed that majority of the stations meet thisstandard (figure 4.10). Only few of the station (2%) could not meet the criteria. These stations are mainly major and independent marketers and none among them is NNPC outlet. In essence distance of filling station to the hospital is one major criterion the regulators not play with because only few station.

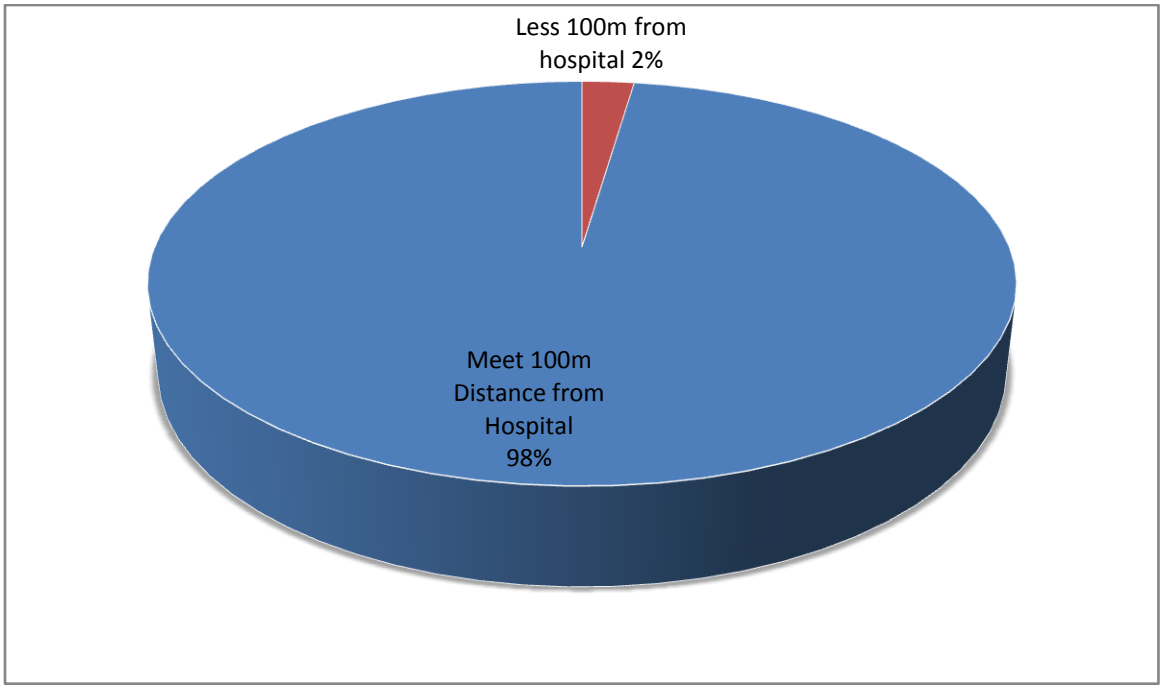


Figure 4.10: Filling Station Distribution in Relation to 100m Distance to HCF
Source: Field Survey (2014)

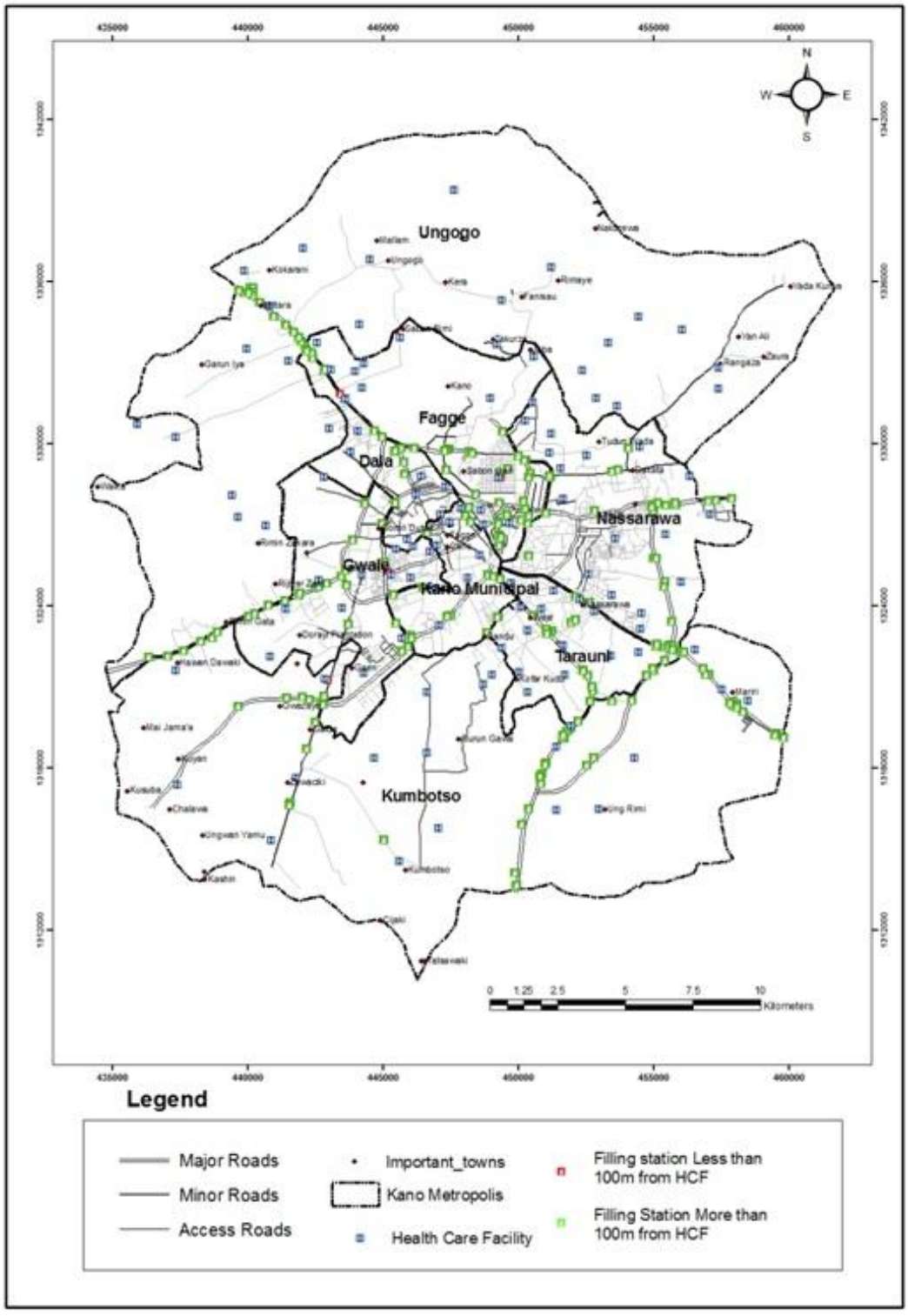


Figure 4.11: Location of Filling Stations in Relation to Health Care Facilities in Kano Metropolis

Source: Field Survey (2014)

CHAPTER FIVE

SUMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This research analysed the location of filling stations in Kano Metropolis and subjected the location to the physical planning standards put in place by the regulatory agency, DPR and KNUPDA. The research findings revealed that there are 214 filling stations currently operating in the area.Among the filling stations existing in thearea, 69% are owned by about 108 independent marketing companies, 26% by six major marketers and 5% by NNPC. Oando Nigeria plc and A.A. Rano Nigeria ltd top the major and independent marketers with twelve and eight filling station respectively. Mobile Nigeria has the least number among the major marketers (account for 10% of station).

The number of stations correlated significantly with road hierarchy. Major roads like Zaria, Katsina and Maiduguri road have higher number of filling; however the density of station per distance (in km) is higher in minor and access roads. About 78% of the stations were located on the major roads, 14% on the secondary (minor) roadsand 8% on the access roads.

The filling stations trade mostly in PMS than all other petroleum products. The mean capacity for the filling station storage capacity of petroleum products varies extensively because the coefficient of variance (CV) was high, greater than 100% in APG and 49% and 40% in PMS and LPG. The list variant was in observed in the storage capacity of LUB (6%).

Though the filling station exhibit linear pattern because they are cited mainly on road side where drivers can easily get the product, the overall pattern off distribution is clustered with nearest neighbour value (Rn) of 0.3 (less than 1) and z-value of -15. There was significant different between the observed pattern and the random pattern at both 95% and 99% level of significance and its 99% likely that the pattern is cause by chance.The major factors influencing the location of the filling stations are traffic flow, exit side of the town, nearness to inter urban Motor Park,convenience and existence of nodal towns or junction.Most of the station satisfied the minimum requirement of 15 metre distance from the road (96%). Equally 98% of the filling stations met the minimum distance of 100 meter from the hospital. However many station had not meet the criteria of 400 meter minimum distance to other stations where located on same road side and when not separated by any road or street.

5.2 Conclusion

The research made the following conclusions

1. 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 account for more than one-third of the filling station in the area.
2. That there is significant correlation between the hierarchy of the road and number of filling station. Filling 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.

3. PMS is most dominant petroleum product retailed by the filling stations, followed by AGO and DPK and there was high variation in the capacity of the stations in relation to these products.
4. Although major road have the highest number of filling stations, the density per km is higher in minor road. From the finding, major road exceed the KNUPDA minimum of at least three stations per 2 km.
5. The independent marketers dominated the petroleum retail business (filling Station) and this is good for the economy. Indeed the independent marketers were established with intention to diversify the economy, create opportunity for Nigerian to participate in downstream petroleum sector and reduce the monopoly of multinational companies that initially dominated the sector.
6. Even though filling station complies most to the standard regarding distance from the road and from public buildings specifically hospital, many filling stations did not meet the minimum distance of 400 metre from other stations. Indeed it is common in the area to see two stations lie back to back. This has been observed in almost all the major road.

5.3 Recommendations

The study made the following general policy and future research recommendations

5.3.1 General Policy Recommendation

1. This study was abled to create the database for filling stations in Kano Metropolis, the DPR and Kano State City Development Office-which iscurrently try to create spatial database for the city-can utilize this data. A similar study can be carried out in all states of the federation.

2. The DPR should make it compulsory for the filling station operatorswhen submitting their EAI report to include the geographic location of the site. This can be helpul in updating the spatial database for the filling stations successfully.
3. Discrepancies were observed as regard the compliance with standards, as such regulatory agencies need to look into the issue, take appropriate measures and should (in future) ensured that only sites met the minimum standards were given permission to do the business.
4. Filling stations are mostly located on some roads as found by the study, hence the need to give prority for the roads with less number of filling stations when given license to operators.

5.3.2 Future Study 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. The distance of filling station to other public institution like schools and mosques has not been considered by this study simply because the school and mosque are too many in Kano metropolis; this can be area for future research.
3. Filling stations perform many subsidiary businesses like servicing, car wash, mini mart and so on, this can be a potential area for investigation.
4. There is need to create comprehensivedigital update database for filling stations that can enable one access the site (for filling station). In addition it could help the customers locate the filling station at ease.

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APPENDICES

Appendix I: Major Marketers Filling Station in Kano Metropolis

S/N	Company Name	Detailed Location Address
1	African Petroleum Plc	Bello Road, Kano Municipal Lga, Kano State
2	African Petroleum Plc	Eastern Byepass Kawaji Qtrs, Nassarawa Lga, Kano State
3	African Petroleum Plc	Maiduguri Roundabout, Hotoro, Tarauni Lga, Kano State,
4	African Petroleum Plc	Murtala Mohd Way (Leventis), Fagge Lga, Kano
5	African Petroleum Plc	Sharada Industry Estate, Dala Lga, Kano State
6	African Petroleum Plc	Zaria Road U/Uku, Opp Fgc, Tarauni Lga, Kano State
7	Con Oil Nigeria Ltd	Plot 7655, Bello Road, Fagge Lga, Kano State
8	Con Oil Nigeria Ltd	Gwarzo Rd, Rimin Gata Village, Dambare, Kumbotso Lga, Kano State
9	Con Oil Nigeria Ltd	Km 14, (Mile 9)Katsina Road, Ungogo Lga, Kano State
10	Con Oil Nigeria Ltd	16 Lagos Street(Coronation), Fagge Lga, Kano State
11	Con Oil Nigeria Ltd	Sabo Bakin Zuwo, Tarauni , Kano State
12	Con Oil Nigeria Ltd	Sani Abacha Way, Nassarawa Kano State
13	Con Oil Nigeria Ltd	852 Zaria Rd, Gyadi-Gyadi R/About, Tarauni Lga, Kano State
14	Con Oil Nigeria Ltd	Km 2, Zaria Road, Fiat Site, Kumbotso Lga, Kano State
15	Con Oil Nigeria Ltd	Km 2, Zaria Road, Na'ibawa, Kumbotso Lga, Kano State
16	Forte Oil Company Limited	New Road, Sabon Gari Kano
17	Forte Oil Company Limited	Hadejia Road
18	M.R.S Oil & Gas Company Limited	Along Aminu Kano Way
19	M.R.S Oil & Gas Company Limited	Km 12, Gwarzo Road, Dala Lga, Kano State
20	M.R.S Oil & Gas Company Limited	Maiduguri Road, Hotoro, Tarauni Lga, Kano State
21	M.R.S Oil & Gas Company Limited	96a, Murtala Muhammed Way, Nassarawa Lga, Kano State
22	M.R.S Oil & Gas Company Limited	Km 7, Zaria Road, Na'ibawa, Tarauni Lga, Kano State
23	M.R.S Oil & Gas Company Limited	Along Zaria Road, Gyadi-Gyadi, Tarauni Lga, Kano State
24	M.R.S Oil & Gas Company Limited	Zoo Road, Gandun Albasa, Nassarawa Lga, Kano State
25	M.R.S. Oil & Gas Limited.	Madobi Road, Kunyan-Ta-Inna Village, Kumbotso Lga, Kano
26	M.R.S. Oil & Gas Limited.	Maiduguri Road, Opp Tarauni Market Junct, Tarauni Lga
27	Mobile Oil Nigeria Ltd	32a, Airport Road, Nassarawa Lga, Kano State
28	Mobile Oil Nigeria Ltd	Km 15 Gwarzo Road, Kofar Kabuga , Gwale Lga, Kano State
29	Mobile Oil Nigeria Ltd	Km 6, Gwarzo Road Kofar Kabuga, Gwale Lga, Kano State
30	Mobile Oil Nigeria Ltd	Km-9, Katsina/Daura Junction, Ungogo, Kano State
31	Mobile Oil Nigeria Ltd	11, Tafawa Balewa Road, Nassarawa Lga, Kano State
32	Mobile Oil Nigeria Ltd	Along Zango Road, Dakata Nassarawa Lga, Kano State
33	Oando Nigeria Plc	Katsina Road Rijiyar Lemo
34	Oando Nigeria Plc	Katsina Road
35	Oando Nigeria Plc	Km-E3, Aminu Kano Way (Sani Mainagge), Gwale Lga, Kano

36	Oando Nigeria Plc	Along Buk, Municipal, Kano State
37	Oando Nigeria Plc	197, Club Road, Nassarawa Lga, Kano
38	Oando Nigeria Plc	No 1, Club Road, Nassarawa Lga, Kano
39	Oando Nigeria Plc	Eastern Byepass Road, Na'ibawa, Kumbotso, Kano
40	Oando Nigeria Plc	44, Ibrahim Taiwo Road, Fagge Lga, Kano State
41	Oando Nigeria Plc	16, Independence Road, Dakata, Nassarawa Lga, Kano State
42	Oando Nigeria Plc	Along Maiduguri Road
43	Oando Nigeria Plc	Along Maiduguri Road
44	Oando Nigeria Plc	2 Middle/Court Road, S/Gari, Fagge Lga, Kano State
45	Oando Nigeria Plc	85, Murtala Mohammed/Court Road, Nassarawa Lga Kano
46	Oando Nigeria Plc	No 1 Bello Road, Nassarawa Lga, Kano State
47	Total Finaelf Nigeria Plc	Katsina Road Rijiyar Lemo
48	Total Finaelf Nigeria Plc	181a Airport Road, Nassarawa Lga, Kano State
49	Total Finaelf Nigeria Plc	181b Airport Road, Nassarawa Lga, Kano State
50	Total Finaelf Nigeria Plc	Along Buk, Municipal, Kano State
51	Total Finaelf Nigeria Plc	Court Road, S/Gari, Fagge Lga, Kano State
52	Total Finaelf Nigeria Plc	Hadejia Road, Motor Park, Nassarawa Lga, Kano State
53	Total Finaelf Nigeria Plc	Km-2 Maiduguri Road, Hotoro Tarauni Lga, Kano State
54	Total Finaelf Nigeria Plc	Along Maiduguri Road
55	Total Finaelf Nigeria Plc	Along Maiduguri Road
56	Total Finaelf Nigeria Plc	Plot 10, Zoo Road, Kumbotso Lga, Kano State

Appendix II: 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, Fagge Lga, 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 And 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, Nassarawa Lga, Kano
38	Alh. Bukar Makoda & Sons Limited.	Along Eastern Bye-Pass Rd, Hotoron Arewa, 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
43	Al-Ihsan Transport Nigeria Limited.	Sharada Industrial Area, Phase Ii, Gwale Lga, Kano
44	Allah Na Nan Nigeria Limited.	Along Zaria Road, Malikawa Qtrs, Kumbotso, Kano State
45	Almoda Petroleum Limited.	Katsina Road, Opp Army Barrack, Dala Lga, Kano
46	Almoda Petroleum Limited.	Opp Orion Cinema, K/Wambai, Municipal Lga, Kano
47	Altaslim Petroleum Nigeria Limited.	Gwarzo Road, Dorayi Babba M/Park, Gwale Lga, Kano
48	Ammasco International Limited.	Zaria Road, U/Uku, Tarauni, Kano State
49	Amg	Along Zaria Road
50	Aminco International Nigeria Limited.	Km 1 Madobi Road, Kumbotso Lga, Kano State
51	Ammasco International Limited.	50, Kofar Mazugal Road, Dala Lga, Kano
52	Aona Zuma	Airport Round About
53	Asab Oil & Marketing Company Limited	Along Daura Road, Doka Village, Ungogo, Kano State
54	Asaija Oil Nigeria Limited.	Along Eastern Bye-Pass Road, Unguwa Uku, Tarauni, Kano
55	Ascon	Unguwa Uku Motor Park, Tarauni Lga, Kano State
56	Audu Manager & Sons Nigeria Limited.	Maiduguri Road, Mariri Village, Kumbotso Lga, Kano
57	Audu Manager & Sons Nigeria Limited.	Along Maiduguri Road
58	Azman Oil & Gas Limited.	Airport Road, Adjacent To Eldrado Cinema
59	Azman Oil & Gas Limited.	Along Club Road, Bompai, Nassarawa Lga, Kano
60	Azman Oil & Gas Limited.	At Plot131, Ibrahim Taiwo Road, Fagge Lga, Kano State
61	Azman Oil & Gas Limited.	Along Katsina Road, R/Lemo, Dala Lga, Kano
62	Azman Oil & Gas Limited.	Along Maiduguri
63	Azman Oil & Gas Limited.	France/Murtala Mohd Way, Fagge Lga, Kano
64	B.I. Petroleum Nigeria Limited.	Gwarzo Road, Motor Park, Km-5, Gwale, Kano
65	B.I. Petroleum Nigeria Limited.	Kano-Challawa Road, Kumbotso Lga, Kano State
66	BA Bello	Km-12, Kano-Zaria Road, Wailari, Kumbotso Lga, Kano State
67	Bamzy Limited	Eastern Bye-Pass Road, Kumbotso, Kano
68	Bataiya Enterprises Nigeria Limited.	Km 2, Gwarzo Road, K/Kabuga, Gwale Lga, Kanoi
69	Bbsy General Merchant Limited.	Panshekara Rd, Madobi R/About, Kumbotso Lga, Kano
70	Biram Oil & Gas Mktg.Company Limited.	Along Gwarzo Road, Kabuga, Gwale Lga, Kano
71	Biram Oil & Gas Mktg.Company Limited.	Eastern Bye-Pass Road, Kawaji, Nassarawa Lga Kano
72	Biram Oil & Gas Mktg.Company Limited.	Km-7, Hadejia Road, Nassarawa Lga, Kano State
73	Biram Oil & Gas Mktg.Company Limited.	Along Maiduguri Road
74	Bulsawa Petroleum Nigeria Limited.	Km 10, Zaria Rd, Na'ibawa Qtrs, Tarauni Lga Kano State
75	Chula Oil Company Limited.	Along Eastern Bye-Pass, Hotoro, Nassarwa Lga, Kano
76	Criss Cross Pet. Mktg. Co. Nigeria Limited.	13, Court/Middle Road, Sabon Gari, Fagge Lga, Kano
77	Criss Cross Pet. Mktg. Co. Nigeria Limited.	1c, Enugu Road, Sabon Gari, Fagge Lga, Kano State
78	Criss Cross Pet. Mktg. Co. Nigeria Limited.	42, Ibrahim Taiwo Road, Fagge Lga, Kano State
79	Criss Cross Pet. Mktg. Co. Nigeria Limited.	Km 5, Zaria Road, Kumbotso Lga, Kano State
80	Dan Marna	Yahaya Gusau Road, Gwale Lga, Kano
81	Dankano Oil & Chemical Marketing Co. Limited.	Along Kabuga-Gwarzo Road, Ungogo, Kano State

82	Danlami Petr. & Trans. Nigeria Limited.	Along Zaria Road, U/Uku, Tarauni, Kano State
83	Farhan Oil Ltd	Old Katsina Road, Federal Sect, Dala Lga, Kano State
84	Fari Oil Limited.	2 Zaria Road, Na'ibawa, Kumbotso Lga, Kano Stae
85	Gasau Petroleum Limited.	Kumbotso Secreteriat Road, Gadama Village, Kumbotso, Kano
86	Gasau Petroleum Limited.	No-1, Coca-Cola Junction, Challawa Road, Kumbotso
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, Fagge, Kano
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, Kumbotso Lga, 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
141	T.S.G. Oil & Gas Limited.	Along Lawan Danbazau/Off Buk/Zaria Rd, Municipal, Kano
142	Tambari Zango Nigeria Limited	Kano-Gwarzo Road Opp Buk New Site, Kumbotso Lga, Kano
143	Uralo Petroleum Limited.	Along Link Road, Unguwa Uku, Tarauni Lga, Kano State
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
148	Zahab Nigeria Ltd	Madobi Road Kunyan Tasidi Village, Kumbotso Lga, Kano

Appendix III: 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 Investiment Limited)	Along Kano-Gwarzo Road, R/Zaki, Ungogo Lga, Kano State
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

Appendix IV: Filling Stations Not Meet 15 Meter Distance From Road

S/N	Company Name	Location
1	Oando Nigeria Plc	No 1 Bello Road, Nassarawa Lga, Kano State
2	Total Finaelf Nigeria Plc	Along Buk, Municipal, Kano State
3	Criss Cross Pet. Mktg. Co. Nigeria Limited.	13, Court/Middle Road, Sabon Gari, Fagge Lga, Kano
4	Asab Oil & Marketing Company Limited	Along Daura Road, Doka Village, Ungogo, Kano State
5	T.B.F. Nigeria Limited.	No1 Jakara Qtrs, Kano Municipal Lga, Kano
6	A.Y Rimi Venture Limited.	Along Katsina Road, R/Lemo, K/Jajira, Fagge Lga, Kano State
7	Forte Oil	New Road, Sabon Gari Kano
8	Alasan Shuaibu	Along Zaria Road

Appendix V: Filling Stations Not Meet 100m Distance from Hospital

S/N	Company Name	Address
1	Oando Nigeria Plc	Km-E3, Aminu Kano Way (Sani Mainagge), Gwale Lga, Kano
2	Total Finaelf Nigeria Plc	Court Road, S/Gari, Fagge Lga, Kano State
3	Criss Cross Pet. Mktg. Co. Nigeria Limited.	13, Court/Middle Road, Sabon Gari, Fagge Lga, Kano
4	Musa Mailafiya Petroleum Nigeria.	Katsina Road, Rijiyar Lemo, Dala Lga, Kano
5	Ruqee Petr. Co. Ltd	Kano-Challawa Road, Kumbotso Lga, Kano State

Appendix VI: Filling Station And Their Addresses in Kano Metropolis

S/N	Company Name	Detailed Location Address	Lon	Lat
1	Advance Link Petroleum Limited	Abdullahi Bayero Way Opp Kano State Poly	8.54435	11.99336
2	Mobile Oil Nigeria Ltd	32a, Airport Road, Nassarawa LGA, Kano State	8.54484	12.02109
3	Total Finaelf Nigeria Plc	181a Airport Road, Nassarawa LGA, Kano State	8.54323	12.02521
4	Total Finaelf Nigeria Plc	181b Airport Road, Nassarawa LGA, Kano State	8.54275	12.02535
5	A.B.Y. Petroleum Nigeria Limited	Airport Road, Nassarawa LGA Kano	8.54263	12.01178
6	Azman Oil	Airport Road, Adjacent To Eldrado Cinema	8.5442	12.01952
7	A.A Rano	Airport Road, Nassarawa LGA Kano	8.54064	12.02676
8	Alh Nababa Abdulmumini	Airport Road, Nassarawa LGA Kano	8.53539	12.03485
9	Oando Nigeria Plc	Km-E3, Aminu Kano Way (Sani Mainagge), Gwale LGA, Kano	8.49653	11.98811
10	M.R.S Oil & Gas Company Limited	Along Aminu Kano Way	8.49548	11.99109
11	Uramco	Along Aminu Kano Way Goron Dutse	8.49448	12.00417
12	A.B.Y. Petroleum Nigeria Limited	Along Aminu Kano Way, Dala LGA Kano	8.49896	12.01109
13	African Petroleum Plc	Bello Road, Kano Municipal LGA, Kano State	8.53668	12.00702

14	Con Oil Nigeria Ltd	Plot 7655, Bello Road, Fagge LGA, Kano State	8.53358	12.00474
15	Oando Nigeria Plc	No 1 Bello Road, Nassarawa LGA, Kano State	8.5341	12.00428
16	A.A Rano Nigeria Limited.	Along Bompai Road, By Central Hotel, Nassarawa, Kano	8.54392	12.00404
17	Total Finaelf Nigeria Plc	Along Buk, Municipal, Kano State	8.50419	11.96667
18	Nnpc	Plot-12, Buk Road, Gwale, Kano	8.49824	11.98034
19	Oando Nigeria Plc	Along Buk, Municipal, Kano State	#Ref!	#Ref!
20	Pure Oil & Gas Limited.	Buk Road, Kofar Kabuga, Gwale LGA, Kano	8.48241	11.98341
21	Sani Brothers Transport Limited.	Along Buk Road, Sharada, Gwale LGA, Kano State	8.5085	11.98252
22	Oando Nigeria Plc	197, Club Road, Nassarawa LGA, Kano	8.56658	12.00864
23	Oando Nigeria Plc	No 1, Club Road, Nassarawa LGA, Kano	8.55004	12.00775
24	Azman Oil & Gas Limited.	Along Club Road, Bompai, Nassarawa LGA, Kano	8.55174	12.01965
25	Total Finaelf Nigeria Plc	Court Road, S/Gari, Fagge LGA, Kano State	8.53444	12.01950
26	Criss Cross Pet. Mktg. Co. Nigeria Limited.	13, Court/Middle Road, Sabon Gari, Fagge LGA, Kano	8.53473	12.01945
27	Alaj Petroleum Company Limited.	110 Dala Hosp Road, K/Ruwa, Dala LGA, Kano State,	8.50198	12.02074
28	Alfatashir Nigeria Llimited.	Dala Hospital Road, Kofar Ruwa, Dala LGA, Kano State	8.50184	12.02479
29	A. A. Babura	Dala Hospital Road, Kofar Ruwa, Dala LGA, Kano State	8.50102	12.02928
30	Kamaras Global Merchant Limited.	Along Danbatta-Daura Road, Sabon G/Doka, Ungogo, Kano	8.44949	12.08277
31	Alh. Usman Abdullahi Doka & Sons.	Kano-Daura, Sabon Gari Doka, Ungogo LGA, Kano	8.45033	12.08301
32	Asab Oil & Marketing Company Limited	Along Daura Road, Doka Village, Ungogo, Kano State	8.45034	12.08154
33	African Petroleum Plc	Eastern Byepass Kawaji Qtrs, Nassarawa LGA, Kano State	8.58613	12.00988
34	Oando Nigeria Plc	Eastern Byepass Road, Na'ibawa, Kumbotso, Kano	8.56419	11.92335
35	Alh. Bukar Makoda & Sons Limited.	Along Eastern Bye-Pass Rd, Tunshama, Nassarawa LGA, Kano	8.58678	11.99271
36	Alh. Bukar Makoda & Sons Limited.	Along Eastern Bye-Pass Rd, Hotoron Arewa, Nassarawa, Kano	8.59059	11.98476
37	Asaija Oil Nigeria Limited.	Along Eastern Bye-Pass Road, Unguwa Uku, Tarauni, Kano	8.5794	11.94501
38	Biram Oil & Gas Mktg.Company Limited.	Eastern Bye-Pass Road, Kawaji, Nassarawa LGA Kano	8.58681	12.00849
39	Chula Oil Company Limited.	Along Eastern Bye-Pass, Hotoro, Nassarwa LGA, Kano	8.59298	11.97149
40	Ismariya Comapany Nigeria Limited.	Eastern Bye-Pass, Hotoro, Maraba, Tarauni LGA, Kano	8.58672	11.95481
41	Jahun Petroleum Nigeria Limited.	Eastern Bye-Pass Road, Tarauni LGA, Kano	8.58427	11.95352
42	Sadan Petroleum Limited	Eastern Bye-Pass Road, Kumbotso, Kano	8.5866	11.95578
43	Majiya Petroleum Nigeria Limited.	Along Eastern Bye-Pass Road, Hotoro, Nassarawa LGA, Kano	8.59015	11.98301
44	Bamzy Limited	Eastern Bye-Pass Road, Kumbotso, Kano	8.56651	11.92599
45	Sahas Company Limited	Eastern Bye-Pass Road	8.59065	11.95851

46	Nazalco Enterprises	Eastern Bye-Pass Road	8.58772	11.99270
47	Criss Cross Pet. Mktg. Co. Nigeria Limited.	1c, Enugu Road, Sabon Gari, Fagge LGA, Kano State	8.53726	12.02248
48	Mobile Oil Nigeria Ltd	Km 15 Gwarzo Road, Kofar Kabuga , Gwale LGA, Kano State	8.43302	11.96462
49	Mobile Oil Nigeria Ltd	Km 6, Gwarzo Road Kofar Kabuga, Gwale LGA, Kano State	8.48071	11.98647
50	Con Oil Nigeria Ltd	Gwarzo Rd, Rimin Gata Village, Dambare, Kumbotso LGA, Kano State	8.43679	11.96576
51	M.R.S Oil & Gas Company Limited	Km 12, Gwarzo Road, Dala LGA, Kano State	8.46619	11.97986
52	A.A.S Marmro Nigeria,Limited.	Gwarzo Rd, Dorayi Babba, Gwale LGA, Kano	8.46155	11.97818
53	Nipco Plc	Along Gwarzo Road, Kabuga, Gwale LGA, Kano	8.47186	11.98250
54	Nnpc (A.U Future Investiment Limited)	Along Kano-Gwarzo Road, R/Zaki, Ungogo LGA, Kano State	8.45589	11.97667
55	Altaslim Petroleum Nigeria Limited.	Gwarzo Road, Dorayi Babba M/Park, Gwale LGA, Kano	8.44908	11.97300
56	Bataiya Enterprises Nigeria Limited.	Km 2, Gwarzo Road, K/Kabuga, Gwale LGA, Kanoi	8.48223	11.98847
57	Dankano Oil & Chemical Marketing Co. Limited.	Along Kabuga-Gwarzo Road, Ungogo, Kano State	8.46644	11.98073
58	Nnpc (Magarsiku Internationa Company)	Along Gwarzo Road, Kabuga, Gwale LGA, Kano	8.47299	11.98293
59	B.I. Nigeria Ltd	Gwarzo Road, Motor Park, Km-5, Gwale, Kano	8.45124	11.97377
60	Biram	Along Gwarzo Road, Kabuga, Gwale LGA, Kano	8.47566	11.98397
61	Insibal	Along Kano-Gwarzo Road, R/Zaki, Ungogo LGA, Kano State	8.43855	11.96762
62	Yasara International Oil Service Limited	Kano-Gwarzo Road Opp Buk New Site, Kumbotso LGA, Kano	8.42702	11.96143
63	Tambari Zango Nigeria Limited	Kano-Gwarzo Road Opp Buk New Site, Kumbotso LGA, Kano	8.41537	11.95927
64	A.A. Ibrahim & Co Nigeria Limited	Kano-Gwarzo Road Opp Buk New Site, Kumbotso LGA, Kano	8.4219	11.95971
65	Total Finaelf Nigeria Plc	Hadejia Road, Motor Park, Nassarawa LGA, Kano State	8.59281	12.01028
66	A.A. Rano Nigeria Limited	Along Hadejia Road, Yankaba, Nassarawa LGA, Kano State	8.58702	12.01053
67	Biram Oil & Gas Mktg.Company Limited.	Km-7, Hadejia Road, Nassarawa LGA, Kano State	8.59074	12.01038
68	Rimi Holdings Nigeria Limited.	Km-5, Hadejia Road, Nassarawa, Kano	8.59433	12.01029
69	Salisu Garba & Sons.	Km-9, Hadejia Road, Nassaraw LGA, Kano State	8.60531	12.01168
70	Nabila Oil Mill Limited	Hadejia Road	8.60802	12.01216
71	Forte Oil Company Limited	Hadejia Road	8.61318	12.01261
72	Nnpc	Hadejia Road Opp Rimi Holdings	8.59402	12.01113
73	Nnpc	Hadejia Road	8.58823	12.01132
74	A.B.Y Petroleum Nigeria Limited.	Ibb Way, Opp K/Waibai Market, Fagge Kano	8.52379	12.00977
75	Oando Nigeria Plc	44, Ibrahim Taiwo Road, Fagge LGA, Kano State	8.53413	12.00047

76	Agyl Merchandise Nigeria Limited	Along Ibrahim Taiwo Road, Fagge, Kano State	8.53414	11.99682
77	Azman Oil & Gas Limited.	At Plot131, Ibrahim Taiwo Road, Fagge LGA, Kano State	8.53413	11.99882
78	Criss Cross Pet. Mktg. Co. Nigeria Limited.	42, Ibrahim Taiwo Road, Fagge LGA, Kano State	8.53429	12.00012
79	Yasara International Service Limited	41 Ibrahim Taiwo Road,Fagge LGA, Kano	8.53486	11.99941
80	Oando Nigeria Plc	16, Independence Road, Dakata, Nassarawa LGA, Kano State	8.5747	12.02211
81	Lamohd Petroleum Marketing.	Independence Road, Bompai, Nassarawa, Kano	8.57241	12.02176
82	S.D.Y. Engrg. & Constrc. Co. Limited.	Along Independence Road, Bompai, Nassarwa LGA, Kano	8.55131	12.02019
83	T.B.F. Nigeria Limited.	No1 Jakara Qtrs, Kano Municipal LGA, Kano	8.50982	12.00131
84	Mobile Oil Nigeria Ltd	Km-9, Katsina/Daura Junction, Ungogo, Kano State	8.45036	12.08018
85	Con Oil Nigeria Ltd	Km 14, (Mile 9)Katsina Road, Ungogo LGA, Kano State	8.45288	12.07797
86	Aire Integrated Services Nigeria.	No-1, Mile 9, Katsina Road, Ungogo LGA, Kano State	8.44749	12.08102
87	A.Y Rimi Venture Limited.	Along Katsina Road, R/Lemo, K/Jajira, Fagge LGA, Kano State	8.47451	12.05497
88	Alaj Petroleum Company Limited.	Km-2 Katsina Road, Kadawa, Ungogo LGA, Kano State	8.45765	12.07337
89	A.Y Maikifi Oil & Gas Company Limited.	Katsina Road, Bachirawa, Fagge LGA, Kano	8.46816	12.06361
90	Almoda Petroleum Limited.	Katsina Road, Opp Army Barrack, Dala LGA, Kano	8.50545	12.02928
91	Azman Oil & Gas Limited.	Along Katsina Road, R/Lemo, Dala LGA, Kano	8.47486	12.05581
92	Nnpc (Danlami Petr. & Trans. Limited)	Katsina Road, Bachirawa, Dala, Kano	8.46701	12.06498
93	Nnpc (Haab Investment Limited)	Along Katsina Road, Bachirawa, Ungogo LGA, Kano	8.46841	12.06232
94	J.Inkande Nigeria Limited.	Plot 103a, Katsin Rd, Opp Nitel Training School, Fagge, Kano	8.51724	12.02895
95	Nnpc (Kamaras Global)	Along Katsina Road, Kurnar Asabe, Dala LGA, Kano	8.49431	12.03315
96	M.K.K. Oil Company Limited.	Katsina Road, Bachirawa, Ungogo, Kano State	8.46593	12.06631
97	Musa Mailafiya Petroleum Nigeria.	Katsina Road, Rijiyar Lemo, Dala LGA, Kano	8.48026	12.04767
98	Rimi Holdings Nigeria Limited.	Along Katsina Road, Tudun Bojuwa, Fagge LGA, Kano	8.48187	12.04586
99	Sani Brothers Transport Limited.	Katsina Road, Bachirawa, Ungogo, Kano State	8.46441	12.06821
100	A.Y Suleman	Opp. Digital Bridge Institute	8.51653	12.02878
101	Aona Zuma	Airport Round About	8.51577	12.02843
102	A.B Radda	Kurnar Asabe	8.49173	12.03525
103	Oando	Katsina Road Rijiyar Lemo	8.47076	12.05939
104	Total	Katsina Road Rijiyar Lemo	8.47039	12.06104
105	Ado Abdullahi Petroleum Ltd	Katsina Road Rijiyar Lemo	8.4687	12.06182
106	Murna Oil And Gas Limited	Katsina Road Bachirawa	8.46166	12.07054
107	Oando	Katsina Road	8.44882	12.08103

108	Sansul Integrated	Katsina Road	8.44566	12.08203
109	Ammasco International Limited.	50, Kofar Mazugal Road, Dala LGA, Kano	8.52265	12.00687
110	Malikawa Petr. Nigeria Limiited.	Kofar Ruwa M/Park, Dala LGA, Kano State	8.499	12.02857
111	S.G Petroleum Marketing Company.	Kofar Ruwa M/Park, Dala LGA, Kano State	8.49899	12.02843
112	A. A. Dangwaida	Kofar Ruwa M/Park, Dala LGA, Kano State	8.49854	12.02828
113	I. B. S.	Kofar Ruwa M/Park, Dala LGA, Kano State	8.49879	12.02837
114	Malikawa Petr. Nigeria Limiited.	Kofar Ruwa M/Park, Dala LGA, Kano State	8.499	12.02857
115	S.G Petroleum Marketing Company.	Kofar Ruwa M/Park, Dala LGA, Kano State	8.49899	12.02843
116	Almoda Petroleum Limited.	Opp Orion Cinema, K/Wambai, Municipal LGA, Kano	8.52467	12.00478
117	Gusau Petroleum Limited.	Kumbotso Secreteriat Road, Gadama Village, Kumbotso, Kano	8.49539	11.89837
118	Con Oil Nigeria Ltd	16 Lagos Street(Coronation), Fagge LGA, Kano State	8.53691	12.00705
119	T.S.G. Oil & Gas Limited.	Along Lawan Danbazau/Off Buk/Zaria Rd, Municipal, Kano	#Ref!	#Ref!
120	Uralo Petroleum Limited.	Along Link Road, Unguwa Uku, Tarauni LGA, Kano State	8.56612	11.94824
121	Rimi Holdings Nigeria Limited.	Along Link Road, Unguwa Uku, Tarauni LGA, Kano State	#Ref!	#Ref!
122	Alfatashir Nigeria Llimited.	Along Madobi R/About, Kumbotso LGA, Kano State	8.47400	11.94421
123	Aminco International Nigeria Limited.	Km 1 Madobi Road, Kumbotso LGA, Kano State	8.46998	11.94508
124	Bbsy General Merchant Limited.	Panshekara Rd, Madobi R/About, Kumbotso LGA, Kano	8.4745	11.94347
125	Mansur Yusuf Nigeria Limited.	Along Madobi Road, Gezawa Village, Kumbotso, Kano	8.46216	11.94586
126	Pic Oil Nigeria Limited.	Km 4, Kano-Madobi Road, Kunyan-Ta-Inna, Kumbotso LGA, Kano	8.46748	11.94591
127	M.R.S. Oil & Gas Limited.	Madobi Road, Kunyan-Ta-Inna Village, Kumbotso LGA, Kano	8.44567	11.94279
128	Zahab Nigeria Ltd	Madobi Road Kunyan Tasidi Village, Kumbotso LGA, Kano	#Ref!	#Ref!
129	Sanduff Oil & Gas Limited.	Maiduguri Road, Kumbotso LGA, Kano	8.61497	11.93418
130	Yar Sarki Nigeria Limited.	Along Maiduguri, Mariri, Kumbotso, Kano	8.62857	12.00988
131	African Petroleum Plc	Maiduguri Roundabout, Hotoro, Tarauni LGA, Kano State,	8.58613	11.96286
132	M.R.S Oil & Gas Company Limited	Maiduguri Road, Hotoro, Tarauni LGA, Kano State	8.59035	11.96303
133	Total Finaelf Nigeria Plc	Km-2 Maiduguri Road, Hotoro Tarauni LGA, Kano State	8.58757	11.94122
134	A.A Rano Nigeria Limited.	Maiduguri Road, Farawa Village, Kumbotso LGA, Kano State	8.61719	11.94317
135	Absa Nigeria Limited.	Km-7, Maiduguri Road, Kumbotso LGA, Kano State	8.61412	11.94363
136	Audu Manager & Sons Nigeria Limited.	Maiduguri Road, Mariri Village, Kumbotso LGA, Kano	8.6137	11.96386
137	Kajtraco Nigeria Limited.	90 Maiduguri Road, Nassaraw LGA, Kano State	8.58789	11.97774
138	M.R.S. Oil & Gas Limited.	Maiduguri Road, Opp Tarauni Market Junct,	8.56481	11.94280

		Tarauni LGA		
139	Musa Aminu Petroleum Enterprises.	Km 11 Maiduguri Road, Mariri, Kumbotso LGA, Kano	8.61503	11.96362
140	Nnpc Kano Mega Station.	Along Maiduguri Road, Hotoro, Nassarawa, Kano	8.59219	11.95375
141	Imad Oil& Gas Limited.	Along Maiduguri Road, Farawa, Kumbotso, Kano	8.60567	11.96166
142	Total Finaelf Nigeria Plc	Along Maiduguri Road	8.59512	11.96100
143	Nnpc	Along Maiduguri Road	8.59626	11.95367
144	Oando Nigeria Plc	Along Maiduguri Road	8.6045	11.94431
145	Oando Nigeria Plc	Along Maiduguri Road	8.6126	11.93255
146	Total Finaelf Nigeria Plc	Along Maiduguri Road	8.63086	11.95573
147	Biram Oil & Gas Mktg.Company Limited.	Along Maiduguri Road	8.60357	11.96137
148	M.K Ahmad	Along Maiduguri Road	8.5971	11.93363
149	Idris Makole & Sons	Along Maiduguri Road, Mariri, Kumbotso, Kano	8.62812	11.96837
150	A.Y Maikifi Oil & Gas Company Limited.	Along Maiduguri Off Zaria Road	8.55235	11.97125
151	Azman Oil & Gas Limited.	Along Maiduguri	8.55891	11.97212
152	Audu Manager & Sons Nigeria Limited.	Along Maiduguri Road	8.56033	11.96263
153	Magarsiku Internationa Company.	Along Maiduguri Road Hotoro Round About	8.59185	11.96327
154	Rimi Holdings Nigeria Limited.	Along Maiduguri Road Hotoro Round About	8.59321	11.96231
155	Nipco Plc	Along Maiduguri Road Hotoro Round About	8.59321	12.02027
156	Oando Nigeria Plc	2 Middle/Court Road, S/Gari, Fagge LGA, Kano State	8.53474	12.01103
157	African Petroleum Plc	Murtala Mohd Way (Leventis), Fagge LGA, Kano	8.53425	12.01402
158	Azman Oil & Gas Limited.	France/Murtala Mohd Way, Fagge LGA, Kano	8.52625	12.01103
159	Oando Nigeria Plc	85, Murtala Mohammed/Court Road, Nassarawa LGA Kano	8.53425	12.00909
160	M.R.S Oil & Gas Company Limited	96a, Murtala Muhammed Way, Nassarawa LGA, Kano State	8.54321	12.02027
161	Forte Oil	New Road, Sabon Gari Kano	8.53472	12.02204
162	Farhan Oil Ltd	Old Katsina Road, Federal Sect, Dala LGA, Kano State	8.5163	11.91060
163	Gusau Petroleum Limited.	No-1, Coca-Cola Junction, Challawa Road, Kumbotso	8.46345	11.94630
164	B.I. Petroleum Nigeria Limited.	Kano-Challawa Road, Kumbotso LGA, Kano State	8.47481	11.90982
165	Musbahu Garba Nigeria Limited.	Challawa Road, Panshekara, Kumbotso LGA, Kano	8.46317	11.93762
166	Alasan Ahmad And Sons Petroleum Nig. Ltd	Kano-Challawa Road, Kumbotso LGA, Kano State	8.47192	11.92854
167	Maiburgami Oil And Gas	Kano-Challawa Road, Kumbotso LGA, Kano State	8.46898	11.95194
168	Ruqee Petr. Co. Ltd	Kano-Challawa Road, Kumbotso LGA, Kano State	8.47642	11.97034
169	A.A Rano Nigeria Limited.	Kano-Challawa Road, Dukawuya	8.48304	11.97998

170	Con Oil Nigeria Ltd	Sabo Bakin Zuwo, Tarauni , Kano State	8.56025	12.0504
171	Con Oil Nigeria Ltd	Sani Abacha Way, Nassarawa Kano State	8.54126	11.96306
172	African Petroleum Plc	Sharada Industry Estate, Dala LGA, Kano State	8.50338	11.96145
173	Alhaji Shehu Yaro Haske Nigeria Limited	Sharada Industrial Area, Phase Ii, Gwale LGA, Kano	8.50136	11.97342
174	Al-Ihsan Transport Nigeria Limited.	Sharada Industrial Area, Phase Ii, Gwale LGA, Kano	8.51782	11.97303
175	A.A Rano Nigeria Limited.	11, Tafawa Balewa Road, Nassarawa LGA, Kano State	8.51655	12.00687
176	Mobile Oil Nigeria Ltd	11, Tafawa Balewa Road, Nassarawa LGA, Kano State	8.54436	11.99870
177	A.G.Y.L Merchandise Nigeria Limited.	Along T/Yola Road, Dala, Kano State	8.48437	12.01066
178	Ali Musa Nigeria Limited.	Along Waika-Dawanau Road, Dala LGA, Kano	8.48863	11.96585
179	Dan Marna	Yahaya Gusau Road, Gwale LGA, Kano	8.50454	11.97080
180	Nana Petr. & Allied Prod. Limited.	Yahaya Gusau Sharada, Ind Est Phase I, Gwale LGA, Kano	8.49930	12.02957
181	Mobile Oil Nigeria Ltd	Along Zango Road, Dakata Nassarawa LGA, Kano State	8.57800	11.95351
182	African Petroleum Plc	Zaria Road U/Uku, Opp Fgc, Tarauni LGA, Kano State	8.56426	11.96829
183	Con Oil Nigeria Ltd	852 Zaria Rd, Gyadi-Gyadi R/About, Tarauni LGA, Kano State	8.55107	11.93554
184	Con Oil Nigeria Ltd	Km 2, Zaria Road, Fiat Site, Kumbotso LGA, Kano State	8.55831	11.93224
185	Con Oil Nigeria Ltd	Km 2, Zaria Road, Na'ibawa, Kumbotso LGA, Kano State	8.55648	11.93295
186	M.R.S Oil & Gas Company Limited	Km 7, Zaria Road, Na'ibawa, Tarauni LGA, Kano State	8.55582	11.92043
187	Ba Bello	Km-12, Kano-Zaria Road, Wailari, Kumbotso LGA, Kano State	8.5487	11.93295
188	M.R.S Oil & Gas Company Limited	Along Zaria Road, Gyadi-Gyadi, Tarauni LGA, Kano State	8.55582	11.90869
189	Advance Link Petroleum Limited.	Zaria Road, Amaryawa Village, Kumbotso LGA, Kano	8.54436	11.97330
190	Alfatashir Nigeria Llimited.	Plot 2 &3, Zaria Road, Tarauni LGA, Kano State	8.54574	11.93818
191	Alh. Sale Ali Nagero & Sons Limited.	At No-C2, Na'ibawa Quarters, Zaria Road, Kumbotso, Kano	8.56103	11.92421
192	Allah Na Nan Nigeria Limited.	Along Zaria Road, Malikawa Qtrs, Kumbotso, Kano State	8.55028	11.93604
193	Bulsawa Petroleum Nigeria Limited.	Km 10, Zaria Rd, Na'ibawa Qtrs, Tarauni LGA Kano State	8.55891	11.92364
194	Criss Cross Pet. Mktg. Co. Nigeria Limited.	Km 5, Zaria Road, Kumbotso LGA, Kano State	8.55008	11.94980
195	Danlami Petr. & Trans. Nigeria Limited.	Along Zaria Road, U/Uku, Tarauni, Kano State	8.56588	11.93472
196	Fari Oil Limited.	2 Zaria Road, Na'ibawa, Kumbotso LGA, Kano Stae	8.55747	11.95523
197	Ascon	Unguwa Uku Motor Park, Tarauni LGA, Kano State	8.56263	11.98554
198	Na'adade Petroleum Limited.	No-3zaria Road, Nassarawa LGA, Kano State	8.53448	11.91941
199	Nicabon Petroleum Limited.	Km 12, Zaria Road, Wailari Village,	8.54834	11.95487

		Kumbotso, Kano		
200	Rahamaniyya Oil & Gas Limited.	Km-2, Zaria Road, U/Uku, Tarauni LGA, Kano	8.56299	11.88267
201	Amasco	Zaria Road, U/Uku, Tarauni, Kano State	8.53991	11.90350
202	Amg	Along Zaria Road	8.54196	11.88724
203	Aa Goron Dutse	Along Zaria Road	8.53989	11.88319
204	Alasan Shuaibu	Along Zaria Road	8.54043	11.87394
205	Sid	Along Zaria Road	8.54857	11.96876
206	Nnpc	Gyadi-Gyadi Round About	8.55033	11.96744
207	A.A. Rano	Along Zaria Road Gyadi-Gyadi, Tarauni LGA, Kano State	8.55043	11.94469
208	Matrix	Along Zaria Road	8.56516	11.93341
209	A.A. Rano	Along Zaria Road	8.55623	11.96750
210	Total Finaelf Nigeria Plc	Plot 10, Zoo Road, Kumbotso LGA, Kano State	8.53016	11.97285
211	M.R.S Oil & Gas Company Limited	Zoo Road, Gandun Albasa, Nassarawa LGA, Kano State	8.53401	11.97271
212	Premier Oil & Gas Company Limited.	Zoo Road, Tarauni LGA, Kano State	8.53382	12.02829
213	Shaheed Petroleum Ltd	Along Zungeru Road, Fagge LGA Kano	8.52392	12.02777
214	Lifur Oil & Gas Limited.	Zungeru Road, Sabon Gari, Fagge LGA, Kano State	8.52496	12.02829