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MEASURING THE CAUSALITY ON COOPERATIVES, LIVELIHOOD DIVERSIFICATION AND DETERMINANTS AMONG POULTRY FARM HOLDERS: A CASE STUDY OF SOUTH WEST NIGERIA

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ABSTRACT

Cooperative membership and livelihood diversification have been observed to influence households' economic situations, while little is known about their interplays as a matter of mutual exclusivity when they both occur. This study was hence conducted to investigate the level of cooperative performance and how cooperative membership influences livelihood diversification alongside some other imperative hypothesized determinant factors, using primary data collected from 210 poultry farm holders in a multistage sampling process and analyzed with econometric, parametric, and nonparametric analytical estimators at 95 % confidence interval. Results showed that the majority of the cooperator respondents are satisfied with access to loans (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 cooperator-diversified poultry farming households (59.41) narrowly exceeded the non-cooperator category (58.72); hence, further econometric analyses conducted showed that gender of household head, level of formal education, primary occupation, primary labour source, and cooperative membership negatively influenced livelihood diversification, but otherwise for multidimensional poverty, all significant at $P \leq 0.1$, $P \leq 0.5\%$, $P \leq 0.01\%$, $P \leq 0.01\%$, and $P \leq 0.1\%$ probability levels accordingly. Econometric analyses of empirical data revealed that multidimensional well-being significantly increased livelihood diversification, which is offset by an increased level of formal education, cooperative membership, male-headed households, and dependence on family labour; hence, effective cooperative management be further upheld so as to maintain and or further improve the current cooperative performance level in order to cushion credit access constraints confronting agricultural activities. Furthermore, cooperative membership was found to negatively correlate with multidimensional poverty; hence, cooperative membership should be encouraged owing to the way it influences livelihood diversification to improve multidimensional welfare rating. Also, well-trained labour should be employed in order to increase managerial efficiency.

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INTRODUCTION

Agriculture, which remains a general term that encompasses all activities that relate 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 deprived lives in the rural areas, and half of them keeps livestock (Robinson et al., 2011; World Bank, 2016).

Mghenyi et al. (2022) stated that small farmholders who mainly raise their poultry birds for meat and egg production but individually rear less than 1000 birds dominate the Nigerian poultry sector. In confronting these constraints over recent years, interested farmers usually associate and pool their resources through a members-owned and democratically controlled enterprise called Cooperative Society.

The International Cooperative Alliance and International Labour Organization (ICA and ILO, 2015) have defined a cooperative as an autonomous association of individuals who unite voluntarily to

meet their social, economic, and cultural needs and aspirations through this jointly-owned and democratically controlled enterprise. Cooperatives help economic prospects, empower the unprivileged, secure the deprived by facilitating the conversion of idiosyncratic risks to a collective risk, and also mediate their members' access to assets used to maintain a productive living (ICA and ILO, 2015).

Cooperative membership does expose its members to a variety of opportunities in such a way that influences the likelihood of members' livelihood diversification, subject to their interests and enlightenment. Furthermore, Cooperatives are potential means to promote members' social participation, socioeconomic inclusiveness, and poverty escape routes.

However, livestock production as a subsector of the agricultural industry can serve as an important livelihood means and a potential pathway to escaping poverty (IFAD, 2011). However, this can be the primary or secondary livelihood means for the respective less diversified and diversified households, as influenced by households' utility function.

The poultry sector also provides numerous jobs offers for the populace, hereby providing an income source to the people. It also helps provide good animal protein source in their meat and egg products that possess high nutrients (Nasiru et al., 2012; Aral et al., 2013). Whilst much of the existing literature defined 'diversification' in terms of income earning or productive engagements, introducing the 'livelihoods' concept has further broadened the debate process to the inclusion of the means through which the rural households construct a varying activity portfolio and support social capabilities in the quest for survival and struggles so as to improve their standard of living (Ellis, 1998).

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; 'The Determinants of Livelihood Diversification of Selected Rural Households in Kwara State Nigeria' was obtained that gender, primary occupation, poverty status, marital status, and association membership significantly factors influencing livelihood diversification of the respondents within the study area, while in this study, we will further explore/profile the nexuses 'between cooperative membership and livelihood diversification. Also, Raphael et al. (2017), in research titled "The effect of livelihood-diversification on food security among rural farmers in Abia State," obtained that livelihood diversification was a function of credit access, formal education, cooperative membership, household size, and income, while food security status was a function of education, age, income, credit access, and household size while no emphasis was made on cooperative membership as would be addressed in this study.

Furthermore, the study by Ogbanje and Nweze (2014) about the off-farm diversification of small holder farmers in north-central Nigeria used a multistage sampling method to select 180 farming households, showed that off-farm work, farming as a primary occupational, formal education, significantly raised diversification. Still, the farm size, on-farm work hours, age, hours, leisure, farm assets' current value, and crop income reduced off-farm diversification, while the cooperative membership effect was not emphasized as would be addressed by this study.

It is worth noting that the bulk of existing studies on livelihood diversification (such as Adepoju and Obayelu, 2013; Raphael et al., 2017; Pur et al., 2016; Ayantoye et al., 2017; Dilruba and Bidhan, 2016) generalized, while a few focused on crop farmers (such as Okoror et al., 2019; Owusu et al., 2011; Ogbanje and Nweze, 2014; Kimengsi 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 livelihood diversification situation is and as influenced by cooperative membership, and how to better exploit it or provide favorable interventions and necessary policy options. This research thereby sets out to investigate the level of cooperative performance and how cooperative membership influences livelihood diversification alongside some other imperative hypothesized determinant factors in South West Nigeria by answering the following empirical questions;

How much are the cooperatives performing?

1. What is the livelihood diversification index and livelihood diversification profile of the non-cooperator and cooperator farmers?
2. What are the determinants of livelihood diversification of poultry farm holders?

Theoretical Framework

Concerning the theoretical background as of emphasis on what, who, when, and where (Whetten, 1989), this study adapted the rational choice theoretical background in investigating the incidence of cooperative performance and how it influences livelihood diversification among poultry farm holders alongside some other crucial/imperative hypothesized determinant factors in South West Nigeria.

Rational choice theory

The fundamentals of rational choice theory believe that people decide or make individual best decisions under some dominating situations, which will result in either a rational outcome or an irrational one (Steven, 2002). A rational choice is logic-based. The theory of rational choice for consumers' behaviour is rooted in some or all of the following axioms, which also explain the decision-making behavior of an i^{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, 2013).

A poultry farmer may decide to join a cooperative society to maximize utility, which might influence her decision to choose a livelihood strategy or a combination of livelihood strategy from the available sets of livelihood activities to increase utility. Invariably, non-diversification may be due to limited access to information and may yield a different outcome among cooperators. Supposing that there are two feasible outcomes, say, a Cooperative member or a non-cooperator, where the probability of A; $P(A)$ equals the probability of cooperative membership while the probability of B; $P(B)$ equals otherwise (i.e., a non-cooperator). If a j^{th} farmer decides to join a cooperative, her utility/satisfaction function (U) as a cooperator if s/he resolves to join cooperatives which can be well expressed this time as $U_i = f(A \cap B)$, and if she is not a Cooperator as; $U_i = f(A \cap \bar{B})$ but; " 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 valid that $P(A) + P(B) = 1$, meaning a 100% nonadditive chance of occurrence for "A" or "B" and are exclusively mutual.

The decision to diversify (S_i) as influenced by cooperative membership can further determine 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 ($S_1, + S_2, \dots + S_n$), say S_1, S_3 and S_4 , to enhance satisfaction, the utility is expressed as; $U_i = f(S_1 + S_2 + \dots S_i/1-A)$ or $\text{Pr}(S_1 + S_3 + S_4/1-A)$.

METHODOLOGY

Study Location/ Data Source

This study was conducted in South West Nigeria (Oyo State). The State comprises 33 Local Government Areas- LGAs with an estimated population of 7.8 million persons (NBS, 2017), and the land topography covers 35,743 km² 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. Firstly, Oyo State was purposively selected from the existing 6 States in the South West zone due to the existence of a large number of poultry farmers therein (Oyo State Government, 2023), followed by stratification into non-heterogeneous and non-overlapping categories of; dense poultry production area and less dense poultry production area strata, based on the concentration of poultry production activities, from which two agricultural zones, one per strata (i.e., Oyo and Ibadan/Ibarapa respectively)

were randomly selected, out of four existing Agricultural Zones within this State.

The third sampling stage involved 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 Performance

A three-point Likert scale was employed to determine cooperative performance in the study area. The values range from 3-1, and the corresponding indentation is given as follows;

Major problem = 3, Minor problem = 2, Satisfactory = 1.

Livelihood diversification measurement

Margalef Index (MI):

This study applied MI to measure 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 and adapted for this study as follows:

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

Where;

N_i = Gross number of samples' diversity units, S_i = Total Number of farmer's managed diversity units for any i^{th} household, Ln = Natural logarithm, MI is a non-discrete value set (of 0-1) where $\text{MI} \leq 0$ = less diversified, and $\text{MI} > 0 \leq 1$ = otherwise.

Measuring effect of cooperatives and multidimensional poverty on livelihood diversification of poultry farming households

Tobit parametric maximum likelihood estimate:

Because of the inconsistency, alongside the biases of dependent variables in the least square estimate of regression parameters having dualized limits (Greene, 2012), we used a truncated regression, a standardized Tobit model, suited for censored dependent variables. Its implicit function is given as;

$$Y_i^* = X_i'\beta + \varepsilon_i \tag{2}$$

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

The structural models of the regressand " y_i " is expressed as follows;

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

Where;

φ = lower limit,

γ , and γ' = Upper and topmost limit categories.

The explicit logarithmic likelihood function of the model, when the error term dully follows a normal distribution, is given as follows: $0 \sigma^2$. i.e., $\varepsilon \sim N(0, \sigma^2)$.

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

The implicit regression function is specified as follows:

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

Where;

X_1 = Cooperative membership (dummy; No=0; Yes=1); X_2 = Primary labour of source (Dummy; Paid labor=1, Family Labor=0), X_3 = Farm income (₦), X_4 = Gender of household head (dummy; Female=0; Male=1), X_5 = Farming as a primary occupation (dummy; Yes= 1 =0, if otherwise), X_6 = Level of formal education of household head (years), X_7 = Marital status (dummy = 1, if married =0, if otherwise), X_8 = Multidimensional poverty (multidimensional welfare score), X_9 = Access to quality health (dummy; Yes= 1 =0, if otherwise), μ_i = Error term.

RESULTS AND DISCUSSION

Cooperative Performance

The various hypothesized variables influencing cooperative performance in the study area and their intensity, using a three-point Likert-scale, are available in Table 1. The result showed an appreciable cooperative performance in the study area. This may largely be due to the efficient management of well-organized cooperative societies.

Cooperative membership status and livelihood diversification

The result of this analysis in Table 2 showed that about 59.4 % of the cooperator category diversified their livelihood, while it is 58.7 % of the non-cooperators. This, however, implies that the diversified cooperators' household narrowly exceeds the non-cooperator category; hence, further econometric analysis was conducted, and the result is presented in Table 5.

Table 1. Cooperative performance profile in the study area.

| Incidence | | Major Constraints | | Minor Constraints | | Satisfactory | |
|--|----------------|-------------------|-------------|-------------------|-------------|--------------|-------------|
| <i>Cooperative performance variables</i> | | | | | | | |
| Funding | Access to loan | Freq. 27 | Perc. 12.86 | Freq. 31 | Perc. 14.76 | Freq. 152 | Perc. 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 analyses result.

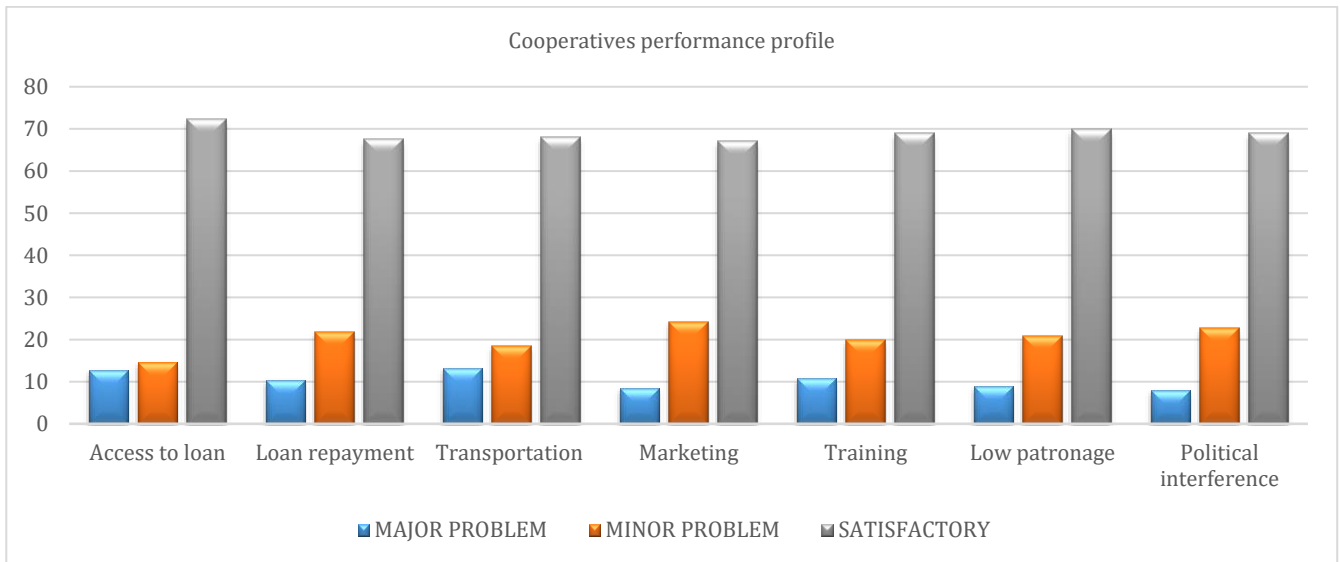


Figure 1. Cooperative performance profile in the study area.

Table 2. Cooperative membership, and livelihood diversification statuses.

| Cooperative membership Status | Less diversified | | Diversified | | Pooled | |
|-------------------------------|------------------|--------|-------------|--------|---------------|--------|
| | Freq. | Perct. | Freq. | Perct. | Freq. | Perct. |
| Non-cooperators | 45.0 (0) | 41.3 | 64.0 | 58.7 | 109.0 (0.365) | 100.0 |
| Cooperators | 41.0 (0) | 40.6 | 60.0 | 59.4 | 101.0 (0.369) | 100.0 |
| Total | 86 | 40.95 | 124 | 59.05 | 210 | |

Note: Mean diversification indices are in parentheses; Source: Field sampling data analyses.

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

| Diversification Status | Non-farming | | Farming | | Pooled | |
|------------------------|-------------|---------|---------|---------|--------|---------|
| | Freq. | Perctg. | Freq. | Perctg. | Freq. | Perctg. |
| Less diversified | 0 | 0.00 | 86 | 100.00 | 86 | 100.00 |
| Diversified | 111 | 89.52 | 13 | 10.48 | 124 | 100.00 |
| Total | 111 | 52.86 | 99 | 47.14 | 210 | 100.00 |

Source: Field sampling data analyses.

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

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

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

People diversify their livelihood activities by managing or participating in different activities in order to increase output or earnings. This may not always be the case as some important

economic processes become interfered with while attending to other activities, hereby bringing about diseconomies to scale in the expected productivity line, owing to the externality effect, and vice versa. The details of the livelihood diversification activities of the poultry farming household are presented in Table 4 below. Table 4 buttresses Table 3, while Figure 3 provides the correlation matrices of the respective analytical variables.

The result in Table 4 and Figure 2 showed that a larger proportion of the diversified primarily engages in civil services (22.38%), relative to those engaged in trade (10%), Handicrafts (10.95%), and others (15.71%).

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

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

Source: Field sampling data analyses result.

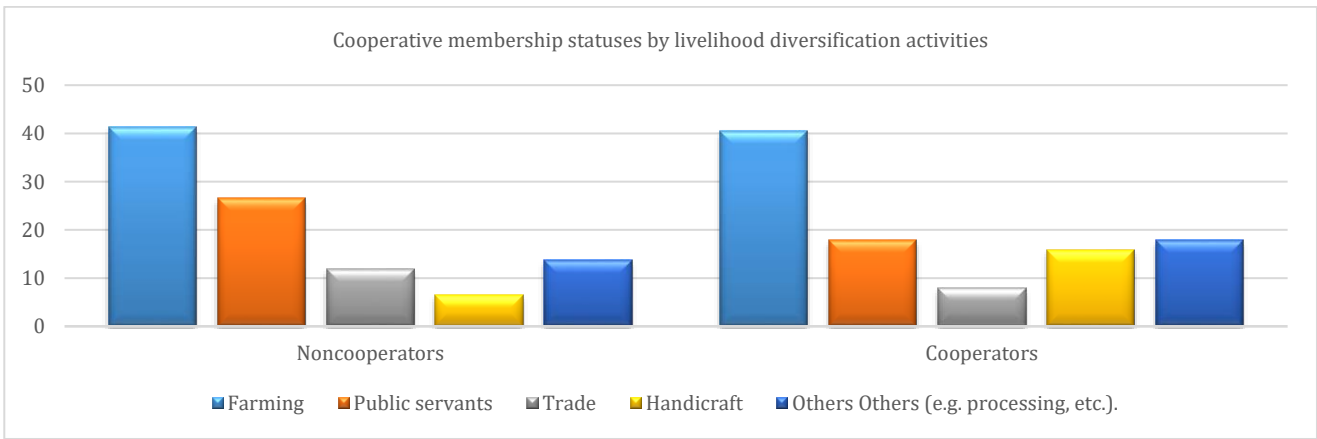


Figure. 2. Cooperative membership by livelihood diversification activities.

Determinants of livelihood diversification depth

A simple mean differences significance test may not sufficiently finalize analyses to conclude causative estimate analyses; hence, further employed a maximum log-likelihood analysis, which is more variable encompassing and a robust estimator.

The result is shown in Table 5 below, with R² being 89%, showing that the model provides a sufficient estimate, which was adjusted to 7% based on the nature of covariates in the model. The model's Prob > chi² was also found significant at a 1% probabilistic level. Analyses revealed that the gender of the household head negatively influences the level of livelihood diversification and is significant at 10% probability. This is may be due to the fact that female-headed households, in many cases, strive 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 and Oluwatayo (2018).

Also, the level of formal education negatively affected the level of livelihood diversification and was significant at a 5% probability level. This may be due to the fact that, household heads with higher degrees find well-paid jobs or make more economically rewarding decisions and may not need to get involved in too many livelihood activities, compared to their counterparts with fewer years of formal education, and this finding corroborates Maja and Oluwatayo (2018), but contradicts the existing apriori expectations from Raphael et al. (2017) and Pur et al. (2016).

Furthermore, the primary source of labour negatively influences livelihood diversification, found significant at a 1% probabilistic level. This may be due to the fact that poultry farmers who engage

paid labour usually operate large-scale poultry farming hence, are less engaged in some other activities or may allocate 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 a primary occupation negatively influences livelihood diversification and is also significant at a 1% probabilistic level, which agrees with the result of Ayantoye et al. (2017), and perhaps 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, the multidimensional welfare status of poultry farming was found to positively influence livelihood diversification and is significant at a 10% probabilistic level. This corroborates the findings of Oyinbo, O., Olaleye, K.T., 2016. This may be due to the fact that wealthy households 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 is also significant at a 1% probabilistic level. It, however, attunes to the results of Ayantoye et al. (2017), Lawal et al. (2017), and Maja and Oluwatayo (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, they might have to focus and consider further advancement on the 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-cooperator counterparts, implying an encouragement of labour/economic specialization.

Table 5. Determinants of livelihood diversification.

| Variables | Dy/dx | Standard error | P-Value (p>t) |
|---|---------------|---------------------------------|---------------|
| Farm income | -1.79e-08 | 1.79e-08 | 0.319 |
| Gender | -0.0751712* | 0.0494803 | 0.130 |
| Marital status | 0.0542011 | 0.0452031 | 0.232 |
| Level of Formal Educational (years) | -0.0080424** | 0.0038276 | 0.037 |
| Primary source of labour | -0.1028923*** | 0.0398515 | 0.011 |
| Farming as your primary occupation | -0.7405421*** | 0.0408655 | 0.000 |
| Multidimensional well-being | 0.2142345* | 0.1649045 | 0.195 |
| Quality health access | -0.0512561 | 0.058477 | 0.382 |
| Cooperative membership | -0.0892643*** | 0.0345277 | 0.010 |
| Constant | 0.7122124*** | 0.1225525 | 0.000 |
| 86 left-censored observations at LD<= 0 | | Pseudo R ² = 0.8935 | |
| 124 uncensored observations | | Adj R ² = 0.0798 | |
| 0 right-censored observations | | Prob > chi ² = 0.000 | |

Source: Field sampling data analyses result.

| Variables | M-dim welfare | Cooperative membership | Liv- diversification | Gender | Formal education | H- size | Farming experience | Infrastructur e access | Farm size | Paid Labour |
|----------------------------|---------------|------------------------|----------------------|------------|------------------|-----------|--------------------|------------------------|-----------|-------------|
| Multidimensional welfare | 1 | | | | | | | | | |
| Cooperative membership | 0.122032* | 1 | | | | | | | | |
| Livelihood diversification | -0.14279** | -0.0881 | 1 | | | | | | | |
| Gender | 0.049099 | 0.038909 | 0.112939* | 1 | | | | | | |
| Formal education | 0.416978*** | 0.077126 | -0.26227 *** | 0.1828 *** | 1 | | | | | |
| Household size | 0.012309 | 0.091093 | -0.01585 | 0.1189 | 0.087705* | 1 | | | | |
| Farming experience | 0.084529 | 0.086542 | 0.019527 | 0.1638* | 0.060865 | 0.371*** | 1 | | | |
| Infrastructural access | 0.107221* | 0.116945* | 0.026903 | 0.0504 | 0.180585 *** | 0.013646 | 0.007064 | 1 | | |
| Farm size | 0.142589* | 0.065821 | 0.129567* | 0.0236 | 0.008314 | 0.1505 ** | 0.1756*** | -0.00363 | 1 | |
| Paid Labour | 0.299419*** | -0.11551* | 0.036537 | 0.1750*** | 0.18591*** | 0.1867*** | 0.151945 ** | 0.13717** | 0.0454 | 1 |

Figure 3. Pairwise correlation matrices for cooperative membership, livelihood diversification and instrumental variables; Source: Field sampling data analyses result.

CONCLUSIONS AND RECOMMENDATIONS

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

From the afore realities, it is recommended that effective cooperative management be further upheld to maintain and improve the current cooperative performance level to cushion credit access constraints confronting agricultural activities. Furthermore, cooperative membership was found to negatively correlate with multidimensional poverty; hence, it should be encouraged because it influences livelihood diversification to improve multidimensional welfare rating. Also, well-trained labour should be employed in order to increase managerial efficiency. 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 also be disbursed through cooperatives aside from 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.

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