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# Cooperative Efficiency and Its Effect On Livelihood Diversification Among Poultry Farm Holders: Empirical Study from South West Nigeria

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**ABSTRACT:** *Cooperative membership and livelihood diversification has been observed to enhance improved households' economic situations, while little is known about their interplay when they both occurs. This study was hence conducted to investigate the incidence of cooperative efficiency, and how it influences livelihood diversification alongside some other crucial/imperative hypothesized determinant factors, using data collected from 210 poultry farm holders via multistage sampling procedure and analysed using econometric, parametric, and non-parametric analytical tools at 95% confidence interval. Result showed that; majorities of the cooperator respondents are satisfied with; Access to loan (72.38%), Loan repayment (67.62%), Transportation (68.10%), Marketing (67.14%), Training (69.5%), patronage (70%), and Political interference (69.05%) while a relatively large proportion of the respondents (59.04%) are diversified, while a majority (89.52%) of this diversified category secondarily diversifies into non farming activities. Also, the proportion of the cooperator diversified poultry farming household (59.41) narrowly exceeds the noncooperator category (58.72) hence, further econometric analysis conducted showed that; gender of household head, level of formal education, primary source of labour, farming as primary occupation, and Cooperative membership negatively influenced livelihood diversification, but otherwise for multidimensional poverty, all significant at 10%, 5%, 1%, 1%, 10%, and 1% probabilistic levels respectively. Finding based recommendations were further proffered.*

**KEYWORDS:** Cooperative membership, livelihood diversification, cooperative efficiency, poultry farming, South West Nigeria.

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## INTRODUCTION

Agriculture which remains a general term that encompasses all activities that relates to crop, and livestock production as a means of livelihood is the mainstay of the Nigerian economy, with an estimated population of about 200 million individuals where at least about 70% of these population are primarily or indirectly engaged in agriculture and living a less developed life (Richard and Olajide, 2020; FAO, 2021) also, the largest quota of the world's poor lives in the rural areas, and half of them keeps livestock (Robinson *et al.*, 2011; World Bank, 2016).

According to Federal Ministry of Agriculture (2012), the Nigerian poultry sector is full of small-holder farmers that on the aggregate raises the bulk of their poultry birds for eggs and meat production, but idiosyncratically rears lesser than 1000 birds employing different production methods in accordance with scanty resources at their disposal. In an attempt to confront these constraints over the years, interested farmers usually associate to form members' institutions to pool resources together usually through a "jointly owned and democratically controlled enterprising", called "Cooperative society".

The International Cooperative Alliance (ICA, 2015), defined cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise". Cooperatives help in identifying economic prospects for members; empowers the unprivileged in defending their interests; providing security to the deprived by allowing them convert idiosyncratic risks to a collective risk; and also mediate members' accessibility to the assets which can be utilized to maintain a productive living (International Labour Organization; ICA, ILO, 2015).

Cooperative membership do expose her members to varieties of opportunities in such a way that increases or reduce the likelihood of members' livelihood diversification, depending on their interests, and enlightenments. Furthermore, Cooperatives are potential means to promote members' social participation and socioeconomic inclusiveness.

Livestock production as a subsector of the agricultural industry can however serve an important livelihood means and a potential pathway to escaping poverty (IFAD, 2011). This can however be the primary livelihood means or secondary livelihood means for the respective no diversified and diversified households also, as influenced by households' utility constraints.

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 (FAO, 2016; NBS 2015), revealing the significance of livestock subsector. It is apparent that livestock

production enables saving, providing security, and allowing resource-poor households to accumulate needed assets

Poultry sector also provides numerous job offers for the populace, hereby providing an income source to the people. It also help provides good animal protein source in their meat, and egg products that possesses high nutrients (Nasiru *et al.*, 2012, Yilmaz *et al.*, 2013).

The Nigeria's livestock resource population was recorded to comprise 151.0 million poultry; 40.80 million goat; 27.0 million sheep; 3.70 million pigs and 16.30 million cattle; (Lombin, 2011), wherein the poultry sector alone constitutes over 60.0% of the accrued livestock resource pool, indicating nomenclatural dominance of the sub sector within the livestock industry in 2011, which is currently on a decrease to 114.3 million poultry, 34.5 million goats, 22.1 million sheeps, 4 million pigs, 13.9 million cattles, and 4.5 million dogs (Animal Genetic Resource. AnGR, 2018), indicating a 24.11% decrease in poultry production rate.

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 (Ellis, 1998).

With respect to livelihood diversification in social science research, there are different methods of aggregating livelihood activities with the most common method been the income share base of some set of economic activities that a given household is involved in (such as; Muhammad *et al.*, 2014; Xuhuan *et al.*, 2019; Misganaw *et al.*, 2019; and Bayero, S., *et al.*, 2019).. This study employs the productive livelihood activity/engagement approach ( as used by Mamman *et al.*, 2014; Solomon *et al.*, 2015; Ayantoye *et al.*, 2017; and Asravor, 2018) with a concern on active involvements to obtain tangible or intangible benefits rather than just involving solely on the basis of direct income earning.

Livelihood diversification can help the rural dwellers avoid economic, environmental, and seasonality shocks hence, making them less vulnerable (OECD, 2011). They also use it as a strategy to combine activities that add to the accumulation of wealth in the household (Khatun and Roy, 2012) however, the extent to which this is influenced by cooperative membership remains conjectural, especially among livestock farmers.

Regarding some of the existing works on cooperatives, livelihood diversification and existing research gaps this work seeks to address, Ayantoye *et al.*, (2017) in their work titled; "determinants of livelihood diversification among rural households in Kwara State", Nigeria, it was obtained that gender, primary occupation, poverty status, marital status, and association membership significantly factors influencing livelihood diversification among the respondents in the study area,

this study however further explores/profiles the relationship between cooperative membership and livelihood diversification.

Also, Raphael *et al.*, (2017), in their research titled “effect of livelihood diversification on food security status of rural farm households in Abia State Nigeria” using a logit regression obtained that their livelihood diversification was influenced by credit, household size, formal education, membership of cooperatives and income while food security status was influenced by education years, credit access, age, income, and household size while no emphasis was made on cooperative membership as addressed in this study.

Furthermore, in the study of Ogbanje *et al.*, (2014), titled; “off-farm diversification among small-scale farmers in north central Nigeria”, using a multistage-sampling methodology in the selection of 180 farming households, revealed that farming activities as a primary occupational means, off-farm work experience, formal education, and off-farm works significantly raised the rate of diversification, whereas the age, hours, leisure, farm size, on-farm work hours, farm assets’ current worth, and crop income negatively affects off-farm diversification, while cooperative membership effect was not emphasized as addressed by this study.

Besides, the bulk of existing studies on livelihood diversification (such as; Adepoju, A.O., & Obayelu, O.A., 2013; Raphael *et al.*, 2017; Pur *et al.*, 2016; Ayantoye *et al.*, 2017; Dilruba, K., & Bidhan, C., 2016) generalised, while a few focused on crop farmers (Okiemua *et al.*, 2019; Owusu *et al.*, 2011; Ogbanje *et al.*, 2014; Jude *et al.*, 2019), without substantive counts of works focusing on livestock farmers (Xuhuan *et al.*, 2019 focused on ruminant producers) hence, this study resolutely focused on livestock (poultry) farmers to bridge the existing wide research gap, in addition to providing strong empirical basis to better understand what the situation is, and how to better exploit it or provide necessary interventions and necessary policy options.

This research thereby sets to investigate the incidence of cooperative efficiency, and how it influences livelihood diversification among poultry farm holders alongside some other crucial/imperative hypothesized determinant factors in South West Nigeria, by proffering specific responses to the following empirical questions;

- i. Are the cooperatives efficient in the study area?
- ii. What is the livelihood diversification index of the cooperator and noncooperator poultry farmers in the study area?
- iii. What are the determinants of livelihood diversification of poultry farmers in the study area?

### **Theoretical Framework.**

Concerning the theoretical background as of emphasis on what, who, when, and where (Whetten, David. A., 1989), this study adapted the rational choice theoretical background in investigating the incidence of cooperative efficiency, and how it influences livelihood diversification among poultry

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farm holders alongside some other crucial/imperative hypothesized determinant factors in South West Nigeria.

### **Rational Choice theory.**

The fundamentals of “rational choice theory” is of the belief that people decides, or makes individual best decisions under some dominating situations which will result to either a rational outcome or an irrational one (Steven, 2002). A rational choice is based on logic. The theory of rational choice for consumers’ behaviour is rooted in some or all of the following axioms, which also explains the decision making behavior of an  $i^{\text{th}}$  firm: (1) Availability of some alternatives (2) The consumers will prefer either of two alternatives, or be indifferent. (3) The consumers are *transitive* in their preference. (4) The consumer will select the alternative or combinations preferred the most (Sanje Rode, 2013).

A poultry farmer may decide to join a cooperative society in order to maximize her utility which consequently might influence her decision to choose a livelihood strategy or a combination of livelihood strategy from the available sets of livelihood activities in order to increase her utility. The utility here may be to increase income, reduce risk, achieve social or political aspirations etc. Invariably, a poultry farmer that does not diversify her livelihood activities may be due to her limited access to information about the existence, and advantages associated with such livelihood strategy, which may yield a different outcome for a cooperater. Supposing that there are two feasible outcomes, say; a Cooperative member or a Noncooperator, where the probability of A;  $P(A)$  equal the probability of cooperative membership while the probability of B;  $P(B)$  equals otherwise (i.e. a Noncooperator).

If a  $j^{\text{th}}$  farmer decides to join cooperative, her utility/satisfaction function (U) as a cooperater if s/he resolves to join cooperatives which can be well be expressed this time as  $U_i = f(A \cap B')$ , and if she is not a Cooperator as;  $U_i = f(A \cap B)$  where; “ $f$ ” is also a function which attributes a specified value (utility function) to a selected alternative.

With the afore as sole possible outcome(s), it remains clear that;  $P(A) + P(B) = 1$ , meaning a 100% nonadditive chance of occurrence for “A” or “B” and are exclusively mutual.

Also, cooperative membership may further influence the decision of a farming household to diversify her livelihood activity as influenced by her cooperative participation been a form of social involvement where livelihood diversification can be aggregated or quantified.

The decision to employ diversification strategies ( $S_i$ ) influenced by cooperative membership, the livelihood diversification strategy ( $S_i$ ) further determines the level of utility derived given as;  $U_i = \text{pr}(S_i/A-1)$  and when more than one strategy is combined from the available sets of alternative strategies ( $S_1, S_2, S_3, \dots, S_n$ ), say  $S_1, S_3$  and  $S_4$ , to enhance satisfaction, the utility is expressed as;  $U_i = f(S_1 + S_3 + S_4 \dots S_i/A-1)$  or  $\text{Pr}(S_1 + S_3 + S_4/A-1)$ .

## **Materials, and Methods**

### **Study area/ Data Source.**

This study was conducted in Oyo State, South West Nigeria. The State comprises of 33 local Government areas (LGAs) with an estimated population of about 7.8 million persons (NBS, 2017) and the land topography covers about 35,743 km<sup>2</sup> situated within latitude 2°N and 5°N; between longitude 7°E and 9.3°E. Data were collected from the poultry farm holders, via multistage sampling technique.

In the first stage, Oyo State was purposively selected from the existing 6 States in the South West zone (Ogun, Ekiti, Lagos, Oyo, Ondo, and Osun States) due to existence of large number of poultry farmers therein (Federal Department of Livestock and Pest Control System, 2007), followed by a stratification into non heterogeneous and non overlapping categories of; dense poultry production area and less dense poultry production area strata, based on concentration of poultry production activities, from which two agricultural zones (i.e., Oyo and Ibadan/Ibarapa respectively) are randomly selected per strata, out of the four existing Agricultural Zones within this State (Ogbomoso, Ibadan/Ibarapa, Saki and Oyo).

Third sampling stage involves a random selection of three Local Government Areas (LGAs) per Ibadan/Ibarapa Zone (Ibadan North, Ibadan South, and Ido), and Oyo agricultural zones (Oyo Central, Oyo west, and Afijio) which is followed by a random selection of 10 farm settlements/communities; one community/farm settlement within the Ibadan North, Ibadan South LGAs and two from Ido LGA (owing to relatively larger poultry production activities taking place in Ido), while one community/Farm settlement was selected per Oyo central, Oyo west, and four communities/farm settlements from Afijio LGA (owing to relatively larger poultry production activities taking place in Afijio), from which a total of 240 farming household was randomly selected in total, while 210 was utilized owing to quality of responses

### **Analytical techniques.**

#### **Cooperative efficiency.**

To determine cooperative efficiency in the study area, a three point likert-scale was employed. The values ranges from 3-1, and the corresponding indentation is denoted as follows; Major problem = 3, Minor problem = 2, Satisfactory = 1.

#### **Livelihood Diversification Measurement.**

##### **Margalef Index (MI).**

This study applies the “Margalef index” (MI) in the measurement of poultry farming households’ livelihood diversification due to its higher discriminating capacity. The “K” Diversity (MI) was developed by Margalef (1957; 1991).



The Margalef index is specified as follows:

$$\text{Margalef indices } (D_i) = \frac{S_i - 1}{\text{Ln}(N_i)} \dots \dots \dots (1)$$

Where;

$N_i$  = Gross number of samples' diversity units,

$S_i$  = Total Number of farmer's managed diversity units for any  $i^{\text{th}}$  household.

$\text{Ln}$  = Natural logarithm.

Margalef index is a nondiscrete value sets (0-1).

Where;  $MI \leq 0$  = nondiversified and,  $MI > 0 \leq 1$  = otherwise.

**Measuring the effect of cooperative membership, income, and multidimensional poverty on livelihood diversification of poultry farming households in the study area.**

**Tobit maximum likelihood estimate.**

Due to the inconsistency, and biasness of the dependent variable in the least square estimate for the regression parameter having dualised limits (Greene, 2012), this study rather employed a censored regression model, which is a standard Tobit model, suited for dualised limited dependent variables boundaries. An implicit function of the model is given as;

$$Y_i^* = X_i' \beta + \varepsilon_i \dots \dots \dots (2)$$

Where  $Y_i^*$  is the livelihood diversification dependent continuous variable that assumes the value of 1 if  $Y_i^* \geq 1$  and vice versa.

The structural forms of the dependent variable  $y_i$  is expressed as follows;

$$Y_i = \begin{cases} \varphi & \text{if } y_i < \gamma = 0 \\ \gamma & \text{if } y_i > \varphi < y_i' \\ y_i' & \text{if } y_i > \gamma = 1 \end{cases} \dots \dots \dots (3)$$

Where;

$\varphi$  = lower limit,

$\gamma$ , and  $y_i'$  = Upper and topmost limit categories.

The logarithmic likelihood explicit function of the model can be represented as follows, assuming that the error term,  $\varepsilon$ , dully obeys a normalized distribution;  $0 \sigma^2$  i.e.,  $(\varepsilon \sim N(0, \sigma^2))$ .

$$\log = \sum_{i=1}^N \left[ I_i^\gamma \log \Phi \left( \frac{\gamma - X_i' \beta}{\sigma} \right) + I_i^\phi \left( \frac{X_i' \beta - \phi}{\sigma} \right) + (1 - I_i^\gamma - I_i^\phi) \left( \log \theta \left( \frac{y_i - X_i' \beta}{\sigma} \right) - \log \sigma \right) \right] \dots \dots \dots (4)$$

The implicit regression function can be specified as follows:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots \dots \dots + \beta_{15} X_{15} + \mu_i \dots \dots \dots (5)$$

Where;

$X_1$  = Cooperative membership (dummy; Yes=1; No=0),  $X_2$  = Primary labour of source (Dummy; Paid labor=1, Family Labor=0),  $X_3$  = Farm income (₦),  $X_4$  = Gender of household head (dummy;

Male=1, Female=0), X<sub>5</sub>= Farming as primary occupation (dummy; Yes= 1 =0, if otherwise), X<sub>6</sub>= Level of education of household head (years), X<sub>7</sub>= Marriage status (dummy = 1, if married =0, if otherwise), X<sub>8</sub>= Multidimensional poverty (multidimensional welfare score), X<sub>9</sub>= Access to quality health (dummy; Yes= 1 =0, if otherwise),  $\mu_i$  = Error term

## RESULT AND DISCUSSION

### Cooperative efficiency.

The various hypothesized variables influencing cooperative efficiency in the study area and their intensity, using a three point likert-scale are presented in table 1. The result showed an appreciable level of efficiency of cooperatives in the study area. This may largely be due to efficient management of well organized cooperatives societies. However this empirical evidence in cooperatives efficiency yet needs some level of improvements in order to further enhance its sustainability and to more effectively actualize their goals.

Table 1. Cooperative efficiency profile in the study area.

Incidence Cooperative efficiency variables		MAJOR CONSTRAINTS		MINOR CONSTRAINTS		SATISFACTORY	
		Freq	Perc.	Freq.	Perc.	Freq.	Perc.
Funding	Access to loan	27	12.86	31	14.76	152	72.38
	Loan repayment	22	10.48	46	21.90	142	67.62
Facilities	Transportation	28	13.33	39	18.57	143	68.10
	Marketing	18	8.57	51	24.29	141	67.14
Training		23	10.95	42	20.00	145	69.05
Low patronage		19	9.05	44	20.95	147	70.00
Political interference		17	8.10	48	22.86	145	69.05

Source: Field Survey data analysis result.



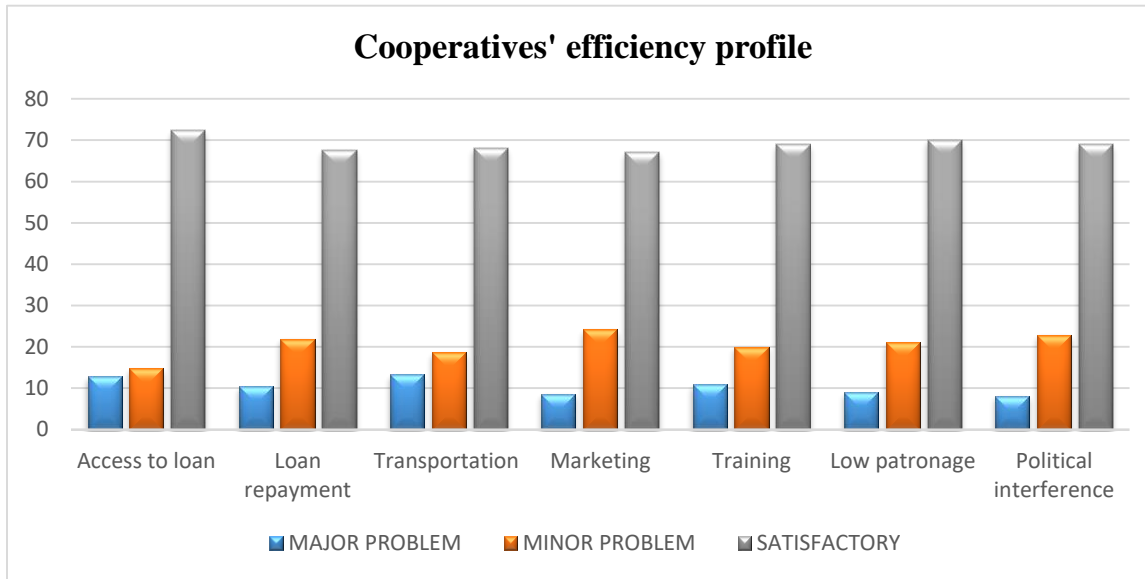


Fig. 1. Cooperative efficiency profile in the study area.

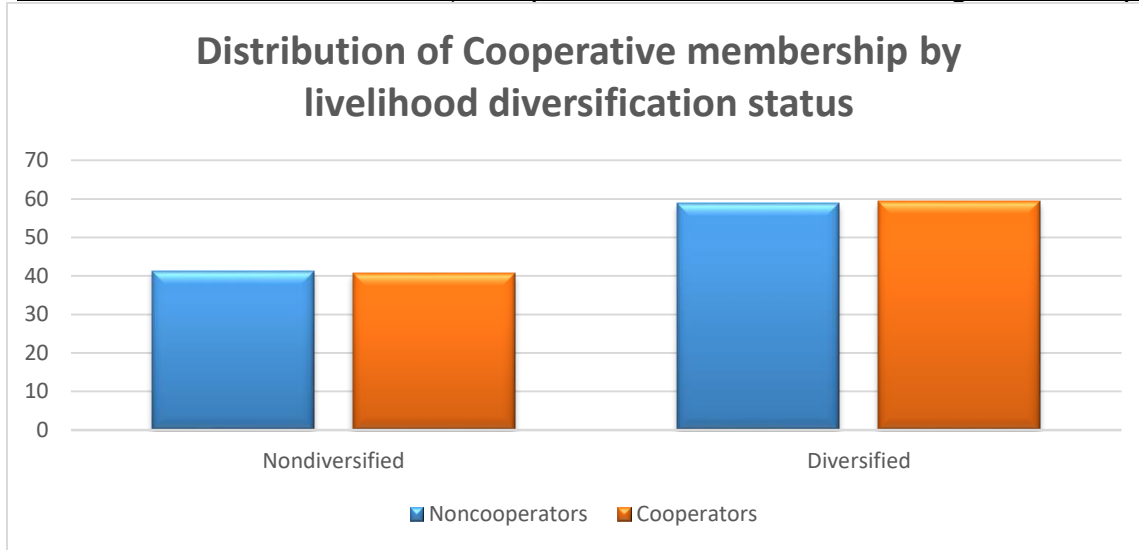
**Cooperative membership and livelihood diversification status.**

The result shows that about 59.41% of the cooperators diversified their livelihood activities, while it is 58.72% for the noncooperator category. This implies that, the proportion of the diversified cooperator household narrowly exceeds the noncooperator category hence, further econometric analysis was conducted and the result is presented in table 5.

**Table 2. Distribution of Cooperative membership and livelihood diversification status**

Source: Field Survey data analysis result. Mean diversification indices parentesized.

Cooperative membership Status	Nondiversified		Diversified		Pooled	
	Freq.	Perctg.	Freq.	Perctg.	Freq.	Perctg.
Noncooperators	45 (0)	41.28	64	58.72	109 (0.3648)	100.00
Cooperators	41 (0)	40.59	60	59.41	101 (0.3691)	100.00
<b>Total</b>	<b>86</b>	<b>40.95</b>	<b>124</b>	<b>59.05</b>	<b>210</b>	



**Fig. 2. Distribution of Cooperative membership by livelihood diversification status.**

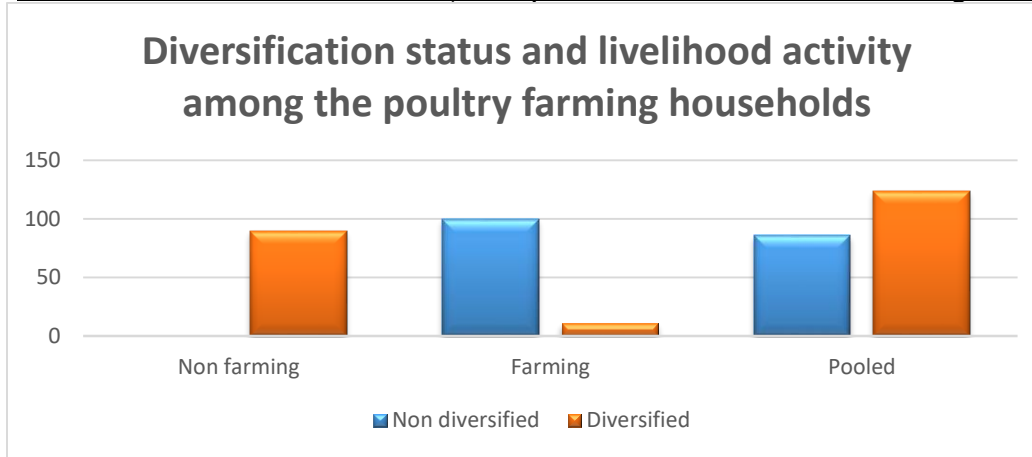
**Diversification status by farming activities among poultry farming households (a).**

The result shows that, a huge proportion of the diversified poultry farming households (89.52%) diversified into non farming activities compared to the relatively fewer proportion (10.48%) in same category who are diversified into farming.

**Table 3. Diversification status and livelihood activity among poultry farming households (a).**

Diversification Status	Non farming		Farming		Pooled	
	Freq.	Perctg.	Freq.	Perctg.	Freq.	Perctg.
<b>Non diversified</b>	0	0.00	86	100.00	86	100.00
<b>Diversified</b>	111	89.52	13	10.48	124	100.00
<b>Total</b>	111	52.86	99	47.14	210	100.00

Source: Field Survey data analysis result.



**Fig. 3. Diversification status and livelihood activity among the poultry farming households.**

**Cooperative membership by livelihood diversification activities among poultry farming households (b).**

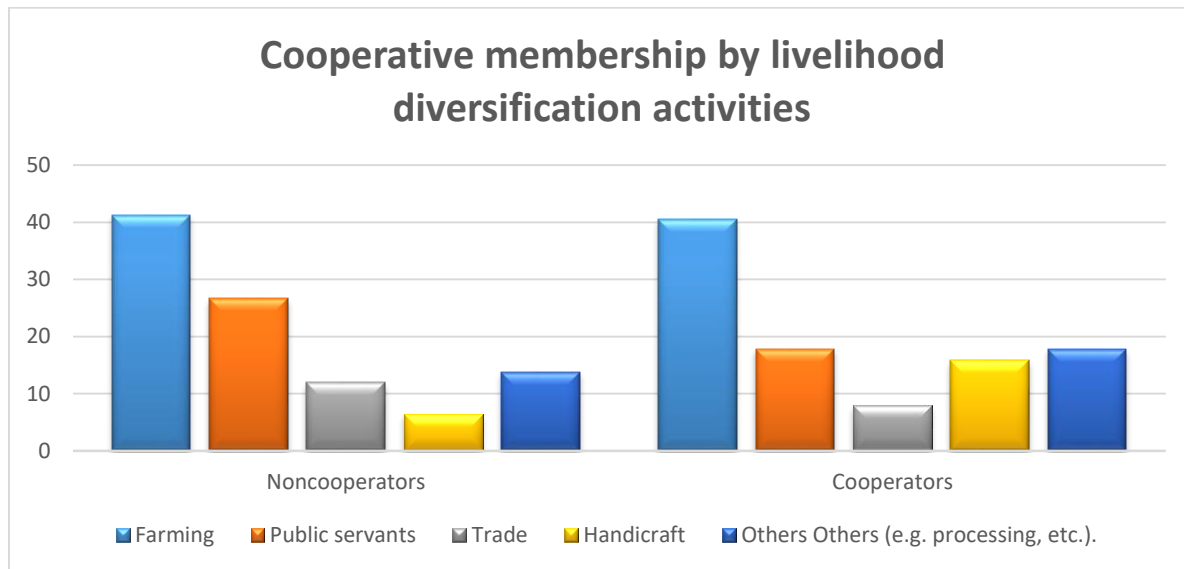
People diversifies their livelihood activities by managing or participating in different activities in order to increase output or earnings. This is may not always be the case as some important economic processes becomes interfered with while attending to some other activities, hereby bringing about diseconomies to scale in the expected productivity line, owing to externality effect, and or vice versa. The details of the livelihood diversification activities of the poultry farming household is presented in table 4 below. Table 4 buttresses table 3.

Result showed that a larger proportion of the diversified primarily engages in civil services (22.38%), relative to those engaged in trade (10%), Handicraft (10.95%), and others (15.71%).

**Table 4. Cooperative membership by livelihood diversification activities among poultry farming households. (b)**

Statuses	Non diversified N=86		Diversified N=124 (Diversified).								Pooled= 210	
	Freq	Perc.	Public service		Trade		Handicraft		Others		Freq	Perc.
			Freq.	Perc.	Freq	Perc.	Freq	Perc.	Freq	Perc.		
<b>Noncooperators</b>	45	41.28	29	26.61	13	11.9	7	6.42	15	13.76	109	100.0
<b>Cooperators</b>	41	40.59	18	17.82	8	7.9	16	15.84	18	17.82	101	100.0
<b>Total</b>	86	40.95	47	22.38	21	10.0	23	10.95	33	15.71	210	100.0

Source: Field Survey data analysis result.



**Fig. 4. Cooperative membership by livelihood diversification activities.**

**Determinants of livelihood diversification depth.**

A simple mean difference significance test will not be a sufficient analysis to conclude an effect estimate or determinant relationship between a dependent variable and an explanatory variable hence, a maximum log-likelihood estimate analysis which is more variable encompassing yet, a robust estimator was employed further.

The result of the Log-likelihood estimate to for the determinants of the level of diversification among the poultry farming households in the study area is shown in table 5 below.

The  $R^2$  was 89%, showing that the model provides a sufficient estimates which was adjusted to 7% based on the nature of explanatory variables in the model. The model’s Prob >  $\chi^2$  was also significant at 1% probabilistic level.

The result showed that, gender of household head negatively influence the level of livelihood diversification, and significant at 10% probabilistic level. This is likely due to the fact that female headed households in many cases strives to make hands meet in order to meet the livelihood demand of the household thus, will decide to diversify, compared to their male headed household counterparts and contrary to the existing apriori expectation from Ayantoye *et al.*, 2017, but attunes the finding of Maja, T., and Oluwatayo, B., 2018.

Also, the level of formal education was found to negatively influence the level of livelihood diversification, and significant at 5% probabilistic level. This is likely due to the fact that, household heads with higher degrees find well paid jobs, or makes more economic rewarding

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 decisions and may not need to get involved in too many livelihood activities, compared to their counterparts with lesser years of formal education and this finding corroborates Maja, T., and Oluwatayo, B., 2018, but contradicts the existing apriori expectations from Raphael *et al.*, 2017, and Pur *et al.*, 2016.

Furthermore, primary source of labour negatively influence livelihood diversification, and significant at 1% probabilistic level. This is likely due to the fact that poultry farmers who engages paid labour usually practice large scale poultry farming hence, are less engaged in some other activities, or incur more time supervising employed labour with no much time for other activities especially when a farm manager is not employed unlike the use of family labour.

Also, farming as primary occupation negatively influence livelihood diversification, and also significant at 1% probabilistic level, which agrees with the findings of Ayantoye *et al.*, 2017, and likely due to the fact that poultry farmers who primarily practice poultry farming may less engage in some other economic activities. The reward for this effect as revealed in this study is increased nominal farm income.

However, multidimensional welfare status of poultry farming was found to positively influence livelihood diversification, and significant at 10% probabilistic level. This corroborates the findings of Oyakhilomen. O, and Kehinde, T, 2016. This is likely due to the fact that wealthy household may tend to diversify their livelihood portfolio, using their existing wealth.

Finally, cooperative membership was found to negatively influence livelihood diversification. This opposes the finding of Raphael *et al.*, 2017, and also significant at 1% probabilistic level. It however attunes with the findings of Ayantoye *et al.*, 2017; Lawal *et al.*, 2017, and Maja, T., and Oluwatayo, B., 2018. This is likely due to the fact that those who involve in cooperative societies are readily exposed to diverse experiences and opportunities in line with their primary occupation hence, might have to focus and consider further advancement on same and not necessarily consider the choice of physical engagement in multiple economic activities outside their primary engagement where they seek to advance upon unlike their non cooperators counterparts, implying an encouragement of labour/economic specialization.

**Table 5. Determinants of livelihood diversification among the poultry farming households in the study area.**

<b>Variables</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>P-Value (p&gt;t)</b>
<b>Farm income</b>	-1.79e-08	1.79e-08	0.319
<b>Gender of household head</b>	-0.0751712*	0.0494803	0.130
<b>Marital status</b>	0.0542011	0.0452031	0.232
<b>Level of Formal Educational (years)</b>	-0.0080424**	0.0038276	0.037
<b>Primary source of labour</b>	-0.1028923***	0.0398515	0.011
<b>Farming as your primary occupation</b>	-0.7405421***	0.0408655	0.000

<b>Multidimensional wellbeing</b>	0.2142345*	0.1649045	0.195
<b>Quality health access</b>	-0.0512561	0.058477	0.382
<b>Cooperative membership</b>	-0.0892643***	0.0345277	0.010
<b>Constant</b>	0.7122124***	0.1225525	0.000
86 left-censored observations at LD<= 0		Pseudo R <sup>2</sup> = 0.8935	
124 uncensored observations		Adj R <sup>2</sup> = 0.0798	
0 right-censored observations		Prob > chi <sup>2</sup> = 0.0000	

Source: Field Survey data analysis result.

## CONCLUSION AND RECOMMENDATIONS

Cooperative membership and livelihood diversification has been solicited as a means of enhancing household's economic situation or status, while little is known about how cooperatives influences livelihood diversification among farm holders alongside some other crucial hypothesized determinant factors. The analysis carried out showed that within the cooperatives, majorities are satisfied with access to loan (72.38%), loan repayment (67.62%), transportation (68.10%), marketing (67.14%), training (69.5%), low patronage (70%), political interference (69.05%), while a relatively large proportion of the respondents (59.04%) are diversified, and a majority (89.52%) of the diversified category secondarily diversified into non farming activities (public service, trade, handicraft, and processing) compared to the relatively fewer proportion (10.48%) in same category who are secondarily engaged in farming. Also, further analysis that; gender of household head, level of formal education, primary source of labour, farming as primary occupation, cooperative membership negatively influence livelihood diversification, while multidimensional poverty was found to positively influence livelihood diversification among the poultry farming households in the study area at 10%, 5%, 1%, 1%, 10%, and 1% probabilistic levels respectively.

From the afore realities; it is hereby recommended that effective cooperatives management be uphold in order to maintain, and or further improve the existing level of cooperatives efficiency in the study area so as to well cushion access to credit menaces confronting agricultural activities. Furthermore, cooperative membership was found to address the menaces of multidimensional poverty and low farm income beyond livelihood diversification i.e., cooperative membership should be prioritized owing to its positive effect in promoting increased farm income, and also farmers multidimensional welfare more, relative to solely livelihood diversification ( see Popoola, D. P, & Ogheneruemu O, 2021, and Popoola et al., 2022). Finally, inputs and adequate incentives should be provided to encourage increased participation in farming, especially poultry farming for enhanced provision of adequate and affordable dietary protein needs and reduced malnutrition, alongside its economic benefits. These inputs supply may as well be disbursed through cooperatives aside government offices, owing to the good performance of cooperatives in the study area, and also encourage increased membership and membership participation in cooperatives in the study area to promote better farming experiences, and improved economic.



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