Critical Predictors of Spatial and Non-Spatial Determinants of Rural Poverty in Developing Countries: The Case of Akwa Ibom State, Nigeria

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ABSTRACT

The study analyzed the predictors of spatial determinants of rural poverty in developing countries using the case of Akwa Ibom State, Nigeria. With Yamane statistical technique, 400 households in 30 randomly sampled rural communities drawn from 19 out of 31 LGAs of the State were selected for oral interview using structured questionnaire complemented by field observations and focused group discussions to assess the indicators and predictors of poverty levels in the communities. Data on 28 poverty indicators and 14 determinants of rural poverty were obtained and analyzed using factor analysis and step-wise regression model. The factor analysis model engaged in analyzing the 28 poverty indicators yielded eight principal dimensions of rural poverty which accounted for 75.87 percent variation in the original 28 indicator variables. The step-wise regression model was used in analyzing the 14 predictors' of rural poverty against each of the eight dimensions of rural poverty obtained from the factor scores of the analysis. The regression results revealed that rural poverty are mostly affected by spatial factors such as the communities distance to state capital, communities' location, and other non-spatial factors such as availability of all day periodic market, household size, number of dependents', household heads' educational attainment and availability of electricity. Gender, marital status, and age of household heads are found to not significantly influence rural poverty levels. The study recommends policies that would promote wide spread access to socioeconomic infrastructures and targeted transfer schemes such as food stamps, subsidized food distribution and nutrition programme as well as improved educational status of household head and employment opportunities as a way of alleviating rural poverty levels in the State.

Keywords: Critical Predictor, Spatial Determinant, Rural Poverty, Developing Countries and Akwa Ibom State

INTRODUCTION

The Millennium Development Goals (MDG) drive was sprung in 2002 and ran until 2015. Its overriding objective was to halt extreme poverty (United Nations 2017). The campaign, embraced by 189 UN member states, set eight clearly development goals (WHO 2017a). The high levels of poverty and the apparent inability of most underdeveloped economies to address their associated problems in spite of the achievements recorded by the MDGs in tackling poverty prompted the development of an integrated world approach which is anchored in the Sustainable Development Goals (SDGs) which have indicators ranging from halving extreme poverty by 2030. Essentially, The MDGs were succeeded by the Sustainable Development Goals (SDGs) for the 2016–2030 period, with a self-standing goal—SDG 1—regarding putting an end to poverty. SDG target 1 aims to end poverty in all its forms everywhere by 2030. Even with significant progress, millions of people globally still live in extreme poverty, facing challenges like laughable and poor access to basic services, education, and economic opportunities. Achieving this goal involves guaranteeing equal access to resources, upholding wide-ranging economic growth, and addressing the root causes of poverty, such as inequality, climate change, and conflict. By eliminating poverty, the way for greater health, education, and opportunity can be paved, ensuring that the objective of target 1 of the SDGs is achieved. Evidence (Esin, 2013, 2024, Mercy, 2019; UNU-WIDER, 2017;

Alkire, Foster, Seth, Santos, Roche, and Ballon, 2015) abound that in all countries of the world, poverty is still one of the most pressing social and environmental problems, particularly, in the developing countries, where it is said to be deep and severe. Presently at the global level, poverty has become a major development issue. This informed why the United Nations has strongly responded to the global poverty challenge by articulating 'poverty eradication' as the foremost goals of the 17 targets of the 2030 Agenda for sustainable development (UNDP, 2015). Other allied institutions such as the World Bank, International Monetary Fund, World Poverty Clock, Brookings Institution and even the Water Life Foundation have collaborated with sister agencies to help push back poverty in the world. In spite of their effort, global poverty statistics still remain alarming.

In Nigeria, poverty remains pervasive, multifaceted and chronic in spite of its abundant natural and human resources endowment. The National Bureau of Statistics (NBS) (2022) estimated that in 2021, 63% of Nigerians are multi-dimensionally poor, and the National MPI projected at 0.257 with higher Multidimensional poverty projected at 72% in rural areas than the urban areas (42%). This implies that nearly 133 million Nigerians lived in poverty. This further suggests that poor Nigerians experience about 26% of all possible denials, such as inadequate or complete lack of access to basic social services – health and education, poor living standards, unfavourable labour market outcomes and security shocks. Additionally, the World Bank reports that 38.9% of Nigerians were living below the poverty line in 2023, with an estimated 87 million people living in poverty, making it the second-largest poor population in the world after India. In terms of monetary deprivation, the national poverty headcount was estimated at 40.9% in 2021, slightly higher than the 40.1% of the 2019 estimate. A further analysis of the poverty statistics by the National Economic Summit Group (NESG) (2022) showed that the incidence of multidimensional poverty in 2021 is significantly higher in rural communities (72%) than in urban centres (42%), with resultant MPI projected at 0.302 and 0.155, respectively. Additionally, the report stated that about 41.9% and 36.9% of Nigerians dwelling in the rural and urban communities, correspondingly, fell below the national monetary poverty line as of 2021.

Akwa Ibom State represents one of the flash points of poverty in Nigeria (Etim and Ekpenyong, 2018). According to the National Bureau of Statistics (2016) poverty report, Akwa Ibom state has a poverty index of 23.8% with significant rural/urban differentials. A study by Effiong, (2017) revealed that poverty and low socio-economic fortunes are higher in the rural areas of Akwa Ibom state compared to its urban counterparts. This accounted for the selection of Akwa Ibom State as one of the flagship states for World Bank's intervention programs. Several studies in Akwa Ibom State in particular and Nigeria in general have attempted to explain the regional determinants of poverty in an attempt to offer solution to poverty alleviation, but most of these analysis are generally concentrated on socioeconomic characteristics of households, with no emphasis on the impact of spatial factors. Although pockets of evidence indicates that poverty is highly related to poor-quality soils, drought-prone climates, high-altitude residence, natural resources deficiencies such as forests or water bodies and lack of access to markets, urban areas, public facilities and related services, there has been little effort to establish the precise relationship between poverty incidence and these factors. This study is therefore an attempt to fill this gap of knowledge by empirically identifying the indicators and spatial determinants of rural poverty at household levels in the rural communities in the light of government concern for poverty alleviation in the State.

MATERIALS AND METHODS

Study Area

Akwa Ibom State is located at the south-east corner of Nigeria between latitudes $4^o \ 3^0$ and $5^o \ 32'$ North of the equator; and longitudes $7^o \ 25'$ and $8^o \ 30'$ east of the Greenwich Meridian. It is bounded on the north by Abia and Cross River States. In the south, the State is bordered by the Atlantic Ocean and on the south-west and west by Rivers and Abia States respectively. Figure 1 is the map of Akwa Ibom State (the study area).

Akwa Ibom State has a landmass of 8,412sq kilometres (Akwa Ibom State, 1989). The State, which was created on 23rd September, 1987 from the former Cross River State, Nigeria, is administratively divided into 31 Local Government Areas (LGAs) including Uyo, the State capital city. By this division, the State has 31 urban settlements as headquarters of the LGAs with Uyo, Eket, Ikot Ekpene, Abak, Etinan, Itu, Ikot Abasi and Oron being the oldest and more developed urban settlements (exception of Itu). The State is drained majorly by Cross

River, Qua Iboe and Imo Rivers. With an endowed coastline of 129km out of Nigeria's 800km coastline, the State has many beaches yearning for development (Usoro and Akpan, 2010).

Akwa Ibom State is made up of Ibibio, Annang and Oron speaking people. Noah (1980) and Otoabasi (2004) noted that these three groups that make up modern Akwa Ibom State are culturally one and understand Ibibio language inspite of the dialectical differences found among them. Besides the three major ethnic groups, Akwa Ibom State has minor ethnic groups such as Eket, Ibeno and Obolo. They share similarities in culture with the major nationalities as they have the same source of origin and also understand and speak Ibibio language.

Settlement patterns in Akwa Ibom State are predominantly the dispersed type and rural in nature. They are made up of compounds that are scattered over the village landmass. This landmass consists of farmlands, bushes or forestlands. This pattern according to Inyang (1984) affected the traditional land holding as ownership is vested more in individuals or families than in village communities. This prevailing pattern "encourages scramble for land" by individuals and families.
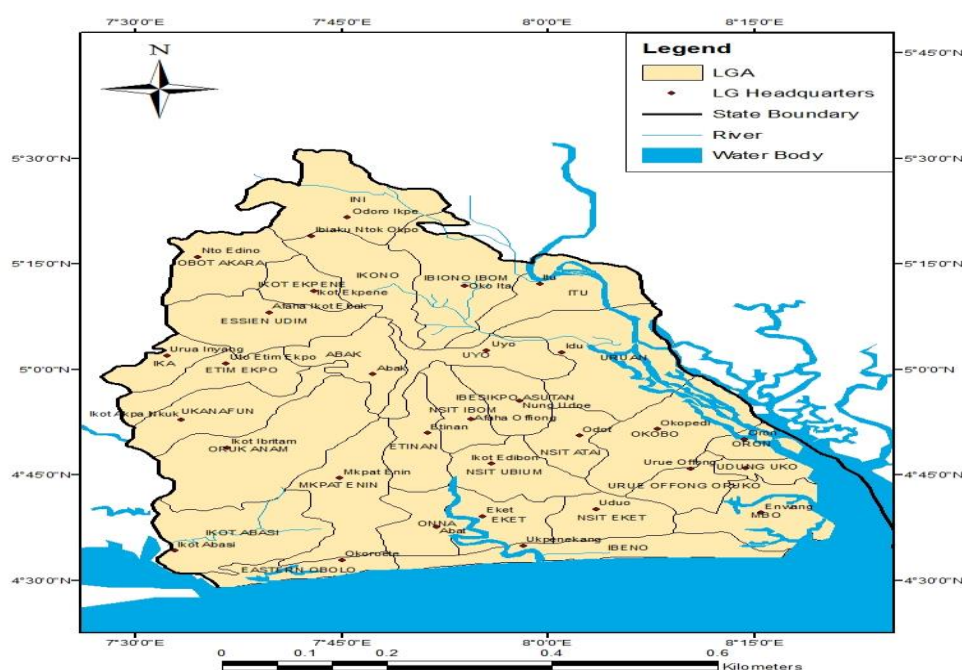

Fig. 1.2: Map of Akwa Ibom State showing the location of the LGA and their headquarters

Data Sources

The data for this study were sourced from two main sources: primary data through personal interviews with the aid of structured questionnaire and field observations, which was the major source of data for the study. Two sets of questionnaire were used: One (structured questionnaire) administered to the households while the other (unstructured questionnaire) was responded to by the field assistants on the basis of their observations. The primary data were supplemented by the secondary data especially the National Bureau of Statistics (NBS) (2022) report, the National Economic Summit Group (NESG) (2022) report, the National Consumer Survey, the Central Bank of Nigeria Poverty Assessment and Alleviation Study of 2019/21 report and the World Bank (2024) Report which were focused on poverty in Akwa Ibom State. The defined poverty indicator data used in this study cut across socio-economic and environmental attributes in view of the multi-dimensional nature of poverty (Table 1).

Table 1: List of indices (dependent variables) and units of measurement

S/N	Indices	Unit of measurement
1.	Water sources	Type

2.	Household energy	Type
3.	Predominant mode of transport	Type
4.	Waste disposal facility	Type
5.	Clothing quality	Type
6.	Household furniture	Type
7.	Ownership of electronic devices	Type
8.	Household communication device	Type
9.	Ownership of alternative power generators	Type
10.	Ownership of business enterprise	Type
11.	Access to credit facility	Type
12.	Sources of credit facility	Type
13.	Monthly expenditure on food	Naira
14.	Monthly expenditure on education	Naira
15.	Monthly expenditure on clothing	Naira
16.	Monthly expenditure on transportation	Naira
17.	Monthly expenditure on health	Naira
18.	Meals / feeding per day	Number
19.	Nature of building	Type
20.	Nature of floor	Type
21.	Nature of walls	Type
22.	Number of household with toilets	Number
23.	Nature of toilet	Type
24.	Nature of bathing facility	Type
25.	Number of rooms occupied by household	Number
26.	Nature of kitchen	Type
27.	Tenure of housing units	Type
28.	Occupation of household head	Type

Source: Authors' Fieldwork (2024)

Sample and Sampling Technique

Data for this study were collected on village/settlement basis. Multi-stage sampling procedure was used in selecting the representative settlements and households. The first stage was the random selection of 19 LGAs from the 31 LGAs in the State. The second stage involved the selection of 30 settlements from the 19 LGAs. The sampled LGAs constituted the sampling frame. Through the table of random sampling numbers, 30 settlements were selected from all the settlements in the 19 LGAs. The thirty villages/ settlements constituted the units areas for the collection and analysis of data relating to the study objectives.

Sample Population Sampling Size

The target population covers all the head of households in the 19 sampled communities. Owing to this, the total population of the thirty selected villages constituted the study population after being projected from 2006 to 2024 using an annual growth rate of 2.83% (NPC, 2006). The projected population was used as a basis to determine the sample size. The total number of households selected for interview was determined by expressing the population of each of the selected villages/settlements as a percentage of the projected population of all the villages/settlements (Table 2).

Table 2: List of Settlements with their 2006 Projected Populations and Sample Size

S/N	Communities	LGA	District	2006 POP	2024 Projected	Households	Sample size
1.	Ikot Akpadem	Mkpat Enin Ikono	**	2239	3499	699	13
2.	Nung Udoe Itak	Nsit Ibom	*	3497	5465	1093	20
3.	Mbiokporo 1	Okobo	*	1424	2225	445	8
4.	Nung Atai Eta	Abak	**	3477	5435	1087	20
5.	Ukana	Ini	***	1270	1985	397	7
6.	Nkari	Okobo	**	1321	2064	412	8
7.	Eweme	Ibesikpo A	**	1760	2751	550	10
8.	Ikot Obio Odongo	Okobo	*	1995	3118	623	11
9.	Ekeya	Etim Ekpo	**	6011	9396	1879	33
10.	Nwot Ikono	Eket	***	3179	4969	993	18
11.	Ikot Ibiok	Uyo	**	3165	4947	989	18
12.	Use Offot	Nsit Ibom	*	3674	5743	1148	21
13.	Mbiaso	Mbo	*	539	842	168	3
14.	Ibaka	Oruk Anam	**	1420	2219	443	8
15.	Ikot Uko	Ika	***	542	847	169	3
16.	Ito Ika	Ini	***	722	1128	225	4

17.	Mbiakpa Ibakesi	Ikono	**	2372	3707	741	13
18.	Mbiabong Ikon	Mbo	*	1022	1597	319	6
19.	Unyenghe	Mbo	**	2919	4562	912	16
20.	Uda	Abak	**	2300	3595	719	13
21.	Abak Ikot	Onna	***	1136	1775	355	6
22.	Mkpok	Uruan	**	2615	4087	817	15
23.	Ndom Ebom	Urue Offong	*	7189	11237	2247	40
24.	Oyoku	Urue Offong	***	1141	1783	356	6
25.	Eyulor	Ikot Ekpene	***	1736	2713	543	10
26.	Utu Edem Usung	Ukanafun	*	2857	4466	893	16
27.	Ikot Udo Obobo	Uruan	**	2183	3412	682	12
28.	Ituk Mbang	Ikot Abasi	***	4789	7486	1497	27
29.	Iqua	Etim Ekpo	**	1555	2430	486	9
30.	Utu Nsekhe	*Total*	***	1130	1766	353	6
				71179	*111244*	*22240*	*400*

Source: Authors Fieldwork (2024)

Note: *Uyo Senatorial District,** Eket Senatorial District,***Ikot Ekpene Senatorial District

The Yamane (1973) formula for finite population was employed to statistically determine the minimum sample size acceptable for generalization thus:

$$n = \frac{N}{1+N(e)^2} \quad \ldots\ldots\ldots\ldots\text{(equation 2)}$$

$$\frac{111244}{1+111244 \times (0.05)^2}$$

$$\frac{111244}{1+111244 \times (0.0025)}$$

$$\frac{111244}{278} = 400$$

Where n= sample size

N= finite population (population of the 30 settlements).

e =   level of significance (0.05)

1= unity

From the above analysis, a total of 400 households was selected for interview. The random sampling technique was employed in administering the questionnaires mainly to the household heads. However, other household members were allowed to provide relevant information which could not be adequately supplied by the household heads. Also, since the sampled settlements vary in population size, proportional representation was used to select the sample respondents in the thirty villages. The set of defined measurable indices for the predictor or independent variables (X) are as listed in Table 3.

Table 3: List of indices (predictor variables) and units of measurement.

S/N	Indices	Unit of Measurement
1.	Distance of settlement from LGA headquarters	Km
2.	Distance of settlement from state capital	Km
3.	Location of settlement on major road	Score
4.	Availability of health facilities	Number
5.	Availability of educational institutions	Number
6.	Availability of all day periodic market	Number
7.	Marital status of household head	Type
8.	Age of household head	Years
9.	Gender of household head	Sex
10.	Employment status of household head	Type
11.	Family size of household head	Number
12.	Dependents of household head	Number
13.	Educational level of household head	Highest
14.	Public power supply	Type

Source: Field Survey (2024)

Justification of the Predictor Variables

X_1 – marital status – is a surrogate to household welfare, it is expected that poverty is deep among married than unmarried household, and also high among the widowed than the divorced/ separated household. The age of household head is a correlate between the economic situation and the household poverty levels. Poverty incidence generally increases with the age group of household heads. World Bank (2022) reported a consistent rising pattern of poverty with the age of household heads in Nigeria. The poverty headcount from the study indicated mode of between 45 to 64 years.

X_2 – Family size is a surrogate for household's composition and their poverty situation. Household composition, in terms of the size of the household and characteristics of its members (such as age) is often quite different for

poor and non-poor households. Increase in the household size is a correlates of worsened poverty situation as it adversely affect household income level, feeding ability and living conditions.

X_3 – Educational level of household head is a surrogate of the quality of life and key determinants of the household head to take advantage of income – earning opportunities. Education, therefore, reduces the chance of being poor.

X_4 – location of settlements on major road – the relevance of this index is derived from the fact that households located in settlements that are nearer to both paved and major roads are likely to be better off than households that are not. Location on major road is therefore designed to measure the influence of place location on its poverty levels. Availability of health facility is a correlate of the socio-economic wellbeing of the households. The spatial variation in availability and access to health facility will results in spatial disparities in living standards both within and between settlements and localities. This notion is the basis for the inclusion of this independent variable in the analysis.

X_5 – the gender of household head is a correlate of the economic welfare of the household and a surrogate for household poverty. It is widely held that female – headed households are more vulnerable to poverty than male headed households. It has also been estimated that more than 50 percent of the rural poor are women and that during the last 20years, the number of poor women increased by about 50 percent as compared to that of men that have increased by 30 percent (IFAD, 1992). This illuminating statistic informed the inclusion of this independent variable.

X_6 –The relevance of the inclusion of the presence of electricity is derived from the fact that electricity is a surrogate to improve living standards. Expanding electricity to the entire population is expected to reduce household poverty situation. A sense of inadequacy or poverty is thus created where it did not exist.

X_7 –It is expected that areas which are closer to the local administrative headquarters and State capital should be well-off than areas that are remote from these centers. This is so because the quantity of economic growth experienced by a given area will be a function of distance from the central city of the region (Amadeo and Golledge, 1975). This is the notion for the inclusion of the liner distance of settlements from both the local administrative headquarter and the State capital. The availability or otherwise of educational facility is also a correlate of poverty. Uneven distribution of educational infrastructure could result in inequality in space.

X_7 – The number of dependent is designed to measure the burden weighing on members of the labor force within the household. One might expect that a high dependency ratio will be associated with greater poverty.

X_8 – The availability of all day periodic market in a community is associated with reduced poverty.

X_9 – The employment status of household heads is a measure of their level of living. It is widely believed that switching heads from being farmers, a financially more expensive intervention, to traders many triggers a drop in poverty. Thus, household heads employment type is a surrogate for their poverty situation.

Other indices used in the analysis of poverty determinants in the study area but not included in the predictor variables in order to avoid multi-collinearity are:

X_{10} –Communication facility which refers to the total count of global system of mobile communication (GSM) masts. This is also a good determinant of the level of welfare.

X_{11} –Public borehole (water supply) refers to the total count of public boreholes. It is an indicator of improved welfare.

X_{12} –Access to Post office / agency refers to the presence of postal agency which is an indication of development.

X_{13} –Banks refer to the total count of commercial banks. It plays vital role in enhancing wealth creation which could in turn improve the rural households' wellbeing.

X_{14} –Motor parks refer to the total count of available Motor Park. It significantly impacts the standard of living within the rural space as it determines the ease of getting motorized mode of transportation to and fro the community and the degree of personal safety.

Analytical Techniques

Factor Analysis Model

In this study, 28 defined indicators of poverty among the sampled population were identified. It was necessary to collapse these variables into smaller dimension or factors which were interpreted as poverty indicators among households in the study area. Factor analysis, is therefore, the most suitable analytic technique for this concern.

Specifically, the R – mode, factor model was employed using the SPSS package (version 17.0) to reduce the 28 variables into smaller and more meaningful form. For the set of data supplied, the programme printed a range of statistical tables including the correlation matrix, factor loadings, rotated factor loadings and factor scores.

Eight factors with eigen values of 1.0 and above were selected and used in the description of the poverty indicators. Variables with loadings of 0.5 and above (negative or positive) were regarded as those associated with each factor and a variable was assigned to the factor on which it has the highest loading. The eight factors identified were regarded as defining the major poverty indicators in the study area. Factor analysis was preferred to the technique of principal components analysis because generally, it produces a clearer structuring of the variables (Schilderick, 1970).

Factor analysis is a multivariate statistical technique which is generally applied in research to achieve parsimony in data description. It is suitable for examining the underlying patterns or relationship for a large number of variables and determines if the information can be condensed or summarised into a smaller set of factors. The factor analysis model can be expressed as follows:

$$X_1 = b_{11}f_1 + b_{12}f_2 + b_{13}f_3 + \ldots\ldots\mu_1 + \text{\euro}_1 \ldots\ldots\ldots \text{ equation (3)}$$

$$X_2 = b_{21}f_1 + b_{22}f_2 + b_{23}f_3 + \ldots \mu_2 + \text{\euro}_2 \text{ etc } \ldots\ldots \text{ equation (4)}$$

Where:

μ_1 = The mean of X_1

$\text{\euro}_1$ = The residual specific to the ith test after taking account of the contribution of the factors

f_1, f_2, f_3 = The value of the factors which vary from one subject to another but have zero mean and unit variance, and are assumed to be uncorrelated with one another and with the residuals.

bif = Constants, like regression coefficients, indicating how much that is affected by each factor. These bif are known as factor loadings.

Like other multivariate statistics, factor analysis has its pitfalls. This relates largely to abnormality of data, size of sample, error in measurement etc. These problems were summoned by working with large sample sizes and ensuring that data were measured on interval and ratio scale in order to reduce error to the barest minimum.

Multiple Regression Model

To predict the spatial determinant of poverty levels among the rural households, the stepwise multiple regression analysis was carried out. In the analysis, factor scores obtained from the factor analysis were modeled as dependent or (Y) variables against a set of 14 defined independent or (X) variables. Five dimensions of the factor scores which are indicators of the variation in poverty levels in the sampled communities were selected for the regression analysis as three of the eight dimensions were insignificant. They were therefore dropped. The five dimensions of poverty indicators formed the basis for predicting the spatial determinants of poverty levels among

the 30 rural households. The 14 indices of the predictor variables (Table 3) were employed in predicting the spatial determinants of the poverty incidence in the sampled rural settlements. The regression model applied was of the form:

$Y = A+B_1X_1+B_2X_2+B_3X_3+B_4X_4+B_5X_5+B_6X_6\ldots\ldots\ldots X_{14} + e$……. equation (5)

Where:

Y = level of poverty as measured by factor indicator along each dimension

$X_1 - X_{14}$ = the set of independent variables described above

A = the regression constant

e = error term that captures the effect of all other variables not included in the equation.

The stepwise multiple regression technique was used in this study because it enabled the selection of regression variables, one at a time, according to their importance in the equation tested. The fewer the number of predictor variables, the easier the interpretation (Yamane, 1973). However, some of the pitfalls of this technique include abnormality of data, measurement errors in the dependent and independent variables, non-randomness of the data and non-linearity among others. These pitfalls was overcome by working on large sample size and ensuring that the data were normally distributed and collected on ratio and interval scale of measurement.

A = the regression constant

e = error term that captures the effect of all other variables not included in the equation.

RESULTS AND DISCUSSION

The indicators of the spatial pattern of poverty were measured by factor scores for the sampled communities on the eight dimensions obtained from the rotated factor matrix. This is designed to give an insight into the means of identifying the critical predictor of the variation in the spatial pattern of poverty in the study area.

Table 4: Factor Scores for the distribution of poverty indicator variables

S/N	Settlement	Dimensions of Poverty							
		F1	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**
1	Ikot Akpadem	0.98757	0.61625	-0.99178	-0.74553	0.04503	0.42	0.42	-1.81
2	Nung Udoe Itak	0.36004	0.02683	-0.56852	-0.44525	-0.34608	- 0.69	- 0.69	-0.72
3	Nung Atai Eta	-1.71806	-0.09897	-1.61848	0.02790	0.04868	1.37	1.37	0.05
4	Ukana	-0.32805	0.05479	-1.10077	-1.23794	-0.17528	-0.21	-0.21	0.19
5	Nkari	0.84030	-0.45470	0.27267	-1.55010	-1.57550	1.73	1.73	-0.17
6	Eweme	0.54344	0.51302	-084037	-0.39048	-1.14512	-0.40	-0.40	-0.05
7	Ikot Obio odongo	-1.22846	-0.24631	-0.60083	-0.46286	-1.43217	-0.44	-0.44	-0.42
8	Ekeya	-0.45757	-0.90007	-0.96505	0.57513	-1.18092	-0.06	-0.06	1.08

9	Nung Udoe Itak	-0.27057	0.02929	1.04717	1.44827	-0.94182	-1.47	-1.47	0.83
10	Nwot Ikono	-0.55500	0.14165	-0.27596	0.78881	0.70041	-0.09	-0.66	-0.92
11	Ikot Ibiok	0.80846	0.82683	-0.01300	0.38539	0.04148	1.88	2.55	0.89
12	Use Offot	0.59630	2.37642	0.40251	3.03140	0.54187	0.15	0.66	-0.79
13	Mbiaso	0.68388	2.65984	-1.16452	-2.36525	0.18105	-0.52	-0.23	0.92
14	Ibaka	0.46320	-0.36909	-1.02576	0.38539	0.71478	-0.77	-1.10	0.87
15	Ikot Uko	0.00114	-126799	-1.00296	0.88199	-0.86086	-0.86	-2.08	0.63
16	Ito Ika	0.09886	0.83130	0.57633	-1.51118	2.12063	-0.36	-0.19	0.23
17	Mbiakpa Ibakesi	-0.14231	-0.88877	-0.06842	0.08366	0.92037	1.63	0.62	1.56
18	Nwot Ikono	-0.37207	-0.68267	0.16869	0.21473	1.22063	0.48	-0.09	2.86
19	Ikot Ibiok	-2.00530	1.01447	1.79857	0.68755	-0.67536	1.50	-0.28	-1.11
20	Mbiabong Ikon	-0.90748	1.11280	1.22506	-0.18284	-0.98706	-0.10	-1.08	0.79
21	Uda	1.11466	1.02789	2.55804	0.13627	-1.15902	-0.34	-1.15	1.16
22	Abak Ikot	0.88216	-1.45584	0.4479	0.14484	1.06640	1.51	-1.85	-1.00
23	Mkpok	0.96522	-0.49617	0.88305	0.09470	-0.45871	-0.73	1.67	-0.71
24	Ndom Ebom	-1.54394	-0.70933	-0.08003	0.84781	-0.44598	-0.91	1.22	-0.67
25	Oyoku	-1.38008	-0.43814	0.48622	0.60850	0.56153	-0.36	0.27	-0.89
26	Eyulor	1.39694	-1.00635	0.24688	0.08873	-0.44141	1.63	0.20	-1.07
27	Utu Edem Usung	-0.59189	-0.98197	-0.16171	-0.17896	0.15543	0.48	1.00	-0.35
28	Ituk Mbang	2.27314	-1.05500	0.32931	-0.26139	-0.18167	1.50	0.72	-0.29
30	Iqua	0.04931	-0.66325	0.34519	0.56873	2.09285	-0.10	0.89	-0.17

Source: Authors' Data Analysis (2024)

Table 4 shows the spatial pattern of the variation in poverty indicator levels among the communities on the eight dimensions of poverty extracted from the rotated factor matrix for the defined poverty indicators. It revealed that unit areas differ in their performance not only along a given dimension but from one dimension to another. The Stepwise regression model was used in predicting the causes of the variation in the poverty indicator variables among the sampled communities with the view of determining the critical predictor of the pattern of variation in poverty levels in the sampled communities.

Predictors of Determinant of Variation in Rural Poverty

The results of the predictors of spatial determinant of rural poverty are presented in the preceding chapters. The predictors were derived by analyzing the 28 indicators of rural poverty obtained from the factor scores against the 14 defined determinants of poverty levels in the rural communities.

Table 5: Predictors of variation in housing quality and environmental sanitation

Parameters	Significant Variables	
	X_3	X_{13}
R	.475	.640
R^2	.225	.410
R^2 Change	.225	.184
B	-.371	.148
Beta	-.510	.431
T	-.3.307	2.793
Sig. T	.003	.010
F	7.561	8.671
Sig. F	0.011	.001

Source: Culled from Author's Regression Results (2024)

Examination of Table 5 showed that two of the 14 independent variables employed in the analysis were significant in explaining the variation in housing quality/environmental sanitation among the 30 settlements. These variables are educational level of household head and location of settlement on a major road. Together they accounted for 41% of the variation in housing quality/environmental sanitation among the rural settlements. The magnitude and direction of influence of these independent variables are shown by their respective *B* and beta values. It is revealed that X_{13} (location of the settlement on major road)) is a very significant determinant of housing quality/environmental sanitation. X_3 is therefore a more important causal factor in predicting the determinant of the variation in housing/environmental sanitation poverty in the sampled communities. The magnitude and indication of influence of this variable is shown by the *beta* and *B* values. The indication is that a unit increase in the communities' proximity to major road will result in -.371 decreases in their poverty level, and in turn lead to a decline in their access to unhygienic housing condition. This factor alone accounted for 22.5% (R^2= 0.225) variation in housing and environmental poverty in the study area, while the second determinant X_{13} (educational level of household heads) accounted for the remaining 18.5% (R^2=.18.5) variation in this dimension. The relationship between X_{13} and X_3 (housing quality/environmental sanitation) is significant as F= 7.561 for X_{13} and F= 8.671 for X_3 greater than the significant F (0.011 and 0.001) (Table 5). The relationship is also strong as R=0.475 for X_{13} and 0.640 for X_3 are higher than the average (0.500).

Table 6: Predictors of variation in basic capabilities or consumption/assets

Parameters	Significant Variable X_{12}
R	.515

R^2	,.265
R^2 Change	.265
B	.330
Beta	.515
T	3.064
Sig. T	.005
F	9.390
Sig. F	.005

Source: Culled from Author's Regression Results (2024)

Basic capabilities involve the fundamental abilities that individuals possess to perform essential tasks or activities. These activities can be physical, emotional or social in nature. Basic capabilities significantly influence the survival (meeting basic needs like food, shelter and health), participation (engaging in social, economic or civic activities), and development (building upon existing abilities to achieve growth and improvement) of the individuals. Understanding basic capabilities helps identify areas for improvement, development, or support, enabling individuals function effectively and reach their full potential. Table 6 shows that only one out of the 14 independent variables used in the analysis significantly explained the variation in the basic capabilities. The variable is number of dependents on household head. The variable alone accounted for 26.5 percent variation in the level of basic capabilities factor among the sampled communities. This result corroborates earlier findings by Akerele and Adewuyi (2011) who opined that dependency ratio exacts a negative impact on household welfare because an increase in household size would translates to an increase in the number of dependents leading to reduction in the income or resources available to cater for the needs of each household member. From the point of view of assessing the relations between dependency and poverty, or efforts to escape poverty, the balance between the quality and quantity of children produced is a very potent consideration. While the 'rich' are increasingly concerned with raising the quality of their children (in terms of upbringing, education and necessary preparations for the labor market) which in itself tends to set a limit to the quality of such children, the poorer segments of the population are unable to substantially raise the quality of their children mostly because they are poor and significantly, because of the sheer number (quantity) of such children.

The magnitude and direction of influence of this independent variable is shown by the beta and B-values. The indication is that as the number of dependents on the household head increases by a unit, its level of basic capabilities or asset consumption will increase by 330 units. This suggests that increase in number of dependent on household head, would all things being equal, results in corresponding increase in household expenditure on food and health and other capabilities necessary for improving the wellbeing of the household. This direction of influence again tends to reflect decrease resource (per capita income) - population (household) ratio as indicator of spatial variation in basic capabilities or asset consumption among the rural households

Also, as revealed in Table 26, the relationship between the number of dependents of household head and basic capabilities or consumption /asset factor is significant as F= 9.390 for X_{12} (Basic Capabilities) is greater than the significant F (0.005). The relationship is also strong as R=0.515 for X_{12} (Basic Capabilities) is higher than the average (0.500). This means that the variation in basic capabilities or consumption/assets depends on the number of dependents on household head. The decline in the per capita income (resource) of household heads is an indicator of down spiral living conditions of household members. This scenario poses a serious threat on the households' welfare in the study area, especially among the low-income poor groups.

Table 7: Predictors of Variation in Feeding and Ownership of Durables

Parameters	Significant Variables		
	X_3	X_{14}	X_6
R	.526	.619	.706
R^2	.249	.333	.436
R^2 Change	.276	.106	.116
B	-.190	.400	-.144
Beta	-.546	.421	-.382
T	-3.184	2.585	-2.360
Sig. T	.004	.016	.027
F	9.933	7.745	7.963
Sig. F	.004	.002	.001

Source: Culled from Author's Regression Results (2024)

Table 7 revealed that only three of the 14 predictor variables are significant in accounting for variation in occupancy/feeding and ownership of durables in the study area. These variables collectively explained 46. 9% of the variance. The significant predictor variables are location of settlement on major road, presence of electricity, and availability of all day periodic market. Contrary to expectation, other predictor variables such as number of dependents on household head, household size and employment status of household head among others are not found to be significant on this dimension of rural poverty.

Of the significant variables, the highest percentage of explanation (27.6 percent) was contributed by settlement location on major road. The implication of its direction of influence as shown by the B and beta values is that a unit location of settlement on major road is likely to result in 19% decrease in poverty among the rural households.

Another factor which contributed significantly to the explanation of the variation in occupancy/feeding and ownership of durables among the rural households is availability of electricity in the rural settlements. Its direction of influence is also significant. What this suggests is that a unit increase in access to electricity will results in an increase in the standard of living of the rural households by 40%. This may derived from the fact that improving access of the rural households to energy source such as electric power supply has considerable potential welfare benefits to the rural inhabitants. Such electric power could enhance the thriving of the activities of small and medium scale industry which in turn induces the growth of the rural economy. Consequently, their absence from the rural areas deprives such areas of the much needed growth which may perpetuate increased poverty levels.

Availability of all day periodic market exhibits, a general expected direction of influence, as a unit increase in the provision of all day periodic market leads to 14% decrease in poverty incidence in the rural communities. The fact that the availability of all day periodic market accounted for 11.6% variation in the occupancy/ feeding dimension reiterate its significance in rural poverty reduction. It could however, be said that the three predictor variables that are associated with the occupancy/feeding dimension underscore the role of improved infrastructure provision in rural poverty reduction.

Table 8: Predictor of variation in human capital/productive assets

Parameters	Significant Variables		
	X_2	X_{11}	X_6
R	.489	.611	.685
R^2	.239	.374	.469
R^2 Change	.239	.135	.095
B	.007	.387	.652
Beta	.437	.368	.317
T	2.858	2.467	2.072
Sig. T	.009	.021	.049
F	8.161	7.459	7.059
Sig. F	.008	.003	.001

Source: Culled from Author's Regression Results (2024)

Table 8 showed that 46.9% of the variation in human capital/productive assets in the sampled communities is explained by three significant predictor variables viz-a-viz distance from state/administrative capital, household size and availability of all day periodic market (Table 8). The result of the analysis revealed that distance from the state capital is the most vital variable that accounts for the variation in human capital amongst the sampled communities. As expected, the result validates the fact that considerable numbers of educational institutions particularly, at the tertiary levels, are largely located and accessed at the urban centers in the state. Field observation shows that education which is the surrogate of human capital reduces the chances of being poor as households' headed by persons without education exhibited the highest poverty incidence/head count. This finding affirmed CBN/World Bank (1999) report that education is crucial as it provides skills and abilities which allow households to secure productive and well-paying jobs and findings by Campbell, Ogunro, and Toluwalope (2022) who noted that increase investment in education can lead to a reduction in poverty. Thus, investing in human capital can lead to economic growth, improved productivity, and reduced poverty levels.

Similarly, household size has a positive impact on the variation on human capital/production asset. This implied that large families are more likely to be poor than small families, especially if most of the family members lack requisite educational qualifications for engaging in productive income earning ventures and are not of working age. However, of the three factors significantly affecting human capital/productive asset, distance from state capital appeared to be the most important. Its direction of influence is also positive.

From the analysis, it can be adduced that:

1) Rural poverty are not only affected by non-spatial variables, but also by significant geographic factors such as distance of communities' to major roads, and urban centers, distance of communities' to major markets and differences in agro-climatic factors.

ii) Compared to urban households, rural families are less affected by gender, marital status and age of the household head, but more by family size and number of dependents. Hence, household heads with large family size and dependents, holding other variables constant will tend to be poorer than those with small household size and dependents, the gender, age or marital status notwithstanding.

iii) The poor appears to be disadvantaged in their access to basic needs, including housing conditions, educational facilities, health care delivery, sanitation, etc. This implies that about one third of the poor families have access to health and educational infrastructure compared with over 90% of the population in the richest group. This suggests that potential welfare benefits of social infrastructures are not assured in the rural communities.

iii) The distance from local administrative headquarters is insignificant in accounting for poverty levels among the rural households. By contrast, improving access to pave roads has little pay off, partly because most households are already within less than 30 minutes walking distance to roads. Thus, household located in settlements that are nearer to both paved roads are better off, as are households living in areas with higher wage levels.

iv) The quality of education in rural areas and the type of employment opportunities in helping the rural families grow out of poverty is questionable, which could be addressed in putting together a poverty reduction strategy.

v) The rural areas of Akwa Ibom State are still largely underdeveloped. This is due to large scale inequality in the spatial distribution of economic growth and services in the rural communities

vi) The inequality involves in distribution of economic growth is obvious in Akwa Ibom State, if allowed to persist; there is a tendency to further impoverish the rural households.

viii) Akwa Ibom State is woefully behind in achieving the SDGs. This foot dragging in the implementation of the SDGs in the State is not so much of lack of resources – both human and materials, but the lack of political will and commitment by the government.

CONCLUSION

The causes of rural poverty are varied, complex, multifaceted and interlocking, and cannot be accounted for completely by a few selected, justified and quantifiable factors as used in this study, thus, other predictor variables such as political, socio – cultural and economic factors may also account for differential poverty levels in space. The socio-cultural or the social, reference factor creates the problem of objectivity or subjectivity in the assessment of individuals as to whether they are poor or not. There are individuals who are subjectivity poor, whose view of the minimum income for them is greater than their actual equivalent income. The problem here is that two identical individuals with the same income may be classified as poor and non-poor, depending on how they perceive their own well -being.

While the socially subjectively poor individuals are those on who is imposed social equivalence of poverty that may not correspond to their own equivalence scale. The objectively poor are those individuals whose current income for equivalence adult is less than the official poverty line. The limitation of this approach is that individuals are likely to set their poverty lines directly in relation to their levels of aspiration. This behavior would bring about preference drift and thus, make poverty line to be relative. Again variations in poverty levels are also likely to be influenced by political and economic decision taken from within and outside the State. In the case of Nigeria, several extraneous factors such as political consideration go into locational decision. Such decision may include the location of public facilities such as schools, health centers, post offices, markets, industries, and revenue allocation to Local Government Area by Federal authorities, decentralization of Federal establishment to the Local Government Areas. Lack of data on these political matters does not permit quantitative analysis of their impact on poverty level. A special aspect of the political factor as noted by Akpan (1992) is the practice described as "winner takers it all" by some political enclaves which ensures that political party in power appropriates to itself all the largesse of office at the expense of the opposition. This means in effect that locational decision policies are influenced not solely by consideration of efficiency or equity, but by party loyalty. Since some areas tend to support the opposition from one government to the other, they also fail to have Federal or State government presence.

This study therefore attributes the unexplained portion of variances in the two dimensions of poverty in the sampled communities to the aforementioned factors and perhaps historical and environmental factors too. Some

aspects of these variables as mentioned earlier however pose difficulties in measurement in order to achieve objective analyses in a study of this nature.

RECOMMENDATION

The study recommends intentional policies that would promote wide spread access to socioeconomic infrastructures and targeted transfer schemes such as food stamps, subsidized food distribution and nutrition programme and improved educational status of household head; employment opportunities and by the government both at the local, state and national levels as a way of alleviating rural poverty levels in the State.

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