

AN ASSESSMENT OF TRANSPORTATION CHALLENGES IN NINGI LOCAL GOVERNMENT AREA OF BAUCHI STATE

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Abstract

This study examines transportation challenges in Ningi Local Government Area, Bauchi State, using a survey research design. Data were collected through questionnaires distributed to drivers, passengers and freight owners using stratified random sampling method. The tool focuses on road conditions, transportation infrastructure and commuting costs. Of the 200 questionnaires, 150 were retrieved and analyzed using SPSS and Microsoft Excel, of which 25% were attributed to unavailability and incomplete submissions of respondents. The findings show that commercial use dominates most transportation routes, causing congestion and limiting access for private vehicles. The survey results revealed that 72% of the respondents cited poor road conditions as the main challenge, causing inconvenience to drivers and passengers. Additional issues include disrupted business activities (65%), difficulty in transporting agricultural products (58%), food shortages and inflation (53%), all of which significantly hinder economic growth in the region. The study recommends targeted infrastructure improvements to increase transportation efficiency and economic resiliency.

Keywords: Transportation Challenges, Rural Infrastructure, Road Conditions, Economic Development, Ningi Local Government Area, Nigeria

Introduction

Transportation is a fundamental component of human society, essential to facilitate the movement of people, goods and services between different places. It plays a vital role in the functioning of daily life and underpins the advancement, economic, social, political and cultural development of human civilization (Okoko, 2006). A well-functioning transportation

system is indispensable for industrialization, agricultural productivity, and the overall development of national and local economies. Efficient transportation networks support timely and cost-effective movement of raw materials to production centers and distribution of finished goods—especially perishable agricultural products to markets, thereby reducing spoilage, cutting transportation costs, and improving

access for both producers and consumers (Filani, 2013).

However, in Nigeria, rural communities face significant development challenges such as widespread poverty, food insecurity, malnutrition, low and unstable incomes and poor infrastructure. These issues are compounded by limited access to reliable transportation, which restricts mobility, hinders access to health care, education, and markets, and ultimately hinders economic opportunities. Recognizing these constraints, the Nigerian Rural Development Strategy (2001) views improved access to transport and other basic services as central to achieving sustainable rural development. Therefore, enhancing rural transport infrastructure is important not only to boost agricultural production but also to improve the quality of life and reduce the persistent urban-rural development gap.

This study examines the specific transportation challenges affecting Ningi Local Government Area of Bauchi State, Nigeria. Despite the strategic importance of transport to the region's economy, the region faces recurring issues such as poor road conditions, inadequate infrastructure and high transport costs. This study aims to identify and analyze these challenges using primary data collected from residents, drivers, passengers and freight operators. Through a

survey research design, the study aims to highlight the extent to which these transportation issues impact economic activities and livelihoods in the area. The findings are expected to inform local development planning and provide recommendations for improving rural transport systems in Ningi LGA

Research Problem

Ningi Local Government Area, a predominantly rural and agricultural area in Bauchi State, faces significant transportation challenges. Like many rural communities in sub-Saharan Africa, it suffers from inadequate transport infrastructure, particularly poor or non-existent all-weather roads such as raw feeders and classified access roads under the rural road network system (Federal Ministry of Works and Housing [FMWH], 2020). This situation hinders the efficient movement of agricultural goods and services to markets, thereby limiting economic growth and social development (World Bank, 2019; Akinyemi and Ukoje, 2018).

Despite the region's large rural population, there is little attention from local and state governments to rural transportation issues. If these challenges persist, the economic and social integration of Ningi's rural communities will remain hindered. Therefore, this study seeks to investigate the nature, causes and impacts of

transportation challenges in Ningi local government area, with a view to identifying practical strategies to improve rural mobility and support sustainable development.

Objectives of the Study

- i. To assess the current road transportation infrastructures in the study area,
- ii. To Identify the Major Problems Affecting Vehicles on the Road,
- iii. To identify the Major transportation challenges faced by the study area,
- iv. To recommend strategies for improving road infrastructure and enhancing transportation efficiency to support economic development in the study Area.

Literature Review

Nature and Classification of Rural Roads in Nigeria transportation plays a central role in the economic and social development of any nation. In Nigeria, rural road networks are critical in linking remote agricultural communities with urban markets and service centers. According to the Federal Ministry of Works and Housing (FMWH, 2020), rural roads in Nigeria are classified into trunk A (federal), trunk B (state), and trunk C (local government) roads. Most rural settlements depend heavily on trunk C and unclassified feeder or access roads, which are largely unpaved and constructed with laterite or

earth materials. These roads are often referred to as “all-weather” only when properly surfaced and drained; however, many in practice become impassable during the rainy season. The poor condition of these access routes reduces mobility and raises transport costs, particularly for rural farmers and traders who rely on them for daily economic activities.

Transport Infrastructure and Agricultural Development

Several studies have shown that the condition of rural transport infrastructure has a direct influence on agricultural productivity and rural livelihoods. Akinyemi and Ukoje (2018) reported that areas with reliable feeder roads experience higher levels of agricultural commercialization and reduced post-harvest losses compared to regions with poor or non-existent road networks. Similarly, the World Bank (2019) observed that improvements in rural access roads significantly reduce travel time and vehicle operating costs, thereby increasing the frequency of market visits and improving the income of farming households. Poor road infrastructure, on the other hand, restricts the movement of farm inputs and outputs, discourages private investment in rural enterprises, and widens the rural-urban development gap.

Socio-Economic Effects of Poor Transportation

Inadequate transport systems do not only affect agricultural distribution but also influence social and economic integration. World Bank (2019) findings indicate that poor rural access limits opportunities for education, healthcare, and employment, especially in communities that become isolated during the wet season. Akinyemi and Ukoje (2018) emphasized that limited mobility discourages the establishment of rural industries and results in higher costs of goods and services. The overall effect is reduced rural productivity, low income, and persistent poverty among farming households. In many agrarian areas of Nigeria, the combination of poor road surfaces, inadequate drainage, and lack of maintenance has made transportation unreliable, particularly for perishable goods that require timely delivery to markets.

Institutional and Policy Challenges

Government agencies at federal, state, and local levels share responsibility for road construction and maintenance, yet coordination among them is often weak. The FMWH (2020) identified inadequate funding, poor institutional capacity, and lack of clear policy direction as key barriers to sustainable rural road maintenance. Local governments are expected to manage the feeder and access roads within their jurisdiction, but most lack the technical manpower and budgetary provisions to do so effectively. This situation leads to progressive deterioration of rural

infrastructure and limits the ability of farmers and traders to benefit from wider economic opportunities.

Evidence from Development Interventions

Development programs such as the Rural Access and Agricultural Marketing Project (RAAMP) have demonstrated that strategic investments in rural road rehabilitation can improve transport efficiency and rural welfare. The World Bank (2019) reported that road upgrading in selected Nigerian states reduced travel time by up to 40 percent and increased farmers' access to input and output markets. However, evidence from these programs also reveals that many interventions are not sustained due to weak maintenance structures and insufficient local participation. The long-term success of such initiatives depends on community engagement, local ownership, and the establishment of maintenance funding mechanisms that ensure the durability of rehabilitated roads.

Research Gap and Rationale for the Study

Existing studies show that poor transport infrastructure remains a major obstacle to rural development in Nigeria (Aderamo & Magaji, 2010; Ogunsanya, 2019). Although many national and regional works have examined the general effects of rural road conditions on agricultural productivity (Akinyemi & Ukoje, 2018; World Bank, 2019), few have focused on specific local government areas such as Ningi in

Bauchi State. The area's distinct topography, rainfall pattern, and agrarian economy make it necessary to carry out a local assessment of its transport network (Bauchi State Government, 2022). This study therefore examines the nature, causes, and effects of transportation challenges in Ningi Local Government Area, with the goal of identifying practical measures to improve rural mobility and promote socio-economic development.

Study Area

Ningi Local Government Area is located in western Bauchi State, covering 4,625 km². With a Population of 387,192 (2006 Census). The Ethnic Groups in the Local Government includes Fulani, Ningawa, Warjawa, Fa'awa, and Duwa. The Climate of the area comprises of two seasons: dry and rainy with; average wind speed of ~10 km/h (NiMet, 2020). The area is predominantly agrarian with crops like millet, sugarcane, and soybeans grown and livestock includes cows, goats, and camels. It hosts several local markets that support vibrant trade. (Bauchi State Government, 2022; Ningi Local Government Council, 2021)

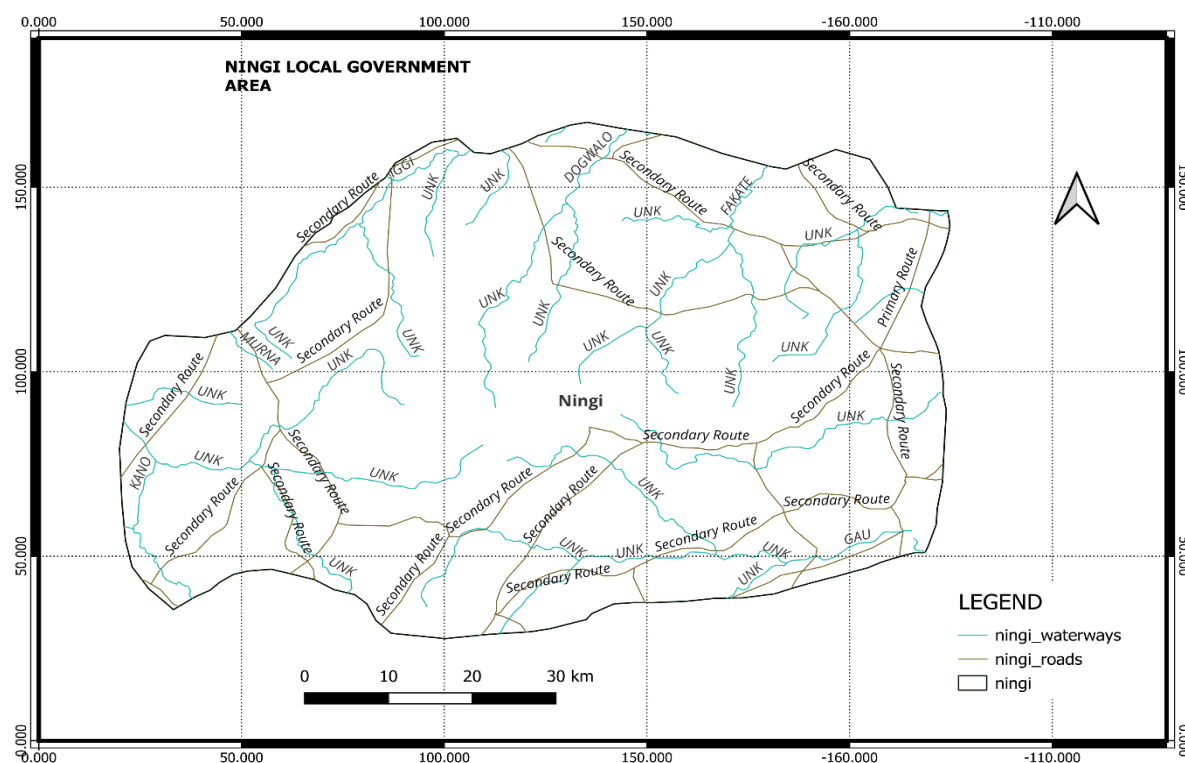


Figure 1: Map of Ningi Local Government Area of Bauchi State Nigeria

Methodology

This study employed a survey research design, which is appropriate for collecting primary data directly from original sources. The survey targeted vehicle drivers, passengers, and freight owners to gather their perceptions regarding road conditions, the availability of transport infrastructure, and the cost of transporting passengers and goods within Ningi Local Government Area.

A total of 200 questionnaires were administered, out of which 150 valid responses were retrieved and used for analysis. The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel. Analytical tools such as simple percentages, mean scores, and correlation analysis were utilized. The results were presented using tables, maps, charts, and graphs to ensure clarity and effective communication of findings.

Findings and Discussion

This section presents the major results obtained from the field survey conducted in Ningi Local Government Area. The analysis focuses on respondents' views regarding the condition of transport infrastructure, accessibility of roads, cost of transportation, and the effects of these factors on socio-economic activities. The findings are discussed in relation to existing literature to highlight areas of similarity or

deviation from previous studies. Through this, the study provides insights into the key transportation challenges affecting rural mobility and development in the area.

This section presents the background information of the respondents involved in the study. It shows their distribution by sex, age, marital status, educational level, occupation, and religion. Understanding these characteristics helps to explain the composition of the sample and provides context for interpreting the study's findings.

Table 1 presents the demographic characteristics of the respondents. The data indicate that males accounted for 66.9%, while females made up 33.1%. In terms of age distribution, 18.1% of the respondents were below 20 years, 40.3% were between 20 and 39 years, 33.6% were aged 40–59 years, and 8.1% were 60 years and above. Regarding marital status, 33.3% were single, 36.7% married, 16.7% divorced, and 13.3% widowed.

The educational background of respondents shows that 26.7% had non-formal education, 20.0% had primary education, 40.0% attained secondary education, and 13.3% had tertiary qualifications. Occupationally, 20.0% were civil servants, 20.0% were drivers, 18.0% were business men and women, 15.3% were students, and 26.7% were farmers.

This implies that while farming remains a major occupation in the study area, other sectors such as civil service, driving, and petty trading also provide significant sources of livelihood. In terms of religion, the data show that 70.0% of respondents were Muslims and 30.0% were Christians, reflecting the dominant religious composition of the area.

Table 1: Demographic Data of Respondents

Characteristics	Category	No of Respondents	Percentage
Sex	Male	91	66.9
	Female	45	33.1
	Total	136	100.0
Age (Years)	Below 20	27	18.1
	20 - 39	40	40.3
	40 - 59	50	33.6
	60 and above	12	8.1
	Total 150	149	100.0
Marital Status	Single	50	33.3
	Married	55	36.7
	Divorced	25	16.7
	Widow	20	13.3
	Total	150	100.0
Educational Level	Non formal	40	26.7
	Primary	30	20.0
	Secondary	60	40.0
	Tertiary	20	13.3
	Total	150	100.0
Occupation	Civil Service	30	20.0
	Driver	30	20.0
	Business	27	18.0
	Man/Woman		
	Student	23	15.3
	Farmers	40	26.7
	Total	150	100.0
Religion	Islam	98	70.0
	Christianity	42	30.0
	Traditional	0	0.0
	Others	0	0.0
	Total	140	100.0

Source: Field work, 2025

Table 2: Traffic count on Market Days

Means of transport	Traffic Inflow	Percentage	Traffic Outflow	Percentage
Motorcycle	60	35.7	49	37.7
Cars/Taxis	39	23.2	31	23.8
Buses	27	16.1	19	14.6
Lorries	21	12.5	19	14.6
Donkeys	11	6.5	5	3.8
Animal Drawn Carts	10	6.0	7	5.4
Total	168	100.0	130	100.0

Source: Field work, 2025

Table 3: Traffic counts on Ordinary Days

Means of transport	Traffic Inflow	Percentage	Traffic Outflow	Percentage
Motorcycle	5	11.4	3	8.3
Cars/Taxis	17	38.6	14	38.9
Buses	10	22.7	9	25.0
Lorries	4	9.1	3	8.3
Donkeys	5	11.4	4	11.1
Animal Drawn Carts	3	6.8	3	8.3
Total	44	100.0	36	100.0

Source: Field work, 2025

Table 2 and 3 above compares vehicle and animal movement on market and ordinary days at a key observation point likely a major junction or market entry. The figures show significantly higher traffic volumes on market days (168 inflows, 130 outflow) compared to ordinary days (44 inflows, 36 outflow). This indicates that market days attract more activity, leading to increased movement of goods and people into and out of the area.

On market days, motorcycles (35.7% of inflow) and cars/taxis (23.2%) are the most common

means of transport, suggesting their popularity for quick and accessible travel. Lorries and animal-drawn carts also feature prominently, highlighting the movement of goods and the continued use of traditional transport. On ordinary days, cars/taxis (38.6%) and buses (22.7%) are more dominant, while motorcycle usage drops sharply, indicating a shift toward private and public motor vehicles during regular days.

The data reflects a mixed transport system that includes both modern and traditional means. The

dominance of motorcycles and cars shows the need for infrastructure that supports flexible, small-vehicle traffic, especially on market days. At the same time, the presence of lorries and animal-drawn carts points to the need for road

planning that accommodates both fast and slow-moving transport. Managing this variety effectively is important to ease congestion and improve traffic flow during peak periods.

Current State of Road Transportation Infrastructures

Table 4: Respondents satisfaction on road characteristics and condition

Road characteristics and condition	Frequency	Percentage (%)
Very satisfied	29	19.9
Satisfied	37	25.3
Not satisfied	80	54.8
Total	146	100.0

Source: Field work, 2025

Table 4 shows that a significant portion of respondents, 54.8%, are dissatisfied with road characteristics and conditions, indicating widespread issues such as poor maintenance, potholes, or inadequate infrastructure. These problems likely contribute to unsafe or uncomfortable driving experiences. On the other

hand, 25.3% of respondents are satisfied, and 19.9% are very satisfied, suggesting that some roads meet acceptable standards, but they are in the minority. The overall dissatisfaction highlights the need for improvements in road quality and maintenance to address the concerns of the larger population.

Major Problems Affecting Vehicles on the Road

Table 5: Major Problems of the Vehicles on the Road

Major problems experience from the vehicle	Frequency	Percentage (%)
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High speed	40	27.4
Parts break down	66	45.2
Tyre puncture	40	27.4
Others	-	0.0
Total	146	100.0

Source: Field work, 2025

Table 5 shows that **parts breakdown** is the most frequently reported vehicle problem, accounting for **45.2%** of all cases. This suggests that a significant number of vehicles in the area are not well-maintained or may be operating beyond their expected lifespan. Regular breakdowns can lead to delays, increased transport costs, and road safety risks, particularly on busy days such as market days when traffic volume is high.

High speed and tyre puncture each account for 27.4% of the reported issues. High speed presents a serious safety concern, especially in areas where roads may not be designed for fast-moving

vehicles or where pedestrian activity is high. It increases the risk of accidents and contributes to unsafe road conditions. Tyre punctures, on the other hand, may point to poor road surfaces, debris, or worn-out tyres, all of which affect vehicle reliability and travel time.

The absence of other reported problems (0.0% under “Others”) indicates that the main challenges are mechanical and speed-related. The findings highlight the need for improved vehicle maintenance, driver education on safe speeds, and better road infrastructure. Addressing these issues can help reduce breakdowns and accidents, improve travel efficiency, and support safer, more reliable transportation in the area.

Table 6: Main Causes of the Vehicle Problems

Causes of the problems	Frequency	Percentage (%)
Lack of proper maintenance	48	32.9
Lack of original spare parts	20	13.7
Bad road condition	78	53.4
Total	146	100.0

Source: Field work, 2025

For Table 6 Chi-square (χ^2) statistics is employed to analyze and discuss Causes of the Vehicle Problems

Set Hypotheses

- Null Hypothesis (H_0): The transportation challenges are equally likely to occur.

- Alternative Hypothesis (H_1): The transportation challenges are not equally likely

So for each category:

- $E_1 = E_2 = E_3 \approx 48.67$

Chi-square Formula

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Expected Frequencies

Assuming equal probability for each cause:

Expected frequency (E) = $\frac{146}{3} = 48.67$ (approx)

Cause	O	E	$\frac{(O - E)^2}{E}$
Maintenance	48	48.67	0.0092
Spare parts	20	48.67	17.74
Bad road condition	78	48.67	17.66
Total χ^2			≈ 35.41

Degrees of Freedom

$df = k - 1 = 3 - 1 = 2$

At $\alpha = 0.05$ and $df = 2$, the critical value from the Chi-square table is 5.991.

Since $35.41 > 5.991$, The null hypothesis is rejected.

Using a Chi-square distribution calculator or table for:

- $\chi^2 = 35.41$
- $df = 2$

We get:

$p\text{-value} < 0.00001$

This extremely small p-value means the probability of observing such differences by random chance is almost zero. There is strong evidence that transportation problems in Ningi LGA are not occurring by chance, bad road condition is a real and dominant issue, not just a random fluctuation.

Overall, the findings highlight the need for better road maintenance, improved vehicle servicing practices, and access to genuine spare parts to reduce vehicle related problems and ensure safer, more reliable transport.

Major transportation challenges in the Study Area

Table 7: Major challenges faced by Transportation Business

Major challenges	Frequency	Percentage (%)
Capital	53	36.3
Bad road	52	35.6
Insecurity	25	17.1
Low passenger turn-out	16	11.0
Total	146	100.0

Source: Field work, 2025

Looking at the challenges faced by Transportation business in the study area, capital is the most significant challenge, with 36.3% of respondents citing it as a major issue. This suggests that many businesses struggle to secure the necessary funding for expansion, maintenance, or improvement of services, which can limit their growth and efficiency. The second major challenge is bad roads, mentioned by 35.6% of respondents. Poor road conditions can lead to vehicle damage, delays, and an overall decrease in the quality of service, making it harder for businesses to maintain reliability.

Insecurity is identified by 17.1% of respondents, reflecting concerns about safety risks that affect both drivers and passengers, particularly in areas prone to violence or theft. Finally, low passenger turnout, noted by 11% of respondents, indicates that businesses may face challenges in attracting enough customers, possibly due to competition, poor service, or economic factors that reduce demand for transport services. These challenges highlight the multifaceted difficulties transportation businesses face, from financial constraints to external factors like infrastructure and security.

Table 8: Cost of conveying people and goods to the market

Cost of conveying people and goods	Frequency	Percentage (%)
Affordable	69	46.9
Not affordable	78	53.1
Total	147	100.0

Source: Field work, 2025

Table 8 reveals that 53.1% of respondents find the cost of conveying people and goods to be not affordable, with 78 instances. This suggests that transportation costs may be high relative to the

income or economic conditions of the majority, potentially due to factors such as rising fuel prices, high tariffs, or inefficient transportation systems. On the other hand, 46.9% of

respondents consider the cost to be affordable, with 69 instances, indicating that a smaller group feels the transportation charges are manageable. However, the higher proportion of people who view the cost as unaffordable points to the need for policy adjustments or improvements in the efficiency of transport systems to make them more accessible and affordable for the majority.

Conclusion and Recommendations

Transport in Ningi LGA is predominantly commercial, with few private vehicles. Poor road conditions have led to discomfort for drivers and passengers, hindered the movement of agricultural products, caused food shortages, increased inflation, and slowed economic development.

Recommendations:

1. Road Maintenance: Establish local maintenance units for regular feeder road upgrades and upkeep (e.g., drainage, bush clearing, bridge/culvert repairs).
2. Public Transport: Introduce mass-transit buses to improve mobility and ease the transport of goods to markets.
3. Public-Private Partnerships (PPP): Encourage PPP initiatives to support sustainable rural transportation development.

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