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ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

ISSN: 0976-3376

Asian Journal of Science and Technology
Vol. 6, Issue 02, pp. 1103-1107, February, 2015

RESEARCH ARTICLE

CRITERIA FOR CITING POVERTY ALLEVIATING FACILITIES IN TARGET COMMUNITIES IN NIGERIA: A CASE STUDY OF YOBE STATE

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ARTICLE INFO

Article History:
Received 26th November, 2014
Received in revised form
18th December, 2014
Accepted 16th January, 2015
Published online 28th February, 2015

Key words:

Criteria,
Citing,
Poverty,
Target,
Communities.

ABSTRACT

The Federal Government of Nigeria have created programmes to alleviate poverty, but indices on electricity, water, education, housing and health have shown that little have been done in the country's effort to develop rural areas. Most of the development projects were not evenly distributed and as such very few groups of people benefited from such projects. One of the most critical decisions of poverty alleviation programme is the identification of the intended beneficiaries of the programmes. That is the poor. It is often argued that the best solution to the problem of poverty alleviation isthe one which identified the characteristics of the target communities and then direct benefits towards the community. This study was therefore conducted to evolve some criteria for siting poverty alleviating facilities for target communities in Yobe state. Primary data for this study were collected from sample of 405 farmers in Yobe state through administration of structured questionnaires. The community variables which constituted the secondary data were collected from various Ministries in the state, Local Government secretaries and the State ADP. To show the association between the individual and community variables and their spatial variation in the study area, Principal Component Analysis was employed. Using principal component analysis, the individual and community variables were transformed into a linear equation by allocating relative weights to each variable. These weights (coefficients of the equation), which are reasonable unique to each variable measured the relative importance of the variables and therefore facilitated their ranking in each of the ten wards. Household attributes like income, housing, sanitation and farm holdings are highly correlated with community variables. Community variables have positive impact on the quality of rural life. The results provide ample evidence on how community facilities translate into individual poverty alleviation criteria. When wards were ranked in terms of their access to central facilities, the arrangement in ascending was: Wadi, Kayeri, Fusami, Koriyel, Wagir, TuloTulo, Kukuri, Karasuwa, Dawayo and Masaba. It is recommended that a ward with least access to central facilities should be the first target siting poverty alleviating facilities in the study area.

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INTRODUCTION

Poverty alleviation is both a moral and a pre-requisite condition for economic growth. It is a term that attracts the attention of many scholars in the world. Alleviation of poverty calls for substantially greater investment in social and infrastructural facilities. These include good and accessible road network, feeder roads linking rural areas, simple and affordable transportation and housing for the masses; portable water supply and agricultural service center. (Oriola 2009) It also includes establishment of schools for skill acquisition and health facilities with sufficient drugs to improve the health status of the people. The provision of basic services in the rural areas will improved the quality of rural life and promotes socio-economic integration.

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The opening of new road would permit easy inputs delivery and timely evacuation of farm produce to market and will also reduce transportation cost. The farmer will have a good price for his farm produce and the income will subsequently improve the quality of rural life. It is a common knowledge that poor health reduces the capacity to work, constrain the ability to increase income and adversely affects the quality of life. The link between poverty and poor health is therefore direct (world Bank, 2011, Oriola, 2009). Therefore, provision off acilities with sufficient drugs in the rural areas will improve the health status of the rural dwellers and this will increase their productivity. Rural dependence upon rivers and ponds has resulted in unnecessarily high incidence of dysentery, cholera, guinea-worm and other related water borne diseases (World Bank, 1984). The supply of portable drinking water in rural areas will reduce the incidence of certain water borne diseases. This will improve the health status of the rural dwellers. Access to social services is a critical factor in

overcoming poverty particularly primary education (World Bank, 1987). Education impacts the ability to read and write and thereby enhances farmer's productivity. A farmer with formal education will be able to acquire and interpret message relating to his farming operation to his own advantage (Umeh, 1986). Poverty in Nigeria needs to be seen in abroad context. Nigeria has the largest population in sub-Sahara Africa. Nigeria is rich in land, people, soil and natural gas resources but the people arepoor (Adawo, 2011). The country is currently characterized by a large rural, mostly agricultural based, traditional sector which comprises about two thirds of the poor. It is also characterized by a small urban capital intensive sector, which has benefited most of the exploitation of the country's resources and from the provision of services that successive government have provided (World Bank, 2011). The poor in Nigeria tend to be concentrated in poor communities. Forae (2011) and Oluwayom (1986) reported that such communities are characteristically cut off from the benefit of development by the absence of access roads, safe drinking water, health facilities, schools and banking facilities.

The Federal Government of Nigeria has created programmes to alleviate poverty. These programmes include: National Directorate of Employment, Directorate of Food, Road and Rural Infrastructures, Primary Health Care Scheme, Better Life for Rural Women, Family Support Programmes and Family Economic Advancement Programmes. Indices on electricity, water, education, housing and health have shown that little have been done in the country's effort to develop rural areas (NBS, 2005). Most of the development project was not evenly distributed and as such very few groups of people benefited from such projects. The study has attempted to identify the distribution of central facilities in the study area and identify the target communities. The broad objective of this study is to evolve a set of criteria for siting poverty alleviating facilities for the target communities in the study area. Specific objective are to:

i. Show the levels of association between the individual characteristics on one hand and the accessibility to central facilities on the other;
ii. Identify the spatial variation of the characteristics of the individual and central facilities in the study area; and
iii. Make policy recommendation based on the empirical evidence.

MATERIALS AND METHODS

The study Area

The study area is Yobe state. Yobe state covers an area of 45, 402 square kilometers. It shares an international boundary with the republic of Niger to the North. Within the country, it shares boarders with Jigawa and Bauchi states to the West, Born state to the East as well as Gombe state to the South. It is situated between longitude 100 55 and 130 East and latitude 9030 and 120 15' North. The state traverses two ecological zones namely the Sudan Savannah to the South and the Sahel in the Northern tip of the state. In both the ecological zones, the impacts of human activities (e.g farming and grazing) and natural disaster (e.g desertification and drought) has degraded most of the vegetational cover. It has a population of 2.5 million (NPC, 2006). The official language in the state is English but Hausa and Kanuri have gained wider acceptability. The state capitalis Damaturu. The main towns are: Damaturu, Potiskum, Nguru, Gashua, Gujba and Geidam. Most of the economic activities are concentrated in these towns. The state is characterized by a large rural, mostly agriculture based, traditional sector which comprises about 70 percent of the population. The state is richly endowed with mineral resources such as gypsum, kaolin and Gum-Arabic. The state has 11 General Hospitals, 43 secondary schools and 7 higher institutions. The Federal Government of Nigeria has established three higher institutions in the state, namely Federal College of Education (Technical), Federal university and Federal Polytechnic located at Potiskum, Gashua and Damaturu respectively. Most of the people depend on wells and ponds as their source of water.

Source of Data

The data used in this study are of two types, namely individual (household) variables and community variables. The individual variables constitute the primary data. They are obtained by means of structured questionnaire and personal interview. Information obtained include age of the household head, educational level, farm holdings, family size, farm income, housing and access to central facilities like banking facilities. Community variables which constitute the secondary data were obtained from various ministries in the State, Local Government Secretariats and State ADP.

Sampling Procedure and Sample Size

The geo-political demarcating criterion adopted for this study is the 'ward'. The State is divided into 176 wards. The sample size of 450 households was drawn by employing a simple two stage cluster sampling. The sampling frame at the first stage is the list of the wards and the sampling frame at the second stage is a list of farm families obtained from the State ADP. Ten wards were selected at random and each of the ten wards selected was considered as a cluster. Forty-five household units were drawn randomly from each stratum, making 450 samples altogether. Out of the total samples only 405 questionnaires were considered for analysis. Forty five were rejected being invalid due to incorrect information provided. Resource constraint influenced the number of wards selected and the sample size.

Data Analysis

In order to identify the spatial variation of the individual characteristics and development facilities in the area, principal component analysis was employed. Bola and Adesina (1987) applied the principal component analysis in identifying the spatial variation of building characteristics and levels of amenities over 41 wards into which Ibadan was divided in 1977. Similarly, Umeh (1986) ranked 54 potential input centres in the Lafia ADP using the model. The principal component analysis is a linear combination of regressor variables. In the process of reducing the dimensionality of the set of data, it indicates the relative contribution (coefficients) used for ranking purposes. The model is useful in identifying a person, object or place based on their characteristics (Cohen, 1988). The first principal component can be viewed as the best

Table 1. Correlation Table

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
X1	1.00	0.535	0.492	0.430	-0.016	0.044	0.041	0.054	0.047	0.044	0.031	0.080	0.23	0.072
X1	0.535	1.00	0.558	0.469	0.87	0.109	0.098	0.024	0.009	-0.003	0.061	-0.007	0.002	-0.010
X1	0.492	0.558	1.00	0.767	0.137	0.191	0.055	0.032	0.005	0.002	0.039	0.027	0.054	-0.061
X1	0.430	0.469	0.767	1.00	0.174	0.213	0.052	-0.028	-0.070	-0.032	0.005	-0.034	-0.01	0.028
X1	-0.010	0.087	0.137	0.174	1.00	0.134	0.112	0.059	0.036	0.047	0.043	0.015	0.076	0.030
X1	0.044	0.019	0.191	0.213	0.134	1.00	0.351	-0.84	0.061	0.021	0.016	-0.058	-0.32	0.038
X1	0.041	0.098	0.055	0.052	0.112	0.351	1.00	-0.041	-0.024	-0.034	0.033	0.038	-0.422	0.021
X1	0.054	0.024	0.032	-0.028	0.069	-0.084	-0.041	1.00	0.888	0.766	0.360	0.511	0.874	0.297
X1	0.047	0.009	0.005	-0.070	0.036	-0.061	-0.024	0.888	1.00	0.936	0.578	0.707	0.891	0.554
X1	0.044	-0.003	0.002	-0.032	0.047	0.021	-0.34	0.766	0.936	1.00	0.483	0.590	0.809	0.584
X1	0.031	0.061	0.039	0.005	0.043	-0.016	0.033	0.360	0.578	0.483	1.0	0.819	0.516	0.578
X1	0.080	-0.007	0.027	-0.034	0.015	-0.058	0.035	0.511	0.717	0.590	0.819	1.00	0.688	0.782
X1	0.25	0.002	0.054	-0.001	0.076	-0.032	-0.022	0.874	0.891	0.809	0.516	0.688	1.00	0.611
X1	0.72	-0.010	0.061	0.028	0.030	0.038	0.021	0.297	0.554	0584	0.578	0.782	0.611	1.00

Source: Computed from Survey Data, 2014

summary or linear relationship exhibited in the data. The second subsequent principal components are defined as the second and subsequent ordered best linear combination of the variables under the condition that each is orthogonal and is inferior to the previous principal component. The method of principal component can be applied in three ways, namely: the original value of the Xjs or their deviations from their means Xj = Xj or the standardized variables (measures as the deviation of the Xjs from the means and subsequently divided by the standard deviations) Zj = Zj/Sxj. The later procedure of standardized variables is adopted in this study, because it is more general in that it can be applied to variables measured in different units (Koutsoyiannis, 1977).

The mode is specified as follows:

Pi = Aij Zj

Where

Pi = The ith principal components

(I = 1, 2, . . . 14)

Aij = the coefficient of the principal component (factor loadings); and

Zi = the standardized values of the Xjs.

The factor loadings are computed by simple summation method adopted, by Koutsoyiannis (1977). The sum square of the loading of the principal component is called the latent root (or eigen value or characteristics root) of this component. It represents the proportion of the total variability explained by each component. The maximum number of principal components is equal to the number of the variables. However, only a small number of principal components are usually retained in the analysis (Cohen, 1988) by convention, a factor is only considered when the eigen value is greater than 1 (Tabachnick and Fidel, 1989). The variables are the characteristics defined below. The individual variables included

X_1=age of the head of household in years, $X_{2=}$ household size in number
$X_{3=}$ Farm holding in hectares, $X_{4=}$ household farm income in Naira
$X_{5=}$ head of household level of education measured as years of schooling,
$X_{6=}$ the type of toilet the farmers are using
$X_{7=}$ the type of house the famers are living in and the community variables are
$X_{8=}$ the number of primary schools available,
$X_{9=}$ the number of health facilities available,
t$X_{10=}$ the road in Km,
$X_{11=}$ the number of market available,
$X_{12=}$ the number of banks available, $X_{13=}$ water supply, and $X_{14=}$ the number of agricultural services centre available

RESULTS AND DISCUSSION

The spatial variation of individual and community Variables in the Study Area

The correlation matrix representing the inter-relationship between each and every one of the 14 characteristics is shown in Table 1. From the individual variables, X_4 (farm income) shows relatively strong relationship to the other variables. From the community variables X_9 (medical Facility shows relatively strong relationships with the other variable. However, it is difficult to obtain an overall picture of grouping of relationships. To examine this more closely, principal component analysis is carried out. The two components selected are presented in Table 2.

Table 2. Eigen value and percent {%} of variance explained Components

Measure	1	2
Eigenvalue	3.96	1.54
Percent of Variation	28.29	10.97
Cumulative percentage	28.29	39.26

According to the table, component one accounts for 28.29 percent of the common variance with 3.96 as its eigen value, and component two accounts for 10.97 percent with 1.54 as its eigen value. It is obvious therefore that those two dimensions dominate the spatial variation as the other 12 factors account for the remaining 60.74 percent, giving an average of about 5.06 percent. The component loadings (aijs) obtained by simple summation method are presented in Table 3 According to the table, component one comprises the following variables: primary school (Xs), medical facility (X9), road (X10) markets (X11) Banks (X12) boreholes (X13) and agricultural service

centre (X14). Component two comprises of the following variable: farm income (X4), Toilet (X6), and housing (X2). The first dimension of variation is accounted by community variables.

Table 3. Principal component loadings on the 14 variables Component

Variable		1	2
Age	(X1)	0.396	0.056
Household	(X2)	0.370	0.001
Farm holdings	(X3)	0.493	0.307
Farm income	(X4)	0.409	0.786
Education	(X5)	0.266	0.146
Toilet	(X6)	0.266	0.418
Housing	(X7)	0.254	0.392
Primary Schools	(X8)	0.648	0.087
Medical facilities	(X9)	0.756	0.366
Roads	(X10)	0.717	0.337
Market	(X11)	0.629	0.074
Banks	(X12)	0.709	0.177
Borehole	(X13)	0.755	0.371
Agricultural service centre	(X14)	0.639	0.166

Source: Computer by simple summation method from Table 1

The individual variables also load positive on the dimension indicating a positive relationship. But farm income and farm holding load highest. The component suggests that, wards that have access to central facilities are likely to have households with large farms and high income. The second component is accounted for by such individual variable as income, housing and sanitation. Community variables also load positive indicating positive relationship. But road, health, facility and water load highest. The component suggests that households with high income, good sanitation and housing are likely to have access to good drinking water, road and health facilities. This means that community variable can improve the quality of life of rural people and hence alleviate poverty in the rural areas. The spatial variation of the individual and community variables over the ten wards is presented in Table 4.

Table 4. The Principal Component Scores of the Selected Wards in Yobe State Components

Ward	1	2
Fusami	-2.855	-0.828
Dawayo	5.508	1.551
Kayeri	-3.858	-1.103
Kukuri	2.179	0.743
Wadi	-3970	-1.351
Masaba	5.516	2.091
Wagir	2.776	-0.264
Koriyel	-2776	-0643
Tulo-Tulo	-7.717	-1.415
Karasuwa	5.091	1.308

The patterns of scores of the ten wards on the first component shows that the highest scores occur in Masaba, Dawayo, Karasuwa and Kukuri wards while Fusami, Kayeri, Wadi, Wagir, Koriyel and Tulo-Tulo wards have negative scores. This means that Masaba, Dawayo, Karasuwa and kukuri wards have more access to central facilities than the rest of the wards. These wards (masaba, Kukuri, Dawayo and Karasuwa) will have household with high income than the rest of the wards because income also loads higher. Consequently, the level of living of the households in these wards will be higher than the rest of the wards. Siting poverty alleviating facilities like boreholes, health facilities and schools in those wards with negative scores will improve the level of living of households in these areas and reduce the level of poverty in the areas. When the wards are ranked in terms of their access to central facilities, the arrangement in descending order is Masaba, Dawayo, Karasuwa, Kukuri. Tulo-Tulo, Wagir, Koriyel, Fusami, Kayeri and wadi. The second component is accounted for by such individual variables as income, housing and sanitation. The pattern of score shows that the highest scores occur in Masaba, Dawayo, Karasuwa and a fairly high score occurs in Kukuri ward. The other wards have negative scores. This means that Masaba, Dawayo, Karsuwa and Kukuri wards are characterized by households with high income good santiation and accommendation.

This means that the level of living of households in these wards (Masaba, Dawayo, Karasuwa and Kukuri) is likely to be higher than the rest of the wards. As expected, the four wards that have higher scores on the first component are also the same wards that have higher scores on the second component. The result indicates that the community variables a have positive effect on the level of living of the households. This is because the analysis shows that community variables have a positive relationship with the individual variables. Siting of development project such as educational facilities, health facilities, water supple and transport in rural areas are considered critical element of efforts so alleviate poverty (Adawo 2011) so in order to improve the level of living (alleviate poverty) of those households in the disadvantaged wards, the provision of more basic facilities like water, health facilities, roads and banks is necessary.

Conclusion

The analysis has shown that there is disparities in the distribution of both individual and community variables between the wards. The analysis shows that the first component is accounted for the community variables and the second component is accounted for by such individual variables as income, housing and sanitation. The analysis also shows that those wards with high score on the first component (community variables) are also the same wards that have higher score on the second component (individual variable). As such, the study has provided a mole evidence on how community variables translate into individual poverty alleviation criteria

Policy Recommendation

The preceding ananlysis has brought out some findings that have important implications for policy. Based on these findings, the following recommendations are made to alleviate poverty in the target community.

i. Siting of poverty alleviating facilities should be done as the basis of disparities between communities, the disadvantage community like Wadi should be the first target of any programme.
ii. All government programmes aiming at poverty alleviation should use both micro-data and macro-data. The use of just one of them would not lead to optimum decision.
iii. Government regulations should guide against administrators influencing the distribution of poverty alleviating facilities. As long as there is selfish interest in

the allocation of development facilities, the disadvantaged areas may continue to live in poverty.

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