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RURAL HOUSEHOLDS PERCEPTION OF THE CONTRIBUTION OF RURAL INFRASTRUCTURE IN IMPROVING LIVELIHOODS AMONG HOUSEHOLDS IN SOUTHEAST, NIGERIA

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Abstract

The study assessed rural household's perception of the contribution of rural infrastructure in improving livelihoods among households in southeast, Nigeria. A multi-stage sampling procedure was used in selecting 324 respondents for the study. Data were collected through structured questionnaire and were analyzed using descriptive and inferential statistics such as ANOVA and simple regression model. The result shows a mean age of the respondents was 45 years, mean number of years spent in school was12.3 years, mean income of N88, 546.75 and a mean household size of 6 persons in a family. The grand mean of 2.4 shows a good present condition of the rural infrastructure in the study area. The ANOVA result showed no significant difference in the respondents rating of the contributions of rural infrastructure in improving livelihoods among rural households across the States. The study concludes that, there was no difference in the contribution of rural infrastructure in improving livelihoods among households in Southeast, Nigeria and recommends that, Policy makers should emphasize in their developmental programmes the need to encourage the development of rural infrastructural facilities in southeast, Nigeria since the contribution of rural infrastructure in improving livelihoods in Southeast, Nigeria was the same across the States.

Keywords: Infrastructure, Rural households, perception, livelihoods

Introduction

Infrastructural development has a crucial role to play if Nigeria is to sustain development and become more inclusive as the country matures. Infrastructure is one of the pillars of economic transformation. Sustainable economic growth often occurs in an environment where there is a meaningful development of infrastructure, and there is evidence that it reduces income inequality and reduces migration in the society (Akinbode, 2013). Infrastructural facilities

refer to those basic services without which primary, secondary and tertiary productive activities cannot be performed (Abubaka, 2012). Deficiencies in rural infrastructural facilities such as transportation, energy, telecommunication and related infrastructures would transform into poorly functioning domestic market, low price transmission and weak international competitiveness. Infrastructure is one of the pillars of economic growth and transformation. Sustainable economic growth often occurs in an environment where there is meaningful infrastructural development. Olayiwola and Adeleye (2005) asserted that there is absence of infrastructural facilities such as potable water, electricity and good feeder roads in the rural areas, which improve the quality of life of the rural dwellers.

The importance of the provision of rural infrastructure lies in its capacity to sustain daily activities, quality of life and economic base in the rural areas (Madu, 2012). In other words, the quality of life and means of livelihood of the rural dwellers can be assessed by analyzing the availability of infrastructural facilities at their disposal. Inadequate and poor maintenance of rural infrastructures affect even the agricultural sector. Rural physical infrastructures such as roads, boreholes, electricity, markets and agro-processing infrastructure in the agricultural sector are grossly inadequate and inefficient, thus, reflecting high levels of pre-harvest and post- harvest losses in the country. Due to poor storage facilities, Nigerian farmers receive less for their produce in terms of bumper harvest and this impacts negatively on productivity (Ogunnowo and Oderinde, 2012). Rural electrification is very vital because greater proportion of the rural areas is yet to be connected with the national grid for electricity supply. Nigeria has been experiencing recurring problem of epileptic power supply over the years. The bulk of agricultural produce comes from rural areas but their production is not meeting the population demand. This is so because there are little or no infrastructures to give the farmers incentives to increase production and the little infrastructures available are not maintained while some are not functioning (Ime, 2014).

Aderamo and Magaji (2010) opined that the sustainability of the provision, operation and maintenance of appropriate rural infrastructure have eluded the hopes and aspirations created in the minds of rural folks. Umoren *et al.* (2009) observed that access and utilization of rural infrastructural facilities has not been taken seriously in Nigeria, and it is often difficult to quantify its direct influence on the quality of life of the rural people. The settlement in Southeastern Nigeria is more or less rural, made up of several rural infrastructures, such as roads, schools, housing, electricity, markets and agro-processing centers. This study seeks to know the extent to which these rural infrastructures have improved household livelihoods in South-east Nigeria, considering the efforts in the development of infrastructural facilities by government at any level.

Objectives of the Study

The broad objective of this study is to ascertain the rural household perception of the contribution of rural infrastructurein improving livelihoods among rural households in South-east Nigeria.

Specifically, the study sought to:

1. identify the rural infrastructure available and their functionality in the study area;
2. determine the level of access to the selected rural infrastructure among rural households;

Hypotheses

HO_1: There is no significant difference in the respondents' mean rating of the contributions of rural infrastructure in improving livelihoods among rural households across the States.

HO_2: Functionalityof educational infrastructure does not significantly influence household income, number of children enrolled in school and livelihood diversification of rural households.

Methodology

Study Area

The study was conducted in South-east Nigeria. South-east Nigeria is located within latitudes 5°N to 6°N of the equator and longitudes 6°E and 8°E of the Greenwich (prime) meridian (Microsoft Corporation, 2009). Southeast zone of Nigeria made up of Enugu, Anambra, Imo, Abia and Ebonyi States. The zone occupies a total land mass of 10,952,400 hectares with a population of 16,381,729 people (NPC, 2006). The Southeast rainforest zone of Nigeria is a belt of tall trees with dense undergrowth of shorter species dominated by climbing plants (Nwajiuba and Onyeneke, 2010). There are two major seasons experienced in this zone. These are the dry season and the rainy season. The dry season occurs between November and March, while the rainy season occurs between April and October, although over the recent decades, it appears very difficult to create a clear-cut distinction between the periods we refer to as rainy season and dry season due to climate change. The zone experiences an average annual temperature, rainfall, relative humidity, number of rain-days and hours of sunshine per day, of 27°C, 1800mm, 72%, 4.4hours, and 142days respectively. Despite the observed erratic nature of both rainfall and dry spells, the location of the zone within the tropical rainforest belt of the country encourages and allows the growth and survival of most tropical food crops like yam, cassava, vegetables, rice, etc, and livestock production. Hence, about 60-70% of the inhabitants of this zone are observed to engage in agriculture, mainly crop farming and animal

rearing (Okoye *et al.,* 2010).

Sample and Sampling Procedure

A multi-stage sampling procedure was used in selecting sample for the study. The first stage involved a random selection of three States out of the five States in Southeastern Nigeria namely; Abia, Enugu and Ebonyi States.The second stage involved a random selection of four Local Government Areas from each of the selected States. The third stage involved a random selection of three communities from each of the selected local government area totaling 36 communities. Nine (9) rural households were randomly selected from each of the communities making a total of one hundred and eight for each State, totaling three hundred and twenty-four (324) respondents for the study.

Data Collection

Primary data were used for the study. Data were collected using a structured questionnaire, which was distributed to the rural household heads.

Data Analysis

The data for this study were analysed using both descriptive and inferential statistics. The descriptive statistics included percentages, means, and frequencies. A 4 point Likert-type scale of very good =4, good=3, fair=2 and poor =1 was used to ascertained the present condition of the physical infrastructures. The cut-off point was determined by adding up the rating (4+3+2+1 = 10) and dividing it by 4 gives 2.5. Any mean score above 2.5 was considered positive condition and less than 2.5 was regarded as poor condition.

Hypothesis

Ho_1: there is no significant difference in the respondents' mean rating of the contributions of rural infrastructure in improving livelihoods among rural households across the States. This was tested using the Analysis of Variance (ANOVA) model.

$$F = \frac{\Sigma n_j(\bar{X}_j - \bar{X})^2 / (k-1)}{\Sigma\Sigma(X - \bar{X}_j)^2 / (N-k)}$$

Ho_2: Functionality of educational infrastructure does not significantly influence household income, number of children enrolled in school and livelihood diversification. This was analyzed using simple regression analysis. The model is expressed explicitly as:

$Y = \beta_1 + \beta_2 X_1 + U_i$

Where,

Y_1= Household income (₦),
Y_2 = number of children enrolled in school (Number)
Y_3 = livelihood diversified(Number of other sources of livelihood)
X= functionality of educational infrastructure (mean score).

Socio-economic Characteristics of Rural Household Heads

The socioeconomic characteristics of the rural household was discussed under this section and presented in table1. They include age, marital status, household size, educational level of household head, income of household head, sources of income and market distance.

The result showed that 24.1% of the respondents were within the age group of 21to30 years, 21.2% of the respondents were within the age bracket of 31-40 years and 22.8% of them were within the age bracket of 41-50 years, the mean age of the respondents was 45years. This implies that the rural household heads were middle aged and still active and could participate adequately in development programmes. This finding agrees with Muhammed, (2009) who reported a mean age of 40 years in his findings, implying middle age household heads with active participation in development programmes in Yobe State. This further implies that majority of the household's heads are in their economic active years, with an advantage of transferring innovations that enhance productivity in their respective activities.

The result showed that 57.4% of the rural household head were female while 42.6% of them were male. This implies that majority of the household head were female. Female respondents being dominants among the respondents could be the result of women being the backbone of agricultural sector and agricultural production. This finding agrees with Nsoanya and Nenna (2011) but contradicts Kehinde *et al.,* (2017) who reported male respondents being dominants among the respondents because of males having greater access to farmland than females. It could also be the result of the tedious nature of activities engaged by rural dwellers such as farming, which is their main occupation.

The educational background of the respondents showed that 35.2% of the respondents had tertiary education, 32.7% of them had secondary education, 23.8% of them had primary education while 8.3% of the respondents had no formal education. The mean education was 12.3 years. This implies that majority of the household head had one form of education or the other, thus, had the ability or advantage of adopting innovation, since education helps in improving ones' investment and capability of adopting improve agricultural innovations as observed by Ozor and Madukwe, (2005). Education creates awareness about opportunities existing elsewhere and the knowledge and skills acquired support individual's quest for better standard (job) outside the farm enterprise, hence, improving the livelihood of the rural households in the study area.

The result on the marital status of the respondents showed that 17.3% of the respondents were single, 70.9% of them were married, 0.3% of them were divorced and 11.4% of them were widowed. This implies that majority of the respondents were married and have families.

The study shows that 25.9% of the respondents had household sizes that ranges form 2-4 persons, 46.9% of them had household size within the range of 5-7 persons and 21.3% of them had household size ranging from 8-10 persons. The mean household size is 6 persons. This implies that large household size has tendency of contributing to the livelihood status of the households since having large household size brings an opportunity of expanding farm or firm size, generating more revenue and meeting the welfare need of the households, therefore, commanding infrastructural development in the area. Supply of family labour is accessible to larger households and is affirmed by Nwaru (2004) who observed that larger household size was desirable, as rural households depend on their members than hired sources of labour.

Table 1 also showed the occupational status of the respondents, 20.7% of the respondents were full-time farmers, 25.9% of them were civil servants, 9.3% of them were retirees, 19.1% of them were part-time farmers and 25.0% of them were traders. This implies that majority of the rural household heads were involved in one livelihood activities or the other.

Source of Credit, Access to Credit and Market

Table 2 shows that 75.3% of them had no access to credit while 24.7% of the household heads had access to credit. This low access to credit could be attributed to the high interest rate in the disbursement of credit to rural farmers. Ekong (2003) asserts that credit is a very strong factor that is needed to acquire or develop any enterprise; its availability could determine the extent of production capacity. Furthermore, 6.5% of the respondents sourced credit from commercial bank, 6.8% of them sourced credit from microfinance bank and family and friends, 0.9% sourced credit from group lending and 3.4% of them sourced credit from cooperative.

The result also showed the respondents access to market. About 91.0% of the respondents had access to market while 8.9% of them had no access to market. Market is one of the infrastructural facilities that enhance the livelihood of the rural household; the functional status of this infrastructure may bring about income savings stemming from reduced expenditure on the items, which can be diverted to other areas of consumption such as food, which may improve the feeding standard of the respondents. Thus, the functional state of the infrastructure can lead to the development of the area of study transforming the lives of the residents as well as improving their livelihood (Muhammed, 2009).

Table 1: Socio-economic Characteristics of Rural Household Head in the Study Area

Variables	Frequency	Percentage	Mean	Std dev
Age				
21-30	78	24.1	**45**	**15.9**
31-40	69	21.3		
41-50	74	22.8		
51-60	47	14.5		
61-70	40	12.3		
71-80	16	4.9		
Gender				
Female	186	57.4		
Male	138	42.6		
Educational level				
No formal Education	**27**	**8.33**	**12.3**	**6.8**
Primary Education	**77**	**23.8**		
Secondary Education	**106**	**32.7**		
Tertiary Education	**114**	**35.2**		
Marital Status				
Single	**56**	**17.3**		
Married	**230**	**70.9**		
Divorced	**01**	**0.3**		
Widowed	**37**	**11.4**		
Household Size				
2-4	**84**	**25.9**	**6**	**3.5**
5-7	**152**	**46.9**		
8-10	**69**	**21.3**		
11-13	**2**	**0.6**		
14-16	**07**	**2.2**		
17-19	**05**	**1.5**		
20-22	**03**	**0.9**		
23-25	**02**	**0.6**		
Occupation				
Full-time Farming	**67**	**20.7**		
Civil Servants	**84**	**25.9**		
Retirees	**30**	**9.3**		
Part-time Farming	**62**	**19.1**		
Trading	**81**	**25.0**		
Total	**324**	**100.0**		

Source: *field survey, 2017*

Table 2: Distribution of Respondents according to their Credit Source, Credit Access and Market Access

Have access to Credit	**Percentage**
Yes	24.7
No	75.1
Sources of Credit	
Commercial Bank	6.5
Microfinance Bank	6.8
Family/ Friends	6.8
Group Lending Cooperative	0.9
Have access to market	
Yes	

Source: *field survey, 201*

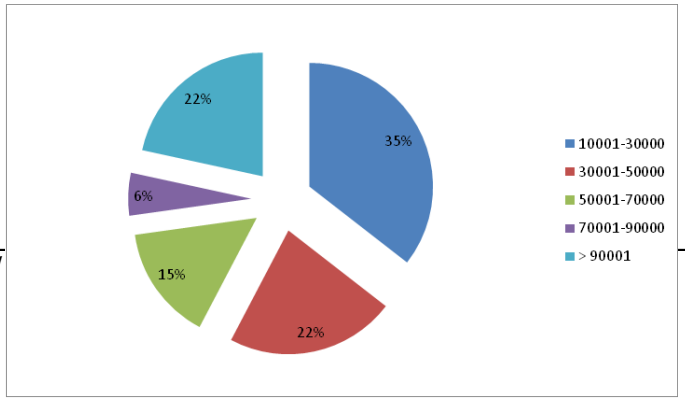

Fig. 1: Aggregate Income level of the rural household heads

Figure 1 shows the income level of the rural households in the study area, 35% of the households had income ranging from N10, 001-30,000, 22% of them had income ranging from N30,001-50,000 and 50,001-70,000 respectively. About 15% of the respondents had income ranging from N70, 001-90,000 and 6% of them had income ranging from N90, 001 and above. Income is being considered as one of the livelihood indicators in this study. This result implied that majority of the rural households were low-income earners, and have need to improve their income thereby improving their livelihood.

Availability of Rural Infrastructure and their Present Condition

The rural infrastructure and their present condition in southeast Nigeria is presented on the Table 3.

The result showed a grand mean of 2.4 indicating that the physical infrastructures assessed in the study area are in relatively fair conditions. For educational infrastructures, both the primary and the secondary schools are in good conditions with a mean score of 3.1 and 3.0 respectively and they are readily available to the rural households in the study area. The good conditions of the educational infrastructures could be as a result of maintenance of these infrastructures. Maintenance enhances the quality of building structure to meet modern requirements, hence, prolonging the life span of building (Oladipo and kunle, 2014). The relatively fair condition of the school infrastructures in the study area might also be as a result of the presence of some rural organizations who from time to time argument governments' efforts in maintaining the school buildings located in the rural areas through their selfless contributions.

The National Centre on Education Statistics (NCES) (2003) opined that maintaining school facilities affects the physical, educational, and financial foundation of the school organization and should, therefore, be considered very important in its day-to-day operations and long-range maintenance management priorities. School buildings are part of a society's asset and infrastructure, because they could be used for a long time. The result contradicts the findings of Oladipo and Kunle (2014) who reported that existing public secondary school buildings in Nigeria lacks adequate maintenance attention, therefore, are in very poor and deplorable conditions of infrastructural disrepair.

The result also showed the availability and present condition of the agro-processing infrastructures in the study area. Palm oil processing centers and garri processing centers are available in the study area and are in fair condition with mean scores of 2.0 and 2.7 respectively. The rice-processing mill was not available as 49.1% of the respondents reported it is available and 50.9% of them reported it was not available. A good condition was recorded for the rice mill with a mean score of 2.4. This implies that the entire agro-processing mill assessed in the study area are in fairly good condition and available except for the rice processing mill which is not available.This could be because not all the States in southeast Nigeria produce rice. This can be further explained in fig 2 showing the availability of rice processing mill in Ebonyi, Enugu and Abia States.

Table 3: Determining the Availability of Rural Infrastructures and their Present Condition

	Variables	Availability Yes	Present condition Mean score
	Educational Infrastructure		
1	Primary schools	314 (96.0)	3.1
2	Secondary schools	310 (95.7)	3.0
	Agro-processing Infrastructures		
3	Rice processing	159 (49.1)	2.4
4	Palm oil processing centers	200 (61.7)	2.0
5	Garri processing	271 (83.6)	2.7
	Public utilities		
6	Roads	307 (94.8)	2.5
7	Public market	311 (96.4)	2.6
8	Transportation	296 (91.4)	2.4
9	Housing	274 (84.6)	2.3
10	Electricity	283 (87.3)	1.9
11	Boreholes	273 (84.3)	2.3
	Grand mean		**2.4**

Source: *field survey, 2017*

Decision: mean > 2.0 indicates good condition; mean score < 2.0 indicates poor condition of infrastructure

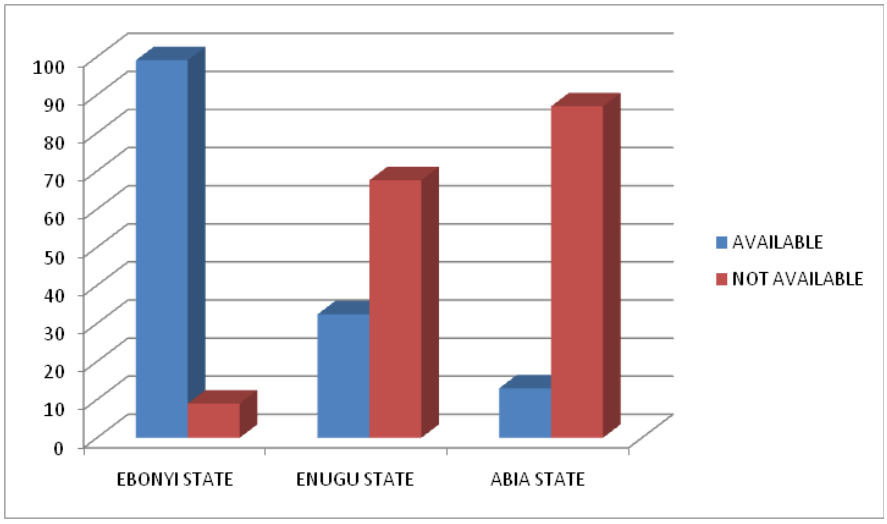

Fig 2: Availability of Rice Processing Mill in Ebonyi, Enugu and Abia States

Figure 2 shows the disparity in the availability of rice mill in Ebonyi, Enugu and Abia States. Rice was readily available in Ebonyi State than in Enugu and Abia States. This implies that Ebonyi State produces rice more than Enugu and Abia States.

Table 3 further showed the availability and condition of public utility. From the result majority of the infrastructures are available and in fair condition with a mean score of 2.5, 2.6, 2.4, 2.3 and 2.3 for road, public market, transportation, housing and boreholes respectively. The presence of an adequate, reliable and efficient transport system is a critical factor in local economy development. A well-developed transportation and market infrastructure provides adequate access to local communities, which is a necessary condition for the efficient operation of manufacturing, retail, labour, housing and markets. Transportation is a wealth creating industry on its own, extremely important for livelihood improvement (Olubomehin, 2012). Therefore, adequate, reliable and economic road and transport system is essential for the social and economic development of rural areas in Southeast Nigeria.

Electricity was available but not in a good condition with a mean score of 1.9. This implies that there is a poor supply of power in the study area. Electricity plays a very important role in the socio-economic and technological development of every nation. The electricity demand in Nigeria far outstrips the supply and the supply is epileptic in nature (Abubakar *et al.,* 2010). The country is faced with acute electricity problems, which is hindering its development notwithstanding the availability of vast natural resources in the country in which Southeastern Nigeria is not an exception. It is widely accepted that there is a strong correlation between improving the livelihood of the rural households and the availability of electricity.

Respondents' Rating of the Contributions of Rural infrastructure in Improving Livelihoods among Rural Households

The ANOVA resultin table 4 was not significant indicating that there is no significant difference in the respondents rating of the contributions of physical infrastructures in improving livelihoods among rural households across the States. By this result, the null hypothesis stated is accepted. This implies that across the three States (Ebonyi, Enugu and Abia States), there is no difference in the contribution of physical infrastructure to the livelihoods of rural households. The result agrees with Emokaro and Oyoboh (2016) who reported measurable improvements in the income earning power, health status and personal hygiene of rural dwellers provided with electricity, primary health care centers and water supply. The number of school enrolments also increased for communities provided with educational facilities as well as improved social activities in areas where socio-economic projects were executed in Edo State.

Table 4: Respondents' Mean Rating of the Contributions Of Rural Infrastructure in Improving Livelihoods among Rural Households Across the States

States	N	Mean rating	Std Deviation	Std Error	F-value
Ebonyi	108	4.0088[a]	.78189	.075524	.102
Enugu	108	4.0111[a]	.55876	.05377	
Abia	108	4.2301[a]	7.11079	.68424	
Total	324	4.0833	4.13120	.22951	

Source: field survey, 2017
***P*= 0.05**

HO_2: Functionality of educational infrastructure does not significantly influence household income, number of children enrolled in school and livelihood diversification. This was analyzed using simple regression analysis.

Table 5: Simple Regression Estimate on the Significant Influence of Functionality of Educational Infrastructure on Income, Number of Children Enrolled in Schools and Livelihood Diversified.

Variable	Household income	Number of children Enrolled in school	Livelihood diversified
Constant	5216.575 (.279)	3.139 (5.155)***	3.139 (5.155)
Functionality Of educational Infrastructure	.419 (4.018)***	.384 (3.765)***	.845 (14.337)***
Adjusted R	.464	.337	.711
R^2	.575	.547	.715
F- statistics	16.144***	14.175***	205.557***

Source: field survey, 2017
*** = significant at 1%, ** = significant at 5%
***P*= 0.05**

The coefficient of determination (R^2) of the model is 0.575, which meant that about 57.5% of the variation in income could be explained by variations in the functionality of educational infrastructure. The F-value was significant at 1% level; this shows the goodness of fit of the model and the overall significance of the model.

The coefficient of household income was statistically significant at 1% level and was directly related to functionality of educational infrastructure. This implies that functionality of educational infrastructure increased household income of the rural dwellers in the study area. The present condition of both primary and secondary schools in South-East Nigeria could be

as a result of help coming from some rural organizations, such as rural women group, age grade association, etc. These organizations get involve in school rehabilitation increasing the level access and use of the infrastructure. Abur *et al.* (2014) reported that educational attainment of the rural households has positive effect on income of the rural dwellers since functionality of educational infrastructure increases the level of access and use of the infrastructure by rural households. This is in conformity with the findings of this study that increased income is as a result of functionality of educational infrastructure.

The coefficient of the number of children enrolled in both primary and secondary schools was significant at 1% level and was directly related to the functionality of educational infrastructure. This implies that the number of pupils enrolled in schools is as a result of the functionality of the infrastructure, in order words; poor condition of the infrastructure would reduce the number of children enrolled especially in both primary and secondary schools. The finding conforms to *apriori* expectation. Public expenditure on educational infrastructure is obviously of fundamental relevance to increase the enrolment rate ratio, especially in areas where the level of school and other public infrastructure is deficient (Duflo, 2001).

The coefficient of determination (R^2) was 0.547, which meant that about 55% of the changes in students' enrollment in schools could be explained by variations in the educational infrastructure.

The coefficient of livelihood diversification of the rural households was significant at 1% level and was directly related to functionality of the infrastructure. This implies that an increase in the functionality of the educational infrastructure, would lead to an increase in livelihood diversification by the rural households. The presence of a functional educational infrastructure in the study area is a new way to raise income and reduce environmental risk of the rural households. The presence of school infrastructure gives the rural households opportunity to display petty trade, which helps them to diversify income creating another avenue of earning income. Edna (2007) reported that agricultural production on its own rarely provides a sufficient means of survival in rural communities of low-income countries such as Nigeria, and rural households have to diversify livelihood. Generally, functionality of educational infrastructure significantly influenced household income, number of children enrolled in school and livelihood diversification. Therefore, the null hypothesis was rejected at 5% level of significance.

Conclusion and Recommendations

The provision of rural infrastructure is basic to rural economic development, which encompasses improving the livelihood and well-being of rural households. The study concludes that rural infrastructure contributes equally to the livelihoods of rural households across the States in Southeast and functionality of rural infrastructure increase household income, food availability, processing labour and helps the rural dwellers to diversify livelihood. The study therefore recommends that Communities where rural infrastructure are located should ensure adequate maintenance and sustainability of such infrastructure. This should be done by the help of government educating the rural dwellers on the need to effectively maintain such infrastructure located in their environment.

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