**CHAPTER ONE**

**INTRODUCTION**

**1.1BACKGROUND OF THE STUDY**

Transportation on pavements and property are common and relevant in the physical and economic development of cities and town in Nigeria and the world at large. Property and land values tend to increase in areas with expanding transportation networksand in areas without such improvements it seems to be less. The value of land and price of housing continue to rise rapidly which are part of the expectations in cities with improvements in transportation and rapid economic population and growth (Goldberg, 1970).

Regions and Nations would be severely limited in development without transportation which plays an important role in the physical and economic growth ( Oyesiku, 2002).

Mobility of goods and pavement facilities are independent. Indeed finding of earlier studies indicate consistent connections among them ( Polzin, 2004). Transportation route is part of distinct development pattern or road network and mostly described as an indispensable factor of human existence, development, industrialization and civilization ( Barley and Littles, 2008). Increased transport investment coupled with route network result in the changed levels of accessibility reflected through Cost Benefit Analysis Savings (CBAS) in travel time and other benefits. In increased catchment areas for services and facilities like Schools, Shops, Offices, Bank and leisure activities benefits are well noticeable.

Road network are observed in terms of its components of connectivity, accessibility, traffic density compactness, level of service and density of the road. The level of service involves the quality of service on transportation device or infrastructure are determined and its approach considering several factors taken as measures of traffic density and congestion rather than the overall speed of the journey (Scott, Walter, 2004)

Freight transportation is an essential component for welfare generation. It is indispensable for the supply of goods facilitating its movement along a chain of supply and in influencing Nigeria economy efficiency.

The Governmental roads in Nigeria are basically divided into three (3) which are Trunk A, Trunk B and Trunk C: ‘A’ roads are those road and under Federal Government ownership; developed and maintained by the Federal Government. Trunk ‘B’ are those that are formerly handled by the State Government while Trunk C are the Collectors and Arterials under the Local Government of the region.

The current road network is about 195,000 kilometers (CBN, 2003) out of which about 18% belongs to the Federal Government (Trunk ‘A’ roads), 16% belongs to the State Government ( Trunk ‘B’ roads) and while 67% are Local Government roads ( Trunk C roads ). According to World Fact Book of Central Intelligence Agency (2004), 193200km of the total road network in Nigeria has 28,980km paved while 164,220km are not and inside the paved road almost 65% are deteriorating due to increased modal split and migration of freight transport ranging from small vehicles to trucks. In Nigeria, most road are in bad shapes leading to negative economic effects. The effect of pavement of freight transport are studied which an analysis taken showed that about 19% of Nigerian roads are paved. All unpaved roads which is about 13% are bad roads.

Both the paved and the unpaved roads in Nigeria are deteriorating by the day and has become a source of worry to all vehicle users. Annual losses (from pavement maintenance) due to bad roads is valued over 185 billion naira including case of erosion, pollution narrow road way, cracks and potholes.

It is certain that the business or the high value of a route would affect the high riding quality of pavement with time. Nigeria at the other hand due to its based Agro-based economy, about 70% of its citizens indulges in commercial activities that involves mobility.

The Kano-Zaria road is a Trunk ‘A’ class road which has a flexible pavement structure that consist of asphaltic concrete surface over other sub- structured layers (base, sub-base and subgrade).

Kano is a Commercial center situated in the Saharan geographic region, south of the Sahara and the second largest city covering 137 square kilometers which is known for diverse economic operations within and outside its region.

At the earlier years, Zaria on the other hand was the most Southern of the Northern-city States. Zaria’s is primarily based on agriculture, cash crop cultivation including cotton, groundnut etc. Zaria’s economy is still on the developing process; this has led to the transportation of agricultural products and other commodities to and fro to Kano and other States in Nigeria.

The historic road construction of the Kano-Zaria road was dated back in the 1970s. This road under-went surface dressing segments by segments until it acquired full completion. According to the Kano State Transportation Agency (1976) the transportation of Heavy Goods Vehicles are considered one of the major causes of pressure on the road.

In Afdin Contractors report, it stated that the total thickness of the pavements layers was not uniform along the entire road width and length while some areas shows cracks and deformation. According to Afdin Contractors Nigeria this section were observed to have extensive potholes along the pavements.

In 1998, the Petroleum Trust Fund (PTF) awarded a contract for the rehabilitation of Kano-Zaria road pavement reconstruction of scarified area and the laying of 40mm asphaltic concrete surface (PTF, 2011). Then the development of the Federal Road Maintenance Agency (FERMA) in 2003 was a major step towards the maintenance and rehabilitation of the road.

Since then, the Kano-Zaria road has been on maintenance scheme and check till-date.

**1.2 STATEMENT OF THE PROBLEM**

The research is concerned with the effects of pavements of freight transportation in Kano-Zaria highway consisting of some areas having land use for example the Kafin Super market, Polaris Banking firm, Kasco fertilizer Company and AM Yalwa Nigeria Petro- Filling Station. Therefore, the environmental impacts of road freight transport is assessed with respect to transport of goods by Heavy goods vehicles ( HGVs). The deformation affects the safety and riding quality of road pavements.

In recent years, the growing volume of road traffic had increased for instance Kano is termed as ‘center of commerce’ so about 75% of the population are involved in business activities, be it small or large. Those that are into large businesses that involves transporting goods to other States or Zaria in particular would usually own personal Heavy Goods Vehicles (HGVs) which are used for moving this goods within the metropolitan or outside it.

**1.3 AIMS AND OBJECTIVES**

**1.3.1 AIMS**

The aim of this study is to understand the effect of pavement conditions of freight transportation systems in Nigeria.

**1.3.2 OBJECTIVES**

The above aim would be achieved through the following objectives-

1. To evaluate the problems caused by freight transportation on pavements.
2. To study the behaviors of freight transportation road users on pavement.
3. To evaluate the cause of existing traffic of the road.

**1.3.3 SCOPE AND LIMITATION**

The extent of this study is the kano-Zaria road network which the (HGVs) access all the time. The roads include; Kano-Kaduna highway, Gajale, Tarau and Kiru-Rurum road. The focus is on the evaluation of the effect of conditions of pavement of freight vehicles transporting on that road to places of goods delivery.

**1.3.4 JUSTIFICATION OF THE STUDY**

The Kano-Zaria road way with its approximate length of about 161.3km which some of its areas is in a deplorable condition and yet no published research work has been carried out in order to explore the effect of pavement condition of freight transportation on this road in other to bring up safety measures and possible recommendation to reduce deterioration of our road networks and preventing our pavements from possibly going into extinct in Nigeria.