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The Impact of Rural Roads on Agricultural Development in Nigeria: A case study of Kwara State

By

E. T. O. OYATOYE

*Dept. of Agric, Econs. & Farm Management
University of Ilorin.*

Abstract:

This study was carried out with the aim of evaluating the impact of rural roads on agricultural development. The findings reveal that farmers incur lower marketing cost, have access to wider markets, experience little or no delay in moving their produce and hence incur less losses due to damages; most important of all, they receive better prices for their products. These better prices act as incentives for increases in production which enhance the income of the farmers and improve their socio-economic conditions leading to overall development of the rural areas.

The major recommendation that emanates from this work is that government should intensify its activities in the area of road construction in the rural areas.

Introduction

Integrated agricultural and rural development is a socio-economic, educational and cultural process by which the inhabitants of the rural areas attempt to improve their living conditions. The process depends on participation and critical awareness of the people in the rural areas in the analysis of their problems, needs, and interests. Within the framework of this approach, development can be defined as a widely participatory process of social change in a society intended to bring about both social and material advancement including greater equality, freedom and other valued quality for the majority of the people through their gaining control over their environment.

The process of development as defined above has some implications, among which are those concerned with the eradication of peculiar problems associated with the rural sector. Such problems include poverty, ignorance, unemployment, illiteracy, and those concerned with motivation of rural dwellers for self-help participation in community development.

The rural sector is by and large the producer of Nigeria's food crops and to neglect this sector of the economy is to considerably slow down the pace of national development process or grind it to a halt, if not set a retrogressive process in motion.

It is common knowledge that most of the country's investment in transportation bypassed the rural areas and as a result, food rots in farms when people starve in towns or import food. The absence of rural roads and the in-accessibility of existing roads because of lack of maintenance has contributed in a large measure to the escalating food prices and outright food shortages.

* E.T.O. OYATOYE (MRS) is a Reader in the Department of Agricultural Economics and Farm Management, University of Ilorin, Ilorin.

Many studies of varying orientations exist on road transport in Nigeria. There is a category of works which have demonstrated the importance of road transport to the economic growth of Nigeria (see Walter, 1958, Lugard, 1970; Mcphee, 1971 and Stanford Research Institute, 1961). There is a second category which have stressed the economic values of adequate transport facilities in Nigeria (see Ijewere, 1968; Hay, 1968; Ogundana, 1978; Oyatoye, 1979 and Ukwu, 1980).

The prominent role of roads and other infrastructures in agricultural development have been fully recognised by the various governments of the federation. This interest has been borne out by the different National Development Plans and the Integrated Rural and Community Development Schemes. Over the years, a greater percentage of budgetary allocations have gone to the development of transport infrastructures and services. Federal government expenditure on road from 1962 to 1985 shows that high percentage allocation to road compared to other transport modes might be due to the fact that road constitutes about 90 per cent of all internal movement of goods and persons in Nigeria (Onakomaiya, 1980). However, the rural areas where majority of Nigerians reside are poorly served by existing road network.

Unfortunately, there was no comprehensive survey and inventory of what infrastructural facilities were available or lacking in this country until Idachaba and Olayide (1980) examined the structure of infrastructures in Nigeria. Their findings, especially, Idachaba (1985) confirmed the inadequate supplies of infrastructural facilities which had contributed significantly to rural-urban migration and consequently urban unemployment. These findings led to the establishment of a Directorate of Food, Roads and Rural Infrastructures (DFRRI) which was charged with diverse functions directed towards the improvement and development of the quality of life. For the benefit of this study, we reproduce the functions of DFRRI as contained in section 5: C, L, M, N and section 7 sub-section (3) of the instrument setting up the organization which we consider relevant: 5 (C) to facilitate and support a national rural feeder road network programme involving construction, rehabilitation, improvement and maintenance especially in relation to the nations food self-sufficiency programme as well as general rural development; (L) to define, encourage and support any activity calculated to enhance food production, rural development, rural water supplies, the provision of their infrastructures to rural areas and any other rural development. (M) to encourage the implementation of physical development funds at the community level in order to increase rural productivity and improve rural electricity; (N) to prescribe the criteria and determine the level of corresponding financial grant which will adequately stimulate the expansion of food production and processing, rural water supplies, road construction and maintenance of rural roads and the provision of rural infrastructures. 7 (3) to initiate the construction and repair of roads to facilitate community development and distribution of agricultural products.

Problem statement and justification for the study

The lack of and/or inadequate supply of rural infrastructural facilities have been identified as posing major impediment to food self-sufficiency and general agricul-

tural development in this country. The achievement of DFRRI with regards to the provision of substantial lengths of rural roads in the country since its inception provides an opportunity to compare marketing of agricultural produce and hence agricultural development before and after DFRRI. Thus the effect of rural roads on marketing and development of the agricultural sector is the focus of this study.

Objectives

The study in general intends to find out how effective rural roads constructed by DFRRI have been in the area of agricultural development.

The specific objectives are:

1. To determine whether the rural roads constructed by DFRRI have any effect on the cost of evacuating farm produce and the delivery of farm inputs;
2. To determine if the rural roads constructed by DFRRI have any effect on the time taken in evacuating farm produce and in delivering inputs;
3. To determine if there is any change in the retail market prices of farm produce after rural road construction;
4. To investigate whether farmers have access to alternative expanded markets and if so whether there are any changes in the retail prices as a result of the now expanded markets; and
5. To investigate the extent of transfer of improved technology before and after rural road construction.

Methodology

Data for this study were collected from both primary and secondary sources. The secondary sources of data include Kwara State Directorate of Food, Roads and Rural Infrastructures (DFRRI) (which came into existence in June 1986 and which was expressly charged with provision of rural infrastructures especially road, electricity and water), Ministry of Economic Development, and Local Government headquarters, as well as published and unpublished works.

Primary data were collected through personal interviews conducted with the aid of structured questionnaires. A sample size of 200 respondents spread over five local government areas in which the Directorate had executed all its programmes of water and sanitation, rural feeder roads, electrification and agriculture during phase I of its operation was selected. The selected local governments are Edu, Ifelodun, Okene, Irepodun and Oyun. The basis of allocating the questionnaires among the local government areas was on the estimated farming population in the areas, the ratio used being roughly one farmer to every four thousand farming population.

A simple random sampling technique was used in the selection process in which case every sampling unit within the selected villages had equal chances of being selected as part of the sample. The benefitting villages were purposively identified with the assistance of the Kwara DFRRI.

The main tool of analysis employed in this study is simple descriptive analysis. The period between June 1984 and July 1986 constituted the pre-project period while the period between July 1988 and July 1990 constituted the post-project period.

Result

Road construction work is one of the most popular activities of DFERRI in Kwara State. About 2,003.8km of road network was constructed or rehabilitated during the phase I of its project implementation (Kwara DFERRI, 1990). Table I shows the Phase I of DFERRI Rural Road Programme in Kwara State as officially reported in the Documentary Hand-book of the Directorate.

Table I: PHASE I OF DFERRI RURAL ROAD PROGRAMME IN KWARA STATE AS REPORTED BY THE DIRECTORATE

LGA	km	(km) New Roads	(km) Reconstructed Roads	(km) Rehabilitated Roads
Moro	138.4	--	28.5	59.9
Asa	123.4	--	12.0	111.4
Irepodun	250.1	18.0	10.6	221.5
Oyi/Yagba	304.5	--	38.0	266.5
Okene/Okehi	83.7	--	18.2	65.5
Kogi	72.5	--	--	72.5
Oyun	114.8	--	82.4	32.4
Edu	138.3	1.0	10.0	127.3
Ifelodun	126.6	--	--	126.6
Ilorin	30.8	--	--	30.8
Borgu/Kaima	620.7	150.2	11.1	459.4
Total	2,003.8	169.2	260.8	1,573.8

Source: Documentary Handbook of Kwara DFERRI, 1990.

From Table II it can be observed that out of the total respondents (200), 176 (95.7%) indicated that DFERRI rehabilitated existing roads in their localities while 8 others (4.3%) indicated that DFERRI constructed new roads in the villages.

Table II: DFERRI ROAD CONSTRUCTION PROGRAMME AS REPORTED BY RESPONDENTS

Length of Road (km)	Rehabilitated (km)		Newly Constructed (km)	
	Frequency	Percentage	Frequency	Percentage
Less than 11	26	14.0	2	1.1
11 -- 15	59	23.2	3	1.6
16 -- 20	64	34.8	0	0.0
21 -- 30	23	12.5	2	1.1
Above 30	4	2.2	1	0.5
Total	176	95.7	8	4.3

This further shows that a total of 184 (92%) of total respondents enjoy rehabilitated or newly constructed roads in their vicinity. From the Table, it is obvious that both the newly constructed and the rehabilitated roads were of short lengths of between 11km and 30km. The roads were of laterite surfaces which puts their life-span at roughly one to two rainy seasons.

Most of the farmers interviewed claimed that they transport their farm products from their farms to the rural markets while transportation from rural to urban markets was performed by middlemen. Data summarised on Table III indicates that transport cost per kilometre declines both in pre-project and post-project periods as the distance travelled increases.

Table III: AVERAGE FOODSTUFF TRANSPORTATION COST IN RURAL AREAS

Length of Roads (km)	Pre-Project N/Ton	Post-Project N/Ton	Pre-Project N/Ton/km	Post-Project N/Ton/km	% Difference
1 (5.5)* 10	9.5	5.5	1.7	1.0	41.2
11 (15.5) 20	24.0	15.5	1.5	1.0	33.3
21 (25.5) 30	33.5	22.0	1.3	0.9	30.8
31 (35.5) 40	40.5	28.5	1.1	0.8	27.3
41 (45.5) 50	43.0	32.0	0.9	0.7	22.2

* The distances in bracket are the average distances used in calculating N/Ton/km.
Source: Field Survey: 1990

Before DFRRRI road works projects started cost per kilometre travelled was N1.70 when the distance travelled was between one and ten kilometres; the corresponding cost post-project was N1. These costs gradually declined to N0.80 per kilometre during the pre-project period as distance travelled approached 41km - 50km while the corresponding cost for post-project period decreased to N0.70.

The study also shows that transport cost had decreased more after the road project than before the commencement of the project. One suspects that this is due to increased flow of traffic consequent on the availability of good motorable roads.

Generally however, transport cost per ton increases as distance increases. For instance, pre-project transport cost was about N9.50 per distance of about 10km and this increased gradually to about N43 as the distance increased to about 50km. Similarly, the corresponding costs post-project, were N5.50 and N32 respectively. These findings agree with those of Bello (1987) and Tomek and Robinson (1981). In their studies of the impact of rural road system on agricultural produce marketing, they found that transport cost per unit product rises as distance increases though at a decreasing rate.

Table IV summarises farmers response to questions on prices of agricultural produce in the local markets prior to the road project and after road works. The table indicates a general increase in the prices of the main foodstuffs on the local markets

after the road project. Although if the rate of inflation in the country is taken into account, it is doubtful if any meaningful impact has been made on producer prices yet. However, there is no doubt that with improved access to and from urban centres, marketing of produce of the rural sectors will become more competitive thus pushing up prices.

Table IV: AVERAGE RETAIL PRICE FOR SELECTED FOODSTUFFS IN RURAL AREAS

Type of Foodstuff	Average Retail Price (Pre-Project) (N/ kg)	Average Retail Price (Post-Project) (N/ kg)	Average Change (2 - 3)	% Change
Yam	2.00	2.80	0.80	+40.0
Maize	1.50	2.00	0.50	+33.3
Gari	1.50	1.55	0.05	+ 3.3
Rice	5.50	7.00	1.50	+27.3
Cowpea	4.00	6.50	2.50	+62.5
Sorghum	1.20	2.00	1.00	+83.3

Source: Field Survey, 1990

Means of Transportation

Efficient transportation system is essential in food crop marketing. Four principal means of transportation were found to abound in the survey area; they are head portorage, bicycle, motorcycle, and road vehicles (busses and lorries).

Table V: MEANS OF TRANSPORTATION

Means of Transportation	Pre-Project	%	Post-Project	%
Head Portorage	145	72.5	58	29.0
Bicycle	68	34.0	41	20.5
Motorcycle	37	18.5	56	28.0
Busses/Lorries	32	16.0	127	63.5

From Table V, it is obvious that there was a re-markable improvement in the transportation system after road construction. Only 29 per cent of total respondents depend on head portorage for transporting their farm products from farm to the village as against 72.5 per cent before the road construction. Only 20.5 per cent transport their farm products by bicycle after road construction as against 34 per cent before the road works. 63.5 per cent now depend on either bus or lorry as against 16 per cent before the road works.

Farmers experiences with cost of transportation are summarised in Table VI

Table VI: AVERAGE TRANSPORTATION COST ACCORDING TO THE MEANS OF TRANSPORT USED

Mode of Transport	Average Transport Cost (Pre-Project) N/kg/km	Average Transport Cost (Post-Project) N/kg/km	Average Change (2 - 3)	% Change
Head Portorage	1.70	1.65	0.05	- 3.0
Bicycle	1.50	1.50	0.00	0.00
Motorcycle	1.50	1.00	0.50	-33.0
Vehicle (Bus/Lorry)	1.30	0.80	0.50	-38.0

From the Table, indications are that average transport cost per kilometre for all the transport means (Head portorage, bicycle, motorcycle and buses/lorries), declined generally after the road project except for bicycles, the average cost of which remain constant. The percentage decrease in average transport cost for buses/lorries (38%) was the highest, closely followed by motorcycles the cost of which had decreased by 33 per cent. The general decrease in the average transport cost could be attributed to increased traffic flow and competitive demand for commuters. It should be noted that not only has it become cheaper to transport by lorries and busses, these means of transport are faster than head portorage, bicycle and motorcycles and more importantly more produce can be handled per period with consequence for quality.

Table VII: CHANNELS OF PRODUCT MARKETING

Channels	Pre-Project Frequency	%	Post-Project Frequency	%
Local Market	156	78.0	68	34.0
Sell directly on the farm	24	12.0	11	5.5
Sell to Government Agencies	13	6.5	14	7.0
Sell to Agro Industrial Enterprises	6	3.0	38	19.0
Carry to Urban Market	37	18.5	105	52.5

The responses of farmers to channels of product marketing revealed that prior to the road project, majority of them (78%) depended on local markets for the sales of their farm products but after the road works only 34 per cent of them still depend on local markets while 52.5% carry their products to urban markets. This implies that the bargaining power of the farmers has increased with access to alternative markets.

Table VIII summarises respondents ranking of the advantages derived by them from the road works.

Table VIII: MARKETING ADVANTAGE OF ROAD WORKS TO FARMER RESPONDENTS

Derived Benefit	Frequency	% of Total Respondents
Timely sales of produce	90	45.0
Reduction in Wastes	72	36.0
Availability of Ready Markets	73	36.5
Reduction in Transport Cost	38	19.0
Higher Income From Sales	32	16

From the Table 45% of the respondents agreed that the construction of the road networks had brought about timely sales of their produce. 36% had indicated that the road programme had caused some reduction in wastage of their farm products. 36.5%, 19% and 16% had indicated ready and accessible markets, reduced transportation costs and higher income from sales respectively as the advantages of the road works. Other advantages mentioned are attraction of agro-industries to the rural areas, regular visits by extension agents, reduction in travelling time, accidents and crop damages.

Summary and conclusion

This study was carried out with the aim of evaluating the impact of rural roads on agricultural development. The findings reveal that farmers incur lower marketing cost, have access to wider markets, experience little or no delay in moving their produce and hence less losses due to damages and most important of all, they receive better prices for their products. These better prices act as incentives for increases in production which enhance the income of the farmers and improve their socio-economic conditions leading to overall development of the rural areas.

The major recommendation that emanates from this work is that government should intensify its activities in the area of road construction in the rural areas.

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