



Comparative Analysis of Determinants of Household Poverty among Rural Farming Households in Southwest Nigeria

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Poverty is multifaceted in nature and its measurement based on uni-dimensional is insufficient to explain the various deprivations experienced by the poor. Using the Alkire and Foster's multidimensional methodological approach, this study confirmed that multidimensional approach to poverty should be used to complement uni-dimensional measure of poverty. The paper examined the factors influencing farming household poverty by applying two approaches. It specifically identified the attributes of the rural farmers and the contributions of the various dimensions to poverty. Primary data was collected from 362 rural farming households and analysed using descriptive statistics, Alkire and Foster's MPI and logit regression model. The results revealed that 66.85 percent of rural households were declared monetary poor while only 34.53 percent of them were multidimensional poor. Housing condition contributed most (27.34%) to household multidimensional deprivation followed by education (23.58%). The two approaches, while sharing many similarities, do not lead to the same results. The logit regression results revealed that female headed households are more prone to be poor for both uni-dimensional and multidimensional approaches to household poverty. Increase in age increase the probability of being multidimensional poor and decrease the probability of being monetary poor. As farmer aged they may be constrained to improve or maintain their asset base especially the dimensions used in

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measuring their poverty status, however, they may not be monetary poor if they have grown up children through who they receive remittances for their upkeep. Among other factors, being married and household size reduce the likelihood of being monetary poor but has no influence on being multidimensional poor. This can be when married couples are economically empowered to generate income to sustain the household rather than having only the household head empowered economically. Also, farmsize and membership in social group influence the probability of multidimensional poor and no effect on monetary poor. Having a large farmland beyond the available resources and membership in many social group will make a heavy demand on available resources. Efforts should be geared towards poverty reduction to empower the household to acquire good housing structure in addition to enlightenment on human capital investment to reduce poverty.

Keywords: *Multidimensional poverty; Alkire and foster; rural households; Southwest Nigeria.*

1. INTRODUCTION

Poverty has been in existence for many years and continues to exist in a large number of countries and has been variously defined. The World Bank according to Osayande and Osabuohien [1] defined poverty as a multidimensional phenomenon which can be explained as a state of deficiency in well-being with an inclusion of the psychological pain of being impoverished and a sense of incapability with regard to the state and societal institution [2] defined poverty as a situation of low to no capacity for access to basic means of livelihood arising from the separate, combined, or cumulative responses to the complex degrees of the interplay of economic, socio-political and the physical environment. Poverty as a scourge is multi-dimensional in scope and needs concerted efforts to resolve.

Rural poverty happens to be widespread in Sub-Saharan Africa (SSA), and this condition has attracted much attention from agencies and governing bodies. It is particularly frightening to know that this problem, rather than abate, is proving problematic. One of the serious effects of rural poverty is food and nutrition insecurity, and its attendant socio-economic and political costs. Therefore a target to reduce poverty remains an important issue in many countries. In order to understand the threat that the problem of poverty poses, it is crucial to have knowledge about its dimension and the process through which it becomes intensified. As Africa's most populous country, poverty situation in Nigeria is ironically disturbing given the country's natural resource diversity and human capital endowments.

Nigeria is a nation that is endowed with multifarious and multitudinous resources both human and material. However, Nigeria has been

bedeviled with unemployment and poverty because of mismanagement, profligate spending and adverse policies of various governments [3]. A study conducted by Osayande, I. and Osabuohien, J. I. reported that the population of poor Nigerians is put at 58 million or 33.1 percent of the population [1]. This represents an improvement from the previous study conducted in 2009/2010 which put the poverty level at 61% of Nigeria's population. Oyekale and Abayomi [4] testified that the Nigerian poor are in many instances not only unable to generate sufficient income to meet up with daily food and other needs, they sometimes lack access to water and adequate shelter from adverse weather conditions. Poverty manifests itself not only in economic deprivation but also in terms of individual's inability to access basic social amenities.

A move to alleviate poverty would involve enhancing income generation activities which is expected to help provide and improve access to basic needs of life for survival such as food, water, clothing and shelter. The widespread livelihood in the rural Nigeria is engaging in farming activities. Rural households are known to be involved in subsistence agriculture to provide for the household food and other needs. Hence, the small holder farmers among other enterprises constitute the essential ingredient to lubricate and develop the Nigeria economy to lift citizens out of poverty. However, poverty contributes to poor agricultural productivity particularly in Nigeria where many farmers cannot afford to purchase necessary farm inputs such as fertilizers, pesticides and improved seeds, which are expected to enhance productivity [5].

In general, about 90 percent of Nigeria's poor are engaged in agriculture, while 58 percent of the urban population also lives in poverty [6].

Awareness of poverty is not enough, it is very essential to know the measures to take towards its reduction. In view of the fact that the source of livelihood and income generation of majority of the poor is agriculture, efforts at alleviating poverty therefore should entails boosting agricultural production. Since poverty reduction is a major economic development indicator with international acceptability.

2. CONCEPT OF POVERTY MEASUREMENT

There is recent shift in poverty definition towards a more comprehensive meaning and this has been causing a lot of evaluation regarding the measurement of poverty known to be based only on monetary attribute such as income or consumption. According to United Nations Economic Commission for Europe Statisticians [7] the measurement of poverty beyond monetary and consumption measures have been motivated by various conceptions that include social exclusion and inclusion, basic needs, social cohesion, capability poverty, multidimensional poverty, and clustered disadvantage, among others. Each concept in itself is distinct, but each enunciates human well-being or disadvantage directly, hence generates the implication that measures of human hardship should include non-monetary aspects. Aaberge and Andrea [8] opined that only few people would question that well-being is the outcome of many different attributes of human life and that the level of income, or expenditure, is just a crude proxy of the quality of living that a person enjoys.

Therefore, poverty is a multidimensional phenomenon; hence, its measurement based only on consumption level is insufficient in elucidating the multiple deprivations faced by the poor [9]. According to Bidyadhar and Sanjay [10], the shortcomings of money-metric poverty to explain the multiple deprivations of human life and the development of the capability approach showed the way to the growing interest to measure poverty in a multidimensional space. Also, [11] opined that poverty is essentially a multidimensional phenomenon therefore it should be explained by multidimensional approach. Many researchers put forward new methods of measuring poverty through multidimensional approach. One of which is [12] who proposed multidimensional poverty measures which is used against FGT's (Foster Greer Thorbecke) class of uni-dimension poverty measures. This multidimensional approach offers estimates at

the aggregate and proffer major divers of poverty [13].

The concept of the multidimensional poverty approach differs from uni-dimensional approaches, which view welfare according to income or expenditure. The underlying concept of the multidimensional approach is the argument that all non-monetary attributes of welfare have no markets, and when these do exist they are imperfect; hence, there is agreement about the multidimensional conception of poverty [14]. Study by [11] opined that an impoverished situation of a population is a manifestation of insufficient well-being which largely depends on both monetary and non-monetary variables. Therefore, it is certainly true that with a higher income or expenditure budget, an individual may be able to enhance his/her monetary and non-monetary attributes. But at the same time, it may be the case that markets for some non-monetary attributes do not exist, for example, with some public good. It may also happen that markets are highly imperfect, for instance, in the case of rationing. Therefore, income as the sole indicator of the well-being *defined* by the Oxford English Dictionary as "the state of being comfortable, healthy, or happy." [15] is inappropriate and should be supplemented by other attributes or variables, such as housing, literacy, life expectancy, provision of public goods and so on.

This assertion was earlier confirmed by [16] who identified four sets of indicators which can be defended as ingredients for a sensible approach to poverty measurement. These include real expenditure per single adult on market goods, non-income indicators as access to non-market goods, indicators of intra-household distribution such as child nutritional status and lastly indicators of personal characteristics which impose constraints on the ability of an individual. In other words, a genuine measure of poverty should depend on income indicators as well as non-income indicators that may help in identifying aspects of welfare not captured by incomes.

In view of these, this study confirmed that the monetary measure of poverty should be complemented with multidimensional poverty measure to capture comprehensive picture of deprivation. The study therefore determines factors influencing household poverty. Specifically, it identified the socio economic attributes of the farming households, and identified and examined the contributions of the

various dimensions to the household multidimensional poverty index and categories of households based on uni-dimensional approach; and lastly examined the factors determining both uni-dimensional and multidimensional poverty at the household level.

3. MATERIALS AND METHODS

The study was conducted in southwest Nigeria. Primary data were collected through multi-stage sampling technique. Purposive sampling technique was used to select two states out of the six states in the south west region of Nigeria based on their poverty profile. Oyo and Osun state have the least and highest poverty profile in the region. Based on proportionate to size, four and two local government areas (LGAs) were randomly selected from Oyo and Osun states respectively making a total of six LGAs. These Local Government Areas are Akinyele, Ibarapa east, Afijo and Olorunsogo LGA from Oyo state and Boripe and Irepodun LGAs in Osun state. This forms the second stage. The third stage involved random selection of two wards from each LGA. The fourth stage involved random selection of two villages from each ward. In all, six LGAs, 12 wards and 24 villages were used. A total number of 362 farming households were randomly selected and used for the study.

3.1 The Alkire- Foster Multidimensional Poverty Measure

The Alkire and foster multidimensional poverty approach as applied by Adeoti [17] include two steps, first is the identification methods (ρ_k) which identifies the poor by the level of deprivation they undergo. Secondly is the aggregation method which generates intuitive set of poverty measure (Ma), this can be broken down to target the poorest individuals and the dimensions which they are most deprived of Alkire and Foster [18].

Given that $y = |y_{ij}|$ this denote the $n \times d$ matrix of achievements, where the typical entry $y_{ij} \geq 0$ is the achievement of household $i = 1, 2, \dots, n$ in wellbeing indicator $j = 1, 2, \dots, d$. The identification method involves considering the vector c of deprivation counts obtained from deprivation cut-off, z (first cut-off); which is then compared against a poverty cut-off k (second cut-off) to identify the poor where $k = 1 \dots d$. Hence, the identification method ρ is defined as $\rho_k(y_i; z) = 1$ whenever $c_i \geq k$ and $\rho_k(y_i; z) = 0$ whenever $c_i < k$. It means that a household is poor if deprived in at

least k number of dimensions. The common substitute is taking a cut-off which lies between 1 and $\dots d$. In conclusion, the set of households that are multidimensional poor is defined as $Z_k = \{i: \rho_k(y_i; z)\}$. The ρ_k is referred to as a dual cut off method because it first applies the within dimension cut-off z_j to determine the deprived household in each dimension. The cross dimension cut-off k determines the minimum number of deprivations that is encountered by household in order to be considered multidimensional poor.

The headcount ratio (H) which is the proportion of incidence (depth) of people who experience multiple deprivations can be defined as

$$H = q/n \quad (1)$$

Where $q = q(y; z)$ is the number of households in the set Z_k as identified using ρ_k . While it is easy to compute, it violates dimensional monotonicity in which case, if a poor household becomes deprived in an additional dimension, the headcount ratio does not change. [18] proposed a headcount measure that is adjusted by the average number of deprivations experienced by the poor. With regard to this, the censored deprivation vector count ci is defined given that if $c_i \geq k$, then $ci(k) = c_i$; and if $c_i < k$, then $ci(k) = 0$. This implies that in $c(k)$, the deprivation count will be 0 for non-poor households while the poor households keep the original deprivation vector counts ci . Then, $ci(k)/d$ is the shared possible deprivation that is experienced by poor household i , and hence poverty intensity (shared deprivation across the poor) is given by:

$$A = |c(k)| / (qd) \quad (2)$$

The adjusted headcount ratio $M_0(y; z)$ is given by $M_0 = HA$. Other properties of adjusted headcount ratio include dimensional monotonicity, poverty focus, deprivation focus, subgroup decomposability and standard properties of poverty measure. Dimensional monotonicity means that A increases when poor households are deprived in additional dimension though the headcount would remain the same. The M_0 satisfies decomposability in similar way to H . M_0 can be disposed by the subgroups of the population and this is as expressed below.

$$M_0(x, y, z) = \frac{n(x)}{n(x, y)} M_0(x; z) + \frac{n(y)}{n(x, y)} M_0(y; z) \quad (3)$$

Where x and y corresponds to two subgroups with size $n(x)$ and $y(x)$ and total population size

$n(x,y)$. Overall poverty is weighted average of subgroup poverty levels where weights are subgroup population shares. The contribution of each dimension j can also be estimated by breaking down the overall multidimensional poverty measure. Once the identification step has been completed, all members of the $M_0(y; z)$ family can be broken down into subgroups as express below:

$$M_0(y; z) = \sum_{i=1}^n \mu \left(g_{*j}^0(k) \right) / d \quad (4)$$

Where g_{*j}^0 is the j column of the censored matrices $g^0(k)$. Once the identification has been applied and the non-poor rows of g^0 have censored to obtain $g^0(k)$, for each j $(\mu g_{*j}^0(k)) / d) / M_0(y; z)$ can be interpreted as a post-identification dimensions contribution to overall multidimensional poverty.

The various dimensions and indicators used to estimate the multidimensional poverty index (MPI), their weights and the deprivation cut-off point used is as presented in Table 1.

3.2 Foster Greer Thorbecke (FGT) Poverty Measures

FGT poverty index was used to establish the poverty status of the respondents under the uni-dimensional poverty measure by categorizing

them into poor and non-poor households. The measure relates to different dimensions of the incidence of poverty P_0 , P_1 and P_2 were used for head count (incidence), depth (gap) and severity of poverty respectively. These three measures were based on a formula however, each index puts different weights on the extent which a household or individual falls below the poverty line. Poverty measurements as derived from Foster et al. [19] are estimated as;

$$P \propto = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z_i - Y_i}{Z_i} \right)^\alpha \quad (5)$$

Where,

$P\alpha$ = the weighted poverty index for the i_{th} sub-group

α = Foster-Greer-Thorbecke (FGT) index and takes on the values of 0, 1 and 2 for incidence, gap and severity of poverty measures respectively.

Z_1 = the poverty line for the i_{th} sub-group

q = the number of individuals below the poverty line

N = the total number of individuals in the reference population

Y_{ij} = the per capita income of household j in the sub-group i

$Z_1 - Y_{ij}$ = poverty gap of the i_{th} household

$\frac{Z_i - Y_i}{Z_i}$ = poverty gap ratio

Table 1. Dimensions, indicators and deprivation cut-off of MPI

Dimensions (weight)	Indicator (weight)	Deprivation cutoff
Education (1/5)	Enrolled in school (1/10) At least six years of formal education (1/10)	No record of enrollment for formal education and less than six years of formal education
Assets (1/5)	Own physical asset (1/10) Land ownership (1/10)	Possess less than five of radio, generator, fan, motorbike, bicycle, washing machine, air condition, refrigerator, car, gas cooker/ kerosene stove, mattress, furniture, microwave, television set, iron, computer, DVD player and does not own personal farmland
Sanitation (1/5)	Toilet (1/10) Source of water (1/10)	Use of unimproved toilet facilities such as pit latrine without slab, bucket latrine, open pit latrine and hanging toilet and the use of water from unimproved sources like surface water, stream, river and open wells
Housing structure (1/5)	Type of house (1/25) Four type (1/25) Roofing material (1/25) Cooking fuel (1/25) Source of lighting (1/25)	Household living in a room apartment, house without flooring, thatched roof and inadequate wall materials. Use of coal, firewood, sawdust as cooking fuel and without electricity or other improved sources of light
Health (1/5)	Visit doctor (1/10)	Record of illness and stopped activities due to the illness
Dimensions (weight)	Indicator (weight)	

The quantity in bracket is the proportionate shortfall of expenditure/income below the poverty line.

$\frac{q}{\pi}$ = the proportion of the population that falls below the poverty line

If $\alpha = 0$, then FGT measures the incidence of poverty

If $\alpha = 1$, then FGT measures the gap of poverty

If $\alpha = 2$, then FGT measures the severity of poverty

3.3 Logit Multiple Regression

Logistic regression model is a dichotomous regression analysis. The multiple logistic regression model is used when there is single dichotomous outcome and more than one independent variable. The outcome variable in logit regression model is often coded as 0 or 1, where 1 indicates the outcome of interest is present, and 0 for otherwise. If p is defined as the probability that the outcome is 1, the multiple logistic regression analysis can be written as follows:

$$\hat{p} = \frac{\exp(b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p)}{1 + \exp(b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p)} \quad (6)$$

\hat{p} is the expected probability that the outcome is present; X_1 through X_p are distinct independent variables; and b_0 through b_p are regression coefficients. The multiple logistic regression model is sometimes written differently. In the following form, the outcome is the expected log of the odds that the outcome is present;

$$\ln\left(\frac{\hat{p}}{(1-\hat{p})}\right) = b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p \quad (7)$$

In assessing the factors affecting participation in rural water schemes, the multiple regression equation used was:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p + e \quad (8)$$

Where $Y = 1$ for poor household and 0 otherwise) and $b_0 - b_p$ are regression coefficients

X_1 - Sex (male = 1, 0 otherwise)

X_2 - Age (years)

X_3 - Marital status (Married=1, 0 otherwise) household size

X_4 - Household size (actual number) years of education

X_5 - Primary occupation (farming =1, 0 otherwise)

X_6 - Secondary Occupation (Yes =1, 0 otherwise)

X_7 - Farm experience (years)

X_8 - Farm size (hectares)

X_9 - Social group (member = 1, 0 otherwise)

X_{10} - Income (₦)

e- Error term

4. RESULTS AND DISCUSSION

4.1 Socio Economic Features of the Respondents

The socio economic characteristics of the rural households are presented in Table 2. Findings from the table showed that 66.57 percent of the respondents were headed by male, 80 percent of them were married while only 9.67 were single. About 32 percent of the respondents were between 41 and 50 years old. Only 4.42 percent of them were 30 years old or less. The mean household size is 49 years which indicates that the household heads are gradually leaving their active years. The household size results showed that 46.96 percent of the respondents had between 4 and 6 household members. The least percentage (11.33%) accounted for those who had more than nine household members. The average household size is 6 persons which is moderate as increasing household members have its consequence on the generated income.

A large portion of the respondents do not have formal education (53.31%) while only about 2 percent had beyond secondary education. The average years spent in school by the respondents is two years which is far below the minimum nine years of education recommended by the Nigeria Education Policy. Two years of formal education in this modern world is equivalent to no education hence the consequence of low living standard. A greater portion of the respondents (42.82%) cultivated between 1.51 and 3 hectares of farmland for their farming activities. About 14 percent of them cultivated over 5 hectares of farmland. The average farmland cultivated is 3.63 hectares which is fairly large for subsistence rural farming.

About 32 percent of the respondents claimed to have between 11 to 20 years farming experience and this is closely followed by others with 10 years farming experience or less (29.28). The least in this category are those with more than 40 years farming experience and this accounted for only 5.25 percent. The average farming experience is about 20 years. This is lengthy enough to gather enough experience in farming activities that can aid income generation. Majority

of the respondents (59.40%) identified themselves as primarily farmers while 19.06 and 14.92 were into civil service and trading respectively.

Income generated from activities revealed that 28.45 percent of the farmers earned over ₦100,000 from farming activities. This is closely followed by respondents who generated between ₦25,000 - ₦50,000 (26.52%) and ₦50,000 - ₦75,000 (25.14%). The least however, were those who earn ₦25,000 or less which accounted for only 2.49 percent of the total respondents. The average income generated by the rural household is ₦80,348.73 which is reasonable to some extent depending on how large the household is. This indicates that an average household can spend as much as ₦2,678.26 daily.

4.2 Household Multidimensional Poverty Indices

The estimated poverty indices are presented in Table 3. The multidimensional poverty indices were based on five dimensions namely,

education, assets, sanitation, housing and health. As presented in Table 1 earlier, equal weights were assigned to each of the dimensions. Thresholds were set for the dimensions used as cut off to recognize the households deprived of the dimension. Another second cut off K was set to consider the number of dimensions a household must be deprived of to be judged as being MPI poor. Results from the table revealed that the headcount and the adjusted headcount decrease with increase in K. This result is in consonance with the result from [17] and [20]. The headcount ratio H at K equals 1 is 0.8785; this indicates the number of deprivation experienced by households. This implies that 86.85% of the households were deprived in at least one dimension while only about 12% did not experience any form of deprivation in the dimensions considered.

At K equals to 3, the number of deprived households reduced by more than half the deprivation experienced by households at K equals 1. The headcount ratio for the estimated poor at K equals 3 is 0.3453. This suggests that only 34.53% of the household considered were

Table 2. Socio-economic characteristics of rural households

Socio eco	Freq	Percent	Mean (Std.dev)	socio eco	Freq.	Percent	Mean (Std.dev)
Sex				Farmsize			
Male	241	66.57		<=1.5	53	14.64	3.63(2.71)
Female	121	33.43		1.51 - 3.0	155	42.82	
Marital sta				3.01 - 4.5	55	15.19	
Single	35	9.67		4.51 - 6.0	49	13.54	
Married	290	80.11		>6.0	50	13.81	
Widowed	19	5.25					
Divorced	18	4.97		Farm.Exp			
Age				<=10	106	29.28	19.74(11.15)
<=30	16	4.42	49.02 (10.62)	11-20	114	31.49	
31-40	79	21.82		21-30	80	22.1	
41-50	115	31.77		31-40	43	11.88	
51-60	89	24.59		>40	19	5.25	
>60	63	17.4		Pry Occup			
Householdsize				Farming	215	59.39	
<=3	46	12.71	6.09 (2.57)	Civil service	69	19.06	
4- 6	170	46.96		Trading	54	14.92	
7- 9	105	29.01		Artisans	24	6.63	
>9	41	11.33		Income			
Education(yrs)				<=25000	9	2.49	80,348.73
<=0	193	53.31	2.34(3.69)	25001-50000	96	26.52	(40,485.21)
1 – 6	143	39.5		50001-75000	91	25.14	
7 – 12	17	4.7		75001-100000	63	17.40	
13-17	6	1.66		>100000	103	28.45	
>17	3	0.83		Total	362	100	
Total	362	100					

Source: Field survey 2018

found to experience deprivation of at least one of the dimensions. On the other hand, as the headcount ratio H decrease with increase in the cutoff point, the intensity of poverty A increase with increase in cutoff points, that is the share of dimensions from which the poor were deprived increased with K . This is an indication that as the household multidimensional poverty decreases with increase in K , that is reduction in number of poor houses but the intensity of poverty among the poor will be increased.

Table 3. Households' multidimensional poverty indices

K	MO = HA	H	A
1	0.5711	0.8785	0.6502
2	0.5024	0.7265	0.6915
3	0.2767	0.3453	0.8012

4.3 Contributions of the Dimensions to Multidimensional Poverty

Table 4 presents the relative contribution of each dimensions and indicators to the multidimensional poverty index. The findings showed that housing contributed most to poverty with 27.34%. Among the indicators used for this dimension, the type of cooking fuel accounted the highest contribution of 12.74%. The least of the indicator value contributed under housing is the type of residential house (0.08). It is worthy to note that this indicator contributed least in all the thirteen indicators considered to contribute to multidimensional poverty.

Next in the percentage contribution of the dimensions to MPI is education which accounted for 23.58% from which minimum of six years of

formal education as an indicator had a value of 14.03%. Asset as a dimension contributed 14.40% while the least contribution of 13.78% is conform health dimension which is about half of what was contributed by the housing dimension. In view of this, it is important to pay attention to these dimensions contributing to poverty as International Fund for Agriculture Development [21] highlighted access to education, housing, land and health should be given a high priority to alleviate poverty.

4.4 Uni-dimensional Poverty Category and FGT Poverty Indices

Table 5 presents the uni-dimensional poverty indices. The per capita expenditure which is uni-dimensional measure of household poverty was used to categorise the rural households into poor and non poor households. The results revealed that 66.85% of the respondents were uni-dimensionally poor spending as low as ₦5,359.24 (\$14.89) as the monthly per capita expenditure. The non poor on the other hand makes up 33.15% of the total population sampled and they expend ₦12,284.11 (\$34.12) monthly as PCE. The non poor MPCE on food and non food items more than doubled the poor MPCE. This revealed the wide gap existing between the two categories.

The FGT result revealed the headcount index (P_0) measures the proportion that is poor as earlier revealed to be 66.85%. The poverty gap index (P_2) estimates the extent to which the poor households falls below the poverty line as a proportion of the poverty line. P_2 is 0.3893. The P_2 which is the squared of the poverty gap otherwise called the severity of poverty is 0.2578.

Table 4. Relative contributions of the dimensions and the various indicators to MPI at K=3

Dimensions	Percent	Indicator	Percent
Education contribution	23.58	School enrolment	9.55
		Minimum of six years of education	14.03
Asset contribution	14.40	Assets ownership	12.18
		Land ownership	2.22
Sanitation contribution	20.91	Toilet type	10.05
		Domestic source of water	10.86
Housing contribution	27.34	Type f residential house	0.08
		Type of flooring material	5.85
		Type of Roofing material	2.36
		Type of cooking fuel	12.74
		Source of lighting	6.32
Health contribution	13.78	Suffer a form of illness	12.67
		Stop activities due to illness	1.11
Total	100.00		100.00

Source: Alkire and Foster estimates, 2018

Table 5. Uni-dimensional poverty category and FGT poverty indices

Poverty category	Frequency (percent)	Mean Per Capita Exp (Std. Dev.)
Poor	242 (66.85)	5,359.24 (1220.21)
Non-poor	120 (33.15)	12,284.11 (6886.92)
Poverty incidence (P0)	Poverty gap (P1)	Poverty severity (P2)
0.6685	0.3893	0.2578

It takes into account the inequality among the poor. A transfer of income from poor household to a poorer household will reduce the indices while income from a very poor household to a less poor will increase the indices [22].

4.5 Determinants of Household Poverty

The factors influencing poverty is presented on Table 6. The findings revealed a comparative analysis of poverty determinants in the study area using both the multidimensional and uni-dimension approaches. The MPI estimate for poverty cutoff at K equals to 3 (34.53) was used as the poverty line for categorizing the households into poor and non poor categories while the headcount from the uni-dimensional poverty indices was used. The result from logit model revealed that the chi-square value for both analyses were significant at 1%, this affirms that the model is a good fit for the data from both ends. For the MPI, seven factors increased the likelihood of being poor; these include female headed household, age, years of schooling, other source of livelihood apart from farming, size of farmland cultivated, participation in social group activities and household income. On the other hand, nine factors influence the likelihood of being poor under the uni-dimensional poverty. The factors include female headed household, age, not being married, household size, educational level, primary and secondary occupation, farming experience and household income.

For both analysis household headed by females have a high tendency of being poor. A female headed household increases the probability of being poor by 0.85 for MP and 0.61 for UP at 1% and 5% respectively. This finding is similar to the report of [23] and [17]. This outcome could be consequent upon the gender discrimination which reduced the privileges women have relative to their male counterpart in terms of education, asset ownership, and lower income amongst others. Age significantly influence household poverty at 5% level for both MP and UP. However, increase in age will increase the probability of falling into multidimensional poverty

by 0.044 and decrease the probability of falling into uni-dimensional poverty by 0.065. This implies that a unit increase in age will increase likelihood of being multidimensional poor by 4.4% and will reduce likelihood of being uni-dimensional poor by 6.5%. [17] reported the ambiguity of the influence of age on poverty, hence the difficulty in making a general conclusion on the effect of age of the household head on poverty.

Being married and household size has no significant impact on multidimensional poverty in the study area but they significantly influence poverty under uni-dimensional approach at 1% level. This implies that being single increases the probability of being poor by 1.088 while increase in household size will increase the likelihood of being poor by 0.447. The marginal effect increase with increase in the number of household members by 0.083. This result is consistent with [24] where large household were reported to be correlated to poverty. Engagement in other livelihood activities apart from farming significantly increase the probability of being poor for both approaches used in the study. The marginal effects for farming activities are 0.134 and 0.446 for multidimensional and uni-dimensional poverty respectively. This indicates that being a farmer increase the probability of reduction in household poverty. This finding is in agreement with that of [24] who posited that primary occupation is highly correlated with household poverty.

Farming experience and secondary occupation significantly determine household poverty level under the uni-dimensional approach. Increase in the number of years in farming will increase the tendencies to fall into poverty by 0.103. The marginal effect increases with increased years of farming by 0.019. Also, the absence of a secondary livelihood significantly increased the probability of being poor by 1.580. Household that engaged in secondary activities will earn more income which can be used to cater for the general needs of the household. Farm size and non participation in social group significantly reduce the probability of

Table 6. Comparative determinants of household poverty

Variables	Multidimensional poverty (MP) indices				Uni-dimensional poverty (UP) indices				Marginal value (X)
	Coef.	z	dy/dx	z	Coef.	z	dy/dx	z	
Sex	0.858***	3.11	0.145***	3.11	0.606**	2.12	0.112**	2.11	0.837
Age	0.044**	2.04	0.007**	2.02	-0.065**	-2.60	-0.012**	-2.61	49.025
ms_dummy	0.046	0.12	0.008	0.12	1.088***	2.75	0.230**	2.54	0.801
hdsdsize	-0.087	-1.27	-0.015	-1.26	0.447***	4.99	0.083***	5.07	6.094
education	-0.401***	-4.4	-0.068***	-5.31	0.198***	3.73	0.037***	3.71	2.343
pryoccup	0.828**	2.06	0.134**	2.09	2.294***	4.93	0.446***	5.26	0.594
secoccup	0.549	1.6	0.085*	1.71	1.580***	3.59	0.337***	3.51	0.757
farmexpyr	0.012	0.58	0.002	0.58	0.103***	3.90	0.019***	3.94	19.740
farmsize	-0.114**	-2.11	-0.019**	-2.11	-0.051	-0.84	-0.009	-0.84	3.629
socgrp	-2.082***	-5.18	-0.271***	-6.43	-0.252	-0.72	-0.048	-0.70	0.279
income	-0.000**	-2.2	0.000**	-2.21	-0.000***	-7.22	0.000***	-6.68	80,348.7
_cons	-2.066	-2.3			-1.181	-1.23			
No of obs		362				362			
LR chi2(11)		149.48				194.45			
Prob > chi2		0.0000				0.0000			
Pseudo R2		0.3203				0.4228			
Loglikelihood		-158.568				-132.729			

Source: Logit output for determinants of poverty

being poor by 0.114 and 2.082 respectively. The estimated marginal effect revealed that the odds of being poor is further reduced as cultivated farmland increases by 0.019 and increase in non participation in social group by 0.271. In this wise expansion of farmland to increase output will further enhance household poverty level.

In both approaches to measure poverty determinant, increase in household income significantly reduce the probability of being poor. This means that the higher the income from productive activities the more the likelihood of households will be non poor than those with lower income. This is consistent with the findings of [1] where increased income is confirmed to reduce household poverty level. Therefore it is imperative to encourage empowerment of the farmers through expansion of production activities to enhance income generated and thus alleviate household poverty. Lastly, educational attainment significantly affects poverty level under the multidimensional and uni-dimensional approaches. The negative coefficient of educational attainment in multidimensional approach means a higher educational attainment of the household head will lead to a reduction in probability of poor. This result agrees with the findings of [5] and [9] who reported that higher educational levels lead to increase in non-poor categories. Higher educational status is expected to enlighten the household head on various

mean through which poverty can be reduced. On the contrary, the uni-dimensional approach revealed that increase in educational attainment increases the probability of being poor by 0.198. Therefore, early enrollment in school is encouraged.

5. CONCLUSION

The study presents and compares the two approaches which are now widely used for measuring for poverty. It confirmed that in addition to the monetary unit of measurement (consumption), the multidimensional approach will provide sufficient explanations to various deprivations faced by the poor. Primary data were used contrary to the common use of secondary data as mostly available in literature. The findings revealed similarities in factors influencing being monetary or multidimensional poor. Among the factors that jointly influence household poverty in southwest Nigeria are being a female headed household, age, education, farming as primary occupation and level of household income. Housing structure and education as dimensions contribute largest to multidimensional poverty. It is therefore imperative to promote measures of alleviating poverty in order to enhance good housing structure particularly in the rural areas. In addition to facilitating the development of the educational sector. Also, enlightening the rural sector on the importance of education will further

foster reduction in poverty of the rural households.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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