

**GEOSPATIAL ANALYSIS OF ROAD TRANSPORT  
AND SOCIO ECONOMIC DEVELOPMENT IN RURAL  
AREAS OF OSUN STATE, NIGERIA**

**BY**

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**DEDICATION**

This thesis is dedicated to the glory of Almighty God and also to the memory of my late  
parents Mr. Abel Oagoke Oawole and Mrs. Abibat Ayoka Oawole

OBAFEMI AWOLOWO UNIVERSITY

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### **Abstract**

The study identified the types and problems of rural transport services. It also examined the characteristics of rural road networks and accessibility of rural settlements to all weather roads; socio-economic and mobility characteristics of rural population; and the relationship between rural road network, transport services and socio-economic development in Osun State. These were with a view to determining the relationship between rural transportation and distribution of socio-economic facilities in Osun State. Primary and secondary data were used in the study. The primary data were collected through the administration of questionnaires and field observations. Sixty (60) rural settlements, two (2) settlements from each of the thirty (30) Local Government Areas (LGAs) in the State, were selected through stratified sampling techniques. A multi-stage sampling technique was used to select 10% of households in each of the sampled settlements. A total of 1514 respondents whose age were 18 years and above were interviewed. Secondary data used include Spot 5 satellite image of Osun State, on scale of 5 meters, population and road networks data. Data collected were analyzed using descriptive, inferential statistics, connectivity analysis and geospatial techniques. The study showed that two categories of rural roads; earth (3,816.89km) and surfaced roads (1,251.57km) linked up rural settlements in the State. Also, gamma index indicated a low level of road connectivity in the State (0.15 to 0.27). Accessibility measure showed that 40.75% of rural settlements were located within 2km of surfaced roads indicating a high level of inaccessibility of rural settlements to surfaced roads. Results on socio-economic characteristics of sampled respondents revealed an average household size of 6 person;

farming (54.16%) as dominant occupation; and majority (57.33%) of the respondents earned below ₦15,000 per month. In terms of mobility characteristics the results revealed that 59.18% of the households owned motorcycles; an average of 6.29 trips were generated per

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household per day. Trekking was shown as the main mode of transport for short distance (below 1km) trips and it accounted for 52.06% of trips to farmlands, primary school (74.49%), secondary school (75.55%), water collection points (93.85%), primary health care (62.55%) and firewood collection points (80.96%). The results of principal components analysis on factors influencing rural trips to work showed that seven components accounted for 69.82% of the total variability in the study area. The study showed that 100% of the sampled settlements had access to commercial motorcycle transport services, 41 (68.33%) had direct or indirect access to taxi/ bus transport services. Rural transport problems identified bad roads (49.82%), high transport fare (12.13%), long waiting time (13.28%), inadequate vehicles (15.16%) and irregular transport services (2.82%). The study also revealed a positive relationship between location of settlements and distribution of socioeconomic facilities ( $r = 0.414$ ,  $p < 0.05$ ) and between length of earth road network and distribution of socio-economic facilities ( $r = 0.187$ ,  $p < 0.05$ ). The study concluded rural accessibility to surfaced road was low and that the distribution of socio-economic facilities in rural areas of Osun State is related to the characteristics of road network and available transport services.

**CHAPTER****ONE****INTRODUCTION****1.0 Background to the Study**

Transport is at the core of any functioning modern society, and more often than not, transport has been described as a vital component of the socio-economic and political development of any country. No country can have a meaningful development without an efficient transport system. This is because transport facilitates the movement of goods, people, services and information from one place to another thus creating time and place utility and subsequently makes accessible areas previously inaccessible (Ellis, 1999; Badejo, 1998). However, despite the advantages which transport confers on the space economy, the lack or inadequacy of it can lead to increased inaccessibility which in turn can promote prolonged poverty, economic dependency and political disintegration (Chambers, 1983; Porter, 2001).

Various studies such as Adeniji *et al*, (2000), Filani (1993) and Aloba (1985) have shown that transport infrastructure could play a key role in the socio-economic development of poor and emerging countries, most especially in their rural and more backward areas where the majority of the people resides. The rural farmers and other rural dwellers like their urban counterparts require good transport for the evacuation of their farm produce from and movement of farm inputs to scattered farm sites (Ikporukpo, 1988). According to Ogunsanya (1987b), development in rural areas, “is manifested in the presence, number and size of educational institutions, health institutions, industrial establishments, financial institutions, agricultural output, size and quality of manpower”. In the words of Ajayi (1987) “rural development implies improvement of the level of living or

welfare of the rural population. Levels of living refer to the satisfaction of needs in certain

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well defined and quantitative aspects of the total life situation.” All these are possible if transportation facilities are adequate (Ogunsanya, 1987b).

Inadequacy or total absence of transport infrastructure can be a serious constraint on rural development because of immobility and inaccessibility to socio-economic facilities and capital. Thus, the poor quality of life in rural areas is partly a reflection of the present state of rural transport infrastructure: roads and transport services. An economy like Nigeria with a large rural component requires that urgent attention be paid to the provision of rural transport infrastructure, with a view to modernizing the rural economy and to improve the living standard of the rural population. This improvement in rural socio-economic development can become reality through the provision of improved and adequate access to good educational, medical and economic facilities.

### **1.1 Statement of Problem**

The literature on rural transportation in Nigeria have generally focused on rural road evolution (Aloba, 1983), characteristics and hierarchy of rural roads (Aloba, 1986), management of rural transport problems (Ikporukpo, 1988); rural transport policy, planning and development (Aloba, 1985; Ogunsanya, 1987b; Elani, 1993); rural accessibility and travel patterns (Adeniji *et al*, 2000, Adetunji, 2003, and Oawole, 2008). Conspicuously missing from these studies is the contributions of the available road networks to access level of rural population to socio-economic infrastructure. Studies elsewhere in developing countries have also emphasized the contributions of investment on rural road on the development of the economy of the rural areas (Porter, 1995).

and Wilson, 1973;). According to Bryceson *et al* (2008), rural road investment is logically assumed to alleviate the poverty associated with spatial isolation by several studies. However, studies have also shown that rural road investments had a limited impact on the

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lives of rural dwellers (Howe and Richards, 1984; Barwell *et al.*, 1985; Bryceson and Howe, 1993; Fernando and Porter, 2002).

Another aspect that has been missing from the review of various studies in Nigeria is the type and quality of available rural transport services; order and degree of the constraints associated with their provision and management. A good transport system depends not just on suitable path and road infrastructure but also on the availability of appropriate vehicles at the right time and place (Dawson and Barwell, 1993; Ellis and Hine, 1998; Porter, 2007). Indeed, the impact of available transport services to socio-economic wellbeing of rural dwellers and spatial interaction among rural areas on one hand and between rural areas and their surrounding urban centers have received only limited coverage in the literature. The spatial variation in availability and condition of road transport infrastructure in rural environment results in spatial disparities in rural access to socio economic facilities within and between rural settlements. The existence of disparities in access level emanating from variation in rural transport infrastructure, therefore makes the analysis of the relationship between rural transport and socio-economic development imperative in order to identify areas of deprivation. Only through such an analysis can the imbalance in the achievement of rural development, particularly through transport infrastructure provision can be understood

Beside these missing gaps in rural transport studies, most existing studies (Adeoti,

1989, Ogunsanya, 1987a and Aloba, 1983) on rural transport in Southwestern Nigeria need revisiting because most of them were carried out over twenty years, thus outdated. The most current of them was undertaken ten years ago for the Federal Ministry and Worldbank titled “rural travel and transport in South-Western Nigeria” (Adeniji *et al*, 2000). The study examined issues relating to rural travel and transport in Southwestern Nigeria. The study