Advances in Agricultural Technology & Plant Sciences
ISSN: 2640-6586

Academic Strive
Researcher's perception is our reality

Research Article *Volume 5 Issue 2*

How Much Livelihood Diversification Does for Multidimensional Welfare Statuses

Popoola DP*, Adebayo CO and Abdullahi A

Department of Agricultural economics and farm management, Federal University of Technology, Nigeria

***Corresponding author:** Popoola DP, Department of Agricultural economics and farm management, Federal University of Technology, Nigeria, Email: Popooladavidp@gmail.com

Received Date: July 26, 2022; **Published Date:** August 29, 2022

Abstract

Diversification of livelihood portfolios over the years has grossly been a wellbeing improvement avenue, while poverty has been concluded to exceed mere income deprivation but rather, a multidimensional menace. This study hence sets to investigate the effect of livelihood diversification on multidimensional poverty among poultry farming households in South west Nigeria, using data collected from 210 households via multistage sampling procedure and analysed using parametric, and non-parametric analytical tools. The result shows that many of the poultry farming households (59.04%) are diversified, while a majority (89.52%) of them diversified secondarily into non farming activities compared to the relatively fewer proportion (10.48%) in same category that diversified into farming. In all, the diversified poultry farming households were found to suffer lesser deprivation than their nondiversified counterparts, and particularly significant for access to quality healthcare, Household's basic School enrolment, and Child' education enrollment with these trio being significant at 5% probabilistic level, except for sickness (perhaps stress induced), and the standard of living categories. Furthermore, their multidimensional poverty index profile favours the diversified as follows; Average intensity of deprivation (AIOD) = 0.437198 and 0.506173; Headcount ratio (H0) = 0.18548 and 0.20930; Multidimensional poverty index (M0) = 0.08109, and 0.10594 for the diversified and Nondiversified households respectively. Also aggregated multidimensional poverty index shows a positive relationship between livelihood diversification and multidimensional poverty, significant at 10% probabilistic level. Further decomposition within the poor category still reveals a positive effect and significant at 10% probabilistic level. Hence, livelihood diversification is a significant means of achieving the Sustainable Development Goals (SDG) of zero poverty in the study area. Finding based policy options are proffered.

Keywords: Livelihood diversification; Alkire & Foster Multidimensional Poverty Index; Poultry farming; Wellbeing; South West Nigeria

Introduction

Background to the Study

Agriculture which remains a general term that encompasses all activities that involves crop, and livestock production activities, or as a means of livelihood is the mainstay of the Nigerian economy, with an estimated average population of about 200 million persons where at least 70% of these category are primarily or indirectly subsists on agriculture and living in less developed areas [1,2]. Agriculture has been the locus of poverty in Sub-Saharan Nations where Nigeria is a member country. The Nigerian economy from the pre-

independence and post-independence period had largely subsisted economically primarily on Agriculture until the oil boom in the 1970's after which, the Agricultural sector contribution has then been on a considerable decline while it yet remained the largest employer of labour.

The Agricultural sector contribution to the country's GDP is still on the decline from 24.11% in 2015 to 22.35% in 2021 [2-4], and the welfare statuses of farmers remains outrightly low due to falling productivity level which is attributable to low level of technicality know how (agricultural technology) in the process of improving income the level and the food security status [5]; a positive correlate with poverty. Poverty is phenomenally multi-dimensional, and it lacks universally accepted definition (World Bank 2000). Regarding Nigeria, the poverty incidence is around 11.88%, and the average intensity is about 33.26%, while the Multidimensional Poverty Index (MPI), is about 0.040 [6].

The livestock production activities as a subsector of the Agricultural industry can serve an important livelihood means, and a potential pathway to escaping poverty [7]. Regarding the overall GDP contribution quota of the various sectors within the agricultural industry of the Nigeria's economy, the respective agricultural sub sector contribution includes; (cropping, 87.20%), (livestock, 9.00%), (fisheries, 3.00%) and (forestry, 1.20%), hereby making the livestock's sectorial contribution the second highest contributor, after crop production [3,8,]. It is apparent that livestock production also enables saving, providing security, and allowing resource-poor households to accumulate needed assets. The largest quota of the world's poor lives in the rural areas, and half of them keeps livestock [9,10]. This necessitates the need for supplementary livelihood alternatives.

The concern on "livelihood diversification" actually implies a given procedure, a common scope that is targeted at broadening of income, and livelihood options apart from a purely cropping and livestock production to both farming and non-farming activities which are undertaken to harness extra earning through the production of some other nonagricultural and agricultural commodities, the merchandise of paid labor and, or self-deployment into some small scale enterprises [11].

Whilst many of the existing literatures defined 'diversification' in the terms of income earning, or productive engagements, introducing the 'livelihoods' concept has further broadened the debate process to an inclusion of the means through which the rural households constructs a varying activity portfolios and support social capabilities in the quest for survival and struggles so as to improve their standard of living [12]. Livelihood diversification among farming households is a significantly important means of poverty amelioration among small farmers in South East Asia and West Africa, where Nigeria belongs [13]. This posits clearly, the economic relevance of livelihood diversification.

However, the nature of social and economic activity combination (livelihood diversification) with poultry production, and its effect on multidimensional welfare statuses of poultry farming households in the area of study is yet to be known besides the significance of these interrelationships.

Also, many related studies are limited to unidimensional approach but exploring the dimensions, and nature (intensity, and distribution) of deprivations which farmers encounters, and how it is been influenced, or affected by their livelihood diversification decision is useful in knowing the actual diversification status and welfare status interplay, in addition to ways of proffering solutions to identified constraints for better policy formulation.

This study therefore seeks to explore how much livelihood diversification influences multidimensional welfare statuses. An empirical findings from the poultry farming household in South West Nigeria, with specific objectives to; Determine their diversification statuses, determine their multidimensional poverty indices and their cross relationships.

Literature Review

Oyakhilomen Oyinbo and Kehinde Tobi Olaleye [14] in their research titled Farm households livelihood diversification and poverty alleviation in Giwa Local Government Area of Kaduna State, Nigeria using data collected through a questionnaire administered from 100 respondents, analyzed using simple descriptive statistics, the FGT poverty model and Tobit regression model showed that the incidence of poverty among the farming households was 30% while result of the Tobit regression showed livelihood diversification to be significant at 1% probability level and negatively determined the poverty level of the farmers, while this study rather employed the standard multidimensional measure.

Maja and Oluwatayo [15] in their research titled Livelihood Diversification and Poverty among rural households in the Capricorn District, Limpopo, South Africa using multi-stage and simple random sampling technique. Analytical techniques employed were descriptive statistics, FGT poverty index and the probit regression model. Gender of the household head, marital status of the household head, years of formal education, household size and member of association were found to be significant at 10%, 5%, 1%, 1% and 1% respectively. This study however went further to employ the multidimensional approach.

Dagunga Gilbert [16] in a research titled "Livelihood diversification and multidimensional poverty in Ghana: Sustainable livelihood framework approach" to investigate the impact of livelihood diversification on household's multidimensional poverty in Ghana using the seventh round of the Ghana Living Standards Survey (GLSS7). The result shows that the impact of livelihood diversification reduces multidimensional poverty while this study was rather conducted in Nigeria on specific subsector of the economy.

Materials and Methods

Study Area/ Data Source

This study which was carried out in Oyo State (South West Nigeria), a State comprising 33 local Government areas (LGAs) with a population of about 7.8 million persons [6] and the land topography covering about 35,743 km^2 situated within latitude 3°N and 5°N; between longitude 7°E and 9.3°E involved a purposive selection of Oyo State as the first data collection stage, being characterized by widespread production of varying breeds of poultry birds, followed by a random selection of two agricultural zones vis-à-vis Ibadan/Ibarapa and Oyo Agricultural zones from the four Agricultural Zones in Oyo state. The third stage involved a random selection of three local government areas under the Oyo agricultural zone and one Local government in Ibadan/ Ibarapa Zone due to the relatively larger poultry production activities being carried out at former, relative to Ibadan/ Ibarapa. The fourth stage involved random selection of ten villages under Ido Local government area and three villages per Afijio, Oyo central, and Oyo west local government areas, from which 210 farming households were randomly surveyed. The Statistics and Data (STATA) '14 analytical software was used in data analysis.

Analytical Techniques

Multidimensional poverty indices (MPI)

The multidimensional poverty index (MPI) measure as developed by Alkire and Foster [17-20] was used to analise the multidimensional poverty of the respondents, and the methodology included two steps; an identification phase (ρk) that identifies 'who is poor' by considering the range of deprivations they suffer, and an aggregation phase (∑C) that generates an intuitive set of poverty measures (Mα).

Choice of weighted dimensions, indicators and weights

When a household "X" is subject to a deprivation cut-off "z" and a poverty cut-off "k", a household that possesses the indicator of each dimension is scored with the corresponding weight and zero if otherwise. The maximum score is 100 percent; with each dimension equally weighted (where each dimension is 33.3%). A cut-off of 33.3%, which is the equivalent of one-third of the weighted indicators, is used to distinguish between the poor and non-poor. The indices can be obtained using the following models;

$$H_0(X; k; Z) \equiv \frac{1}{N}\sum_{n=1}^{N} I(Cn \geq k) = \frac{q}{N} \quad (1)$$

$$A(X; k; Z) \equiv \frac{\sum_{n=1}^{N} I(Cn \geq k)Cn}{q} = \frac{\sum_{1}^{q} c}{q} \quad (2)$$

$$M_0 = \left[\frac{1}{N}\sum_{n=1}^{N} I(Cn \geq k)\right]\left[\frac{\sum_{1}^{q} c}{q}\right] = H_0 \times A \quad (3)$$

Where: H_o= Head count ratio, A= Average intensity of deprivation, M_0= Adjusted headcount ratio or the multidimensional poverty index (MPI), *q*= the number of people who are multidimensionally poor, *N*= Total population, *C*= is the deprivation score that the poor experience, " I " is indicator that takes the value of 1 if the expression in parenthesis is true and zero if otherwise (Table 1).

	Indicators	Measurements	Related to...	Weights
Education	Years of schooling	Deprived if no household member has completed 9 years of formal education	SDG 4	1/6
	Child enrolment	deprived if any school-aged child is not attending school in years 1 to 6	SDG 4	1/6
Standard of Living	Electricity	Deprived if the household has no electricity	SDG 7	1/18
			SDG 6	1/18
	Drinking water	Deprived if the household does not have access to clean drinking water or clean water is more than 30 minutes' walk from home	SDG 6	1/18
	Sanitation	Deprived if they do not have an improved toilet or if their toilet is shared	SDG 11	1/18

	Housing Cooking fuel	Deprived if hut/house/ has a dirt, sand or dung floor or is built with sub-standard material	SDG 7	1/18
		Deprived if they cook with wood, charcoal or dung		
	Assets	Deprived if the household does not own more than one of: radio, TV, telephone, bike, or motorbike, and do not own a car or tractor	SDG 12	1/18
Health	Health care quality	Deprived if the household does not have access to quality health care	SDG 3	1/6
	Health as a Limiting factor	Deprived if health is a limiting factor in most regular activities	SDG 3	1/6

Table 1: Dimensions, indicators and weights.
Note: SDG1 is Eradicate Extreme Poverty; SDG2 is Zero Hunger; SDG3 is Good Health and Well-being; SDG4 is Quality Education; SDG6 is Clean Water and Sanitation SDG7 is Affordable and clean Energy; SDG11 is Sustainable cities and Communities; SDG12 is Responsible consumption and Production. SDG (2015).

Result and Discussion

Diversification status by farming activities among the poultry farming households (a)

The result showed that, a huge proportion of the diversified poultry farming households (52.86%) are also engaged in non-farming activities compared to the relatively fewer proportion (47.14%) in same category who are not diversified and are engaged solely in agricultural activities (Table 2) (Figure 1).

Primary Occupation Diversification Status	Non farming		Farming		Pooled	
	Freq.	Perctg.	Freq.	Perctg.	Freq.	Perctg.
Non-diversified	0	0	86	100	86	100
Diversified	111	89.52	13	10.48	124	100
Total	111	52.86	99	47.14	210	100

Source: Field Survey data analysis result
Table 2: Diversification status and livelihood activity among poultry farming households.

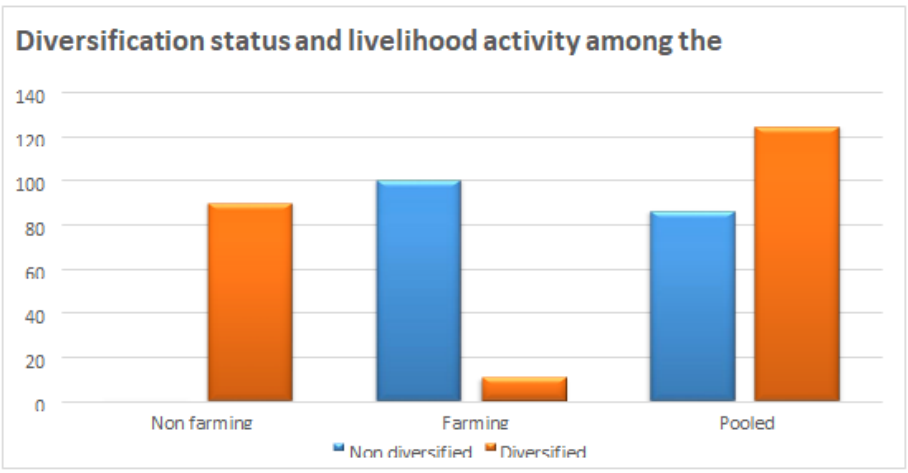

Figure 1: Diversification status and livelihood activity among the poultry farming households.

Livelihood diversification and multidimensional poverty status across the 3 welfare dimensions

The result shows that, many of poultry farming households are deprived in the standard of living dimension (Tables 3&4), particularly with respect to access to electricity, clean water, and asset where about 24.29%, about 55%, and about 36% respectively, are deprived wherein the diversified poultry farming households suffers lesser deprivation than their nondiversified categories (Figure 2).

Dimensions	Pooled N=210			Non-diversified N= 86			Diversified N= 124			P-Value
Education	**Freq.**	**Mean**	**Sddev**	**Freq.**	**Mean**	**Sddev**	**Freq.**	**Mean**	**Sddev**	
Basic enrolment	14 (6.67)	0.1556	0.0417	10 (11.63)	0.1473	0.0537	4 (3.23)	0.1613	0.0296	P= 0.0163**
Child Enrolment	20 (9.52)	0.1508	0.049	13 (15.12)	0.1415	0.0601	7 (5.65)	0.1573	0.0386	P=0.0214 **
Health										
Quality Health Care	55 (26.19)	0.0575	0.0735	29 (33.72)	0.1105	0.0793	26 (20.97)	0.1317	0.0793	P=0.0389 **
Sickness	24 (11.43)	0.1476	0.0532	7 (8.14)	0.1531	0.0458	17 (13.71)	0.1438 (17)	0.0576	P=0.2141
Standard of Living										
Electricity	51 (24.29)	0.0258	0.0279	28 (22.58)	0.0407	0.02473	23 (26.74)	0.043	0.0233	P=0.4913
Clean Water	115 (54.76)	0.0251	0.0277	46 (53.49)	0.0258	0.0279	69 (55.65)	0.0246	0.0277	P=0.7589
Sanitation	44 (20.95)	0.0022		16 (18.6)	0.0452	0.0218	28 (22.58)	0.043	0.0233	P=0.4887
Housing	22 (10.48)	0.0497	0.0171	9 (10.47)	0.9	0.0171	13 (10.48)	0.0497	0.0171	P=0.9965
Cooking fuel	47 (22.38)	0.0431	0.0232	17 (19.77)	0.0446	0.0223	30 (24.19)	0.0421	0.024	P=0.4516
Asset	76 (36.19)	0.0355	0.0268	31 (36.05)	0.0355	0.0268	45 (36.29)	0.0354	0.0268	P=0.9713

Source: Field Survey data analysis result. Percentages parenthesized.

Table 3: Livelihood diversification and multidimensional poverty status across the 3 welfare dimensions.

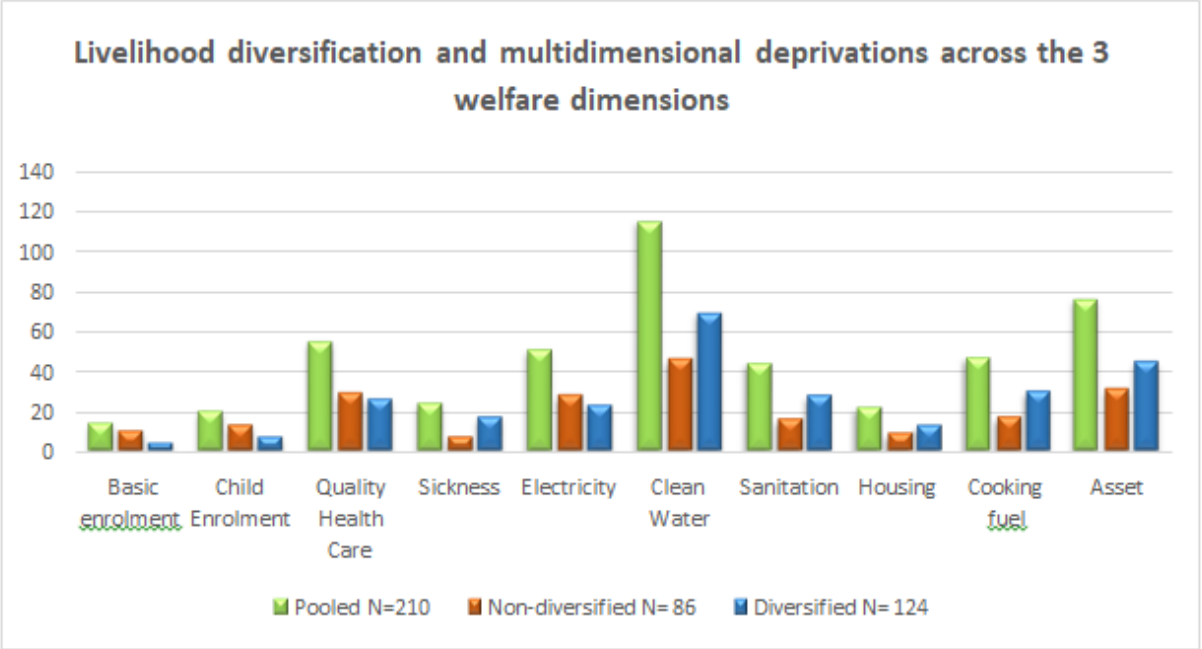

Figure 2: Livelihood diversification and multidimensional deprivations across the 3 welfare dimensions.

Multidimensional Poverty Status of the Diversified and Non-Diversified Poultry Farming Households

The deprivations suffered by the non-diversified poultry farming household are higher than that suffered by the diversified category (Figure 3). Difference significance test of means is presented in Table 5.

Status	Average intensity of deprivation (A_0)	Headcount ratio (H_0)	Multidimensional poverty index (M_0)
Non-diversified (N=18)	0.506173	0.2093	0.10594
Diversified (N=23)	0.437198	0.18548	0.08109
Pooled (41)	0.09127	0.19524	0.01782
Difference	0.068975	0.02382	0.00164

Source: Field Survey data analysis result.

Table 4: Multidimensional poverty status profile of by diversification status.

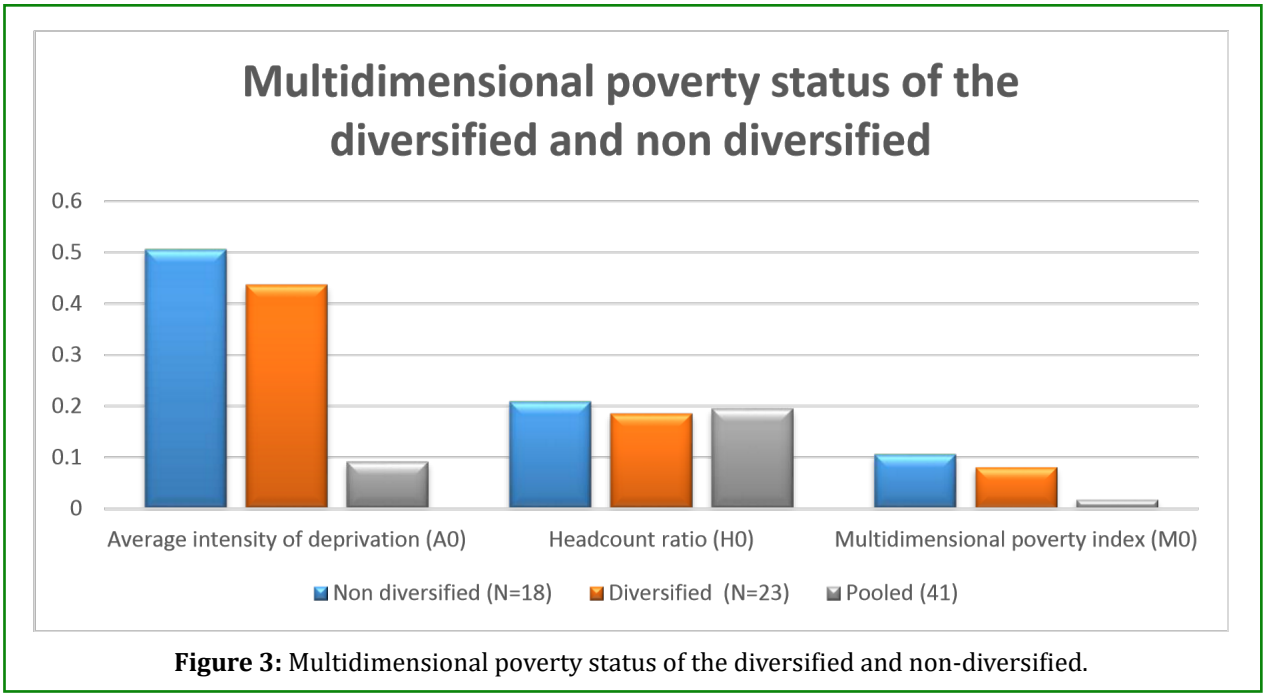

Figure 3: Multidimensional poverty status of the diversified and non-diversified.

Effect of Livelihood Diversification on Multidimensional Poverty of Total Population

That, the mean deprivation counts of the nondiversified poultry farming households was significantly higher than the diversified poultry farming households. This is significant at 10% probabilistic level (Figure 4).

Parameter	Nondiversified N=86	Diversified N=124	Pooled N= 210	Difference Test
Mean	0.18863	0.15009	0.16587	0.0385 (.0247)
	-0.02086	-0.01459	-0.0122	
Std.dev	0.1934	0.1625	0.1763	
Min	0.22222	0.33333	0.2222	
Max	0.7778	0.6667	0.333333	**P= 0.1197***

Source: Field Survey. Robust standard errors Parenthesized.

Table 5: Effect of livelihood diversification on population's multidimensional poverty.

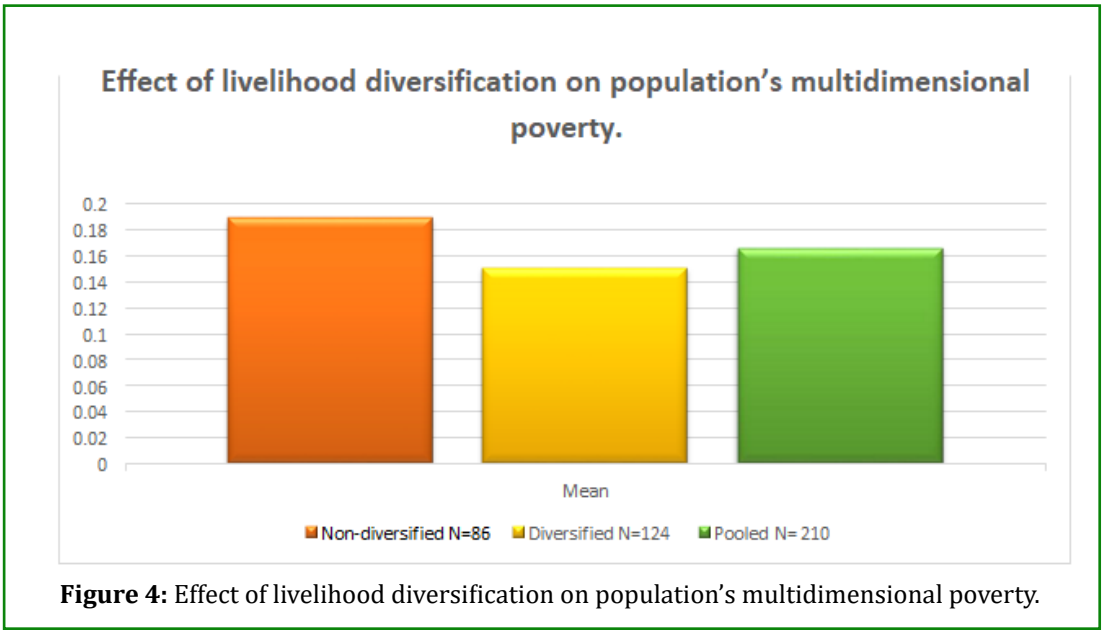

Figure 4: Effect of livelihood diversification on population's multidimensional poverty.

Effect of livelihood diversification on multidimensional poverty of the poor

The result shows that, the mean deprivation counts of the nondiversified poultry farming households is significantly higher than the diversified poultry farming households (Table 6). This is also significant at 10% level (Figure 5).

Parameter	Nondiversified n=18	Diversified n=23	Pooled n= 41	Difference test N=41
Mean	0.50617 (0.03417)	0.43719 (0.020753)	0.4675 (0.01949)	0 .06898 (0.0194953)
Std.dev	0.1449825	0.099528	0 .1248305	
Min	0.3333333	0.3333333	0.3333333	
Max	0.7777778	0.6666666	0.7777778	**P=0.0789***

Source: Field Survey. Robust standard errors Parenthesized.

Table 6: Mean difference test on effect of livelihood diversification on poor population's multidimensional poverty.

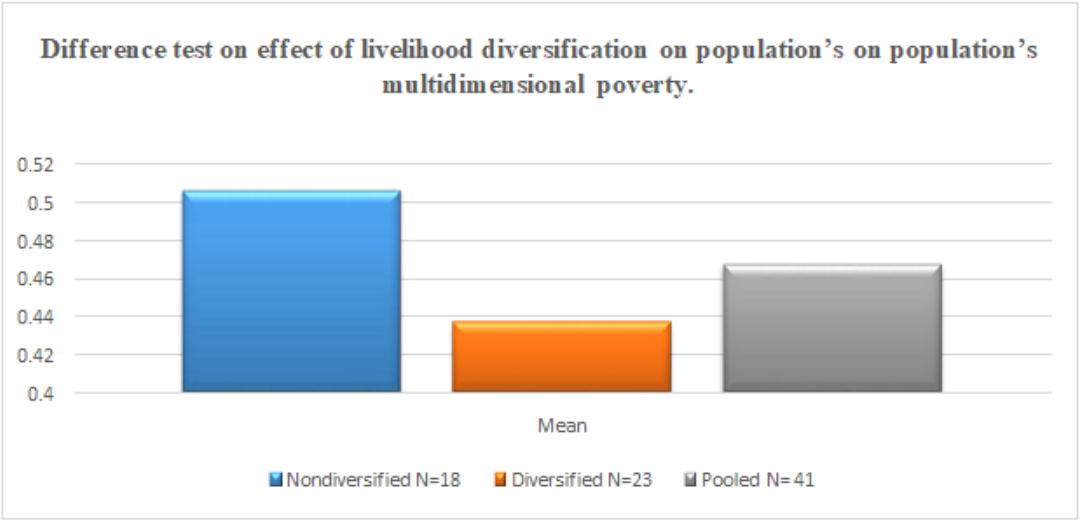

Figure 5: Difference test on effect of livelihood diversification on population's multidimensional poverty.

Conclusion and Recommendations

This study was conducted to determine how much livelihood diversification influences multidimensional welfare statuses, a case study of poultry farming household in South West Nigeria, with specific objectives to; Determine their livelihood diversification incidence, and multidimensional poverty indices as influenced by livelihood diversification. The diversified poultry farming households were found to suffer lesser deprivation than their nondiversified counterparts, and particularly significant for access to quality healthcare, Household's basic School enrolment, and Child' education enrollment with these trio being significant at 5% probabilistic level, except for sickness (perhaps stress induced), and the standard of living categories. Furthermore, their multidimensional poverty index profile favours the diversified households.

From this empirical findings, it can therefore be recommended that; livelihood diversification is also a significant means of achieving the Sustainable Development Goals (SDGs) of zero poverty in the study area, hence, a friendly basic economic, and infrastructural environment e.g., stable and efficient electricity supply, good roads, sustainable social security system etc., should be provided to promote or ease diversification of livelihood activities and creation of more livelihood diversification options. Also, provision of inputs and adequate incentives should be provided to encourage increased diversification into farming, especially poultry farming so as to provide adequate and affordable dietary protein need and reduce malnutrition or under nutrition. To close, Access to; asset acquisition, quality healthcare, and clean water should be improved, being areas of highest experienced deprivations in order to promote actualization of poverty reduction goals.

References

1. Hawkins R, Sobukola O (2020) Insight into agricultural education in Nigeria: a scoping study to identify potential areas of Netherland support. A policy report of the Ministry of foreign affairs, pp: 1-87.

2. FAO (2021) Nigeria at a glance, Food and Agricultural Organization.

3. NBS (2015) GDP Report, National Bureau of Statistics, pp: 80-82.

4. World Bank (2021) Agriculture, forestry, and fishing, value added (% of GDP) - World Bank national accounts data, and OECD National Accounts data files.

5. Amao JO, Awoyemi TT (2008) Adoption of improved cassava varieties and its welfare effect on producing households in Osogbo ADP Zone of Osun State. Gene Conserve J Univ Bras Brazil 7(29): 520-542.

6. NBS (2020) Multidimensional Poverty Index Report 2019, National Bureau of Statistics.

7. IFAD (2011) Rural Poverty Report: New realities, new challenges: New opportunities for tomorrow's generation. Rome: International Fund for Agricultural Development, International Fund for Agricultural Development.

8. LSM (2016) Measuring the Role of Livestock in the Household Economy, A Guidebook for Designing Household Survey Questionnaires, Food and Agriculture Organization, World Bank, Living standard Measurement Study, pp: 1-57.

9. Robinson TP, Thornton PK, Franceschini G, Kruska RL, Chiozza F, *et al*. (2011) Global Livestock Production Systems. Rome: Food and Agriculture Organization of the United Nations; Nairobi: International Livestock Research Institute.

10. World Bank (2016) Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change. Washington, DC: World Bank.

11. Løvendahl CR, Knowles M, Horii N (2004) Understanding vulnerability to food insecurity lessons from vulnerable livelihood profiling. ESA working paper No. 04- 18. Agricultural and development economics division. Rome: FAO, pp: 1-26.

12. Ellis F (1998) Household strategies and rural livelihood diversification. The Journal of Development Studies 35(1): 1-38.

13. World Bank (2011) Poverty and Hunger: Issues and options for Food Security in Developing Countries. Washington DC, USA: World Bank, pp: 1-82.

14. Oyakhilomen Oyinbo, Kehinde Tobi Olaleye (2016) Farm households livelihood diversification and poverty alleviation in Giwa Local Government Area of Kaduna State. The Journal of Sustainable Development 15: 219-232.

15. Maja T, B Oluwatayo I (2018). Livelihood Diversification and Poverty among rural households in the Capricorn District, Limpopo, South Africa. 2018 Annual Conference, September, Cape Town, South Africa 284752, Agricultural Economics Association of South Africa (AEASA), pp: 25-27.

16. Dagunga Gilbert (2020) Livelihood diversification and multidimensional poverty in Ghana: Sustainable

livelihood framework approach. University for Development Studies.

17. Alkire S (2007) Choosing dimensions: The capability approach and multidimensional poverty. CPRC Working Paper 88: 1-25.

18. Alkire S, Roche JM, Vaz A (2017) Changes over time in multidimensional poverty: methodology and results for 34 countries World Development 94: 232-249.

19. Sabina A, Foster J (2011) Counting and multidimensional poverty measurement. Journal of Public Economics 95(7): 476-487.

20. United Nations (2015) Sustainable development knowledge platform.