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# Socio-Economic Drivers of Smallholder Rice Farmers' Participation in IFAD Value Chain Development Programmes in Nigeria

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## Abstract

*This study investigated the socio-economic drivers of smallholder rice farmers' participation in the international fund for agricultural development (IFAD) value chain development programmes in Nigeria. A multi-stage sampling method was used in selecting 509 programme participants and 608 non-participants for the collection of data for the study. Data was collected using a structured questionnaire. Descriptive statistics and binary logistic regression were used to analyze the data obtained. Results of the descriptive analysis showed that rice farming activities were male dominated in the study area (91.8% and 73.8%) in Niger and Ogun State respectively. The mean farm size for participating producers and non-participants respondents in Niger state were 1.41ha and 2.17ha while the mean farm size for participants and non-participants respondents in Ogun State were 2.52ha and 2.48ha respectively. The result of the logistic regression model revealed that level of education, access to road infrastructure ( $p < 0.05$ ); farm size, cooperative membership, distance from the nearest market, vulnerability context ( $p < 0.01$ ) and access to land ( $p < 0.10$ ) played a significant role in the decision of smallholder rice farmers to participate in IFAD value chain development programme in Nigeria. The study recommended that the cooperative societies should be strengthened since they constituted one of the critical variables that influence the decision of rice value chain actors to participate in the intervention programme.*

**Keywords:** Rice value chain, Participation, Value chain development programme, international fund for agricultural development (IFAD)

## Introduction

Value chain development (VCD) has increasingly been adopted globally by governments, donors, and non-governmental organizations (NGOs) in recent years as a strategy for promoting economic growth and eradicating rural poverty. It has been argued that by focusing on linkages between value chains and actors spanning value chains, development interventions can better identify common problems and solutions that lead to mutually beneficial outcomes for value chain actors (Donovan *et al.*, 2015). In Nigeria, the value chain development programme (VCDP) constituted the focus of the International Fund for Agricultural Development (IFAD) assistance. The International Fund for Agricultural Development provided funding for the Nigerian government's six-

year value chain development initiative. The programme's goal was to increase the income and food security of underprivileged rural households engaged in the sustainable production, processing, and marketing of rice and cassava. Initial implementation of the value chain development programme took place in six states: Anambra, Benue, Ebonyi, Ogun, Niger, and Taraba. The programme was subsequently expanded into three additional states, Kogi, Nassarawa, and Enugu, for a total of nine participating states (VCDP Nigeria, 2022).

Despite the value chain development approach's prominent position in current development agendas and its enormous potential to transform the lives of the most vulnerable, there is surprisingly little evidence that these interventions reduce poverty and improve the livelihood of smallholder farmers (Garbero *et al.*, 2018). Furthermore, studies that investigated the socioeconomic drivers of participation in value chain development programmes in Nigeria are likewise few (Tenable, 2018; Bamidele *et al.*, 2019; Adi *et al.*, 2020). Therefore, this study intends to fill the existing gap by investigating the key factors influencing smallholder rice farmers' decision to participate in IFAD value chain development programmes in Nigeria.

## **2. Theoretical Framework**

The theoretical underpinning for the study was based on Actor-Network Theory (ANT). The theory was developed in the 1980s based on the work of Bruno Latour, Michel Callon, and John Law/ (Seuwou, et al., 2017). The theory's central idea is that human and non-human actors take part in a network to achieve specific goals by fusing divergent interests (Zawawi, 2018). According to actor-network theory, "natural elements," "social elements," "human elements," and "nonhuman elements," are all seen as individual "actors" who are connected and shaped through a process of knowledge translation and who ultimately come together to form a heterogeneous network system through stepwise interactions. (Tang, et al., 2018). The theory also seeks to comprehend how actor networks are formed (Heeks, 2013). According to Callon (1986), the four processes of problematization, interest, enrolment, and mobilization are what aid in the formation of networks. Actor-network theory has been used to effectively characterize network interaction and display network analysis results (Tang, et al., 2018). The actor-network theory also demonstrates how networks are vital to development (Heeks, 2013). The theory is therefore suitable to examine the key factors that determine the participation of rice value chain actors in value chain development programmes. This study is of significance as it will contribute to the advancement of knowledge and understanding of the value chain approach as a development tool. It also provides result-based evidence to guide policymakers in programme design and targeting. Also, the outcome of this study would be valuable in developing appropriate policies and workable development strategies to strengthen the IFAD programme.

## **3. Materials and Method**

### *3.1 Study Area*

The study was carried out in two randomly selected states (Ogun and Niger states), located in the southwestern and north-central geopolitical zones of Nigeria respectively. Ogun state lies between latitudes 3°30'N and 4°30'N, and between longitudes 6°30'E and 7°30'E while Niger state is located between the longitudes 3°30'N and 7°20'E and the latitudes of 8°22'N and 11°30'N. The major rainy season in Nigeria is between April and

July and the minor rainy season occurs between October to November each year. Most of Nigeria's core crops, including melon, rice, yams, pepper, and sorghum, may be grown in Niger State. However, cotton, rice, sorghum, millet, yam, and groundnuts constitute the main crops (Omoare & Oyediran, 2017). Also, Ogun state is endowed with fertile soil which makes it possible to grow a variety of crops, including rice, cowpea, yam, cassava, citrus, vegetables, cocoa, kola nuts, rubber, oil palm, and sugarcane (Akinbode *et al.*, 2011). In terms of scope and limitation of the study, this study was conducted in Nigeria covering only two geo-political zones of the IFAD programme area (Ogun State in the southwestern zone and Niger State in the North-central zone). while the rice value chain actors considered are limited to rice producers (farmers') participation in the value chain development initiatives. The processors as well as the rice marketers were outside the scope of this study. The major limitation of this study is the limited geographic scope covered.

### 3.2 Research Design

The study employed a quasi-experimental cross-sectional research design to identify a comparison group that is like the treatment group. The design was considered more feasible considering time and data constraints.

#### 3.2.1 Method of Data Collection

Primary data were used for the study. Actor-specific structured questionnaires administered via personal interviews were used to obtain the relevant information from the respondents.

#### 3.2.2 Sampling Procedure and Sample Size Determination

A multi-stage sampling procedure was used to choose a representative sample for the study. The first stage involved the random selection of two (2) out of the six (6) participating states. The two randomly selected states were Ogun State and Niger State. In the second stage, three (3) Local Government Areas (LGAs) were purposefully chosen from among the eight participating LGAs based on the prevalence of rice farming in the selected LGAs in each of the two States. For Niger State, the selected LGAs were Katcha, Bida, and Wushishi; while the selected LGAs for Ogun State, were Obafemi-Owode, Egbado North, and Ifo. In the last stage, beneficiaries, and non-beneficiaries respondents were selected at random from the three LGAs in each of the two selected states – using the proportionate-to-size principle. Table 1 below shows the distribution of sample size of respondents based on treatment (participants) and comparison group (non-participants)

**Table1: Sample size of respondents based on treatment and comparison group**

Value Chain Actor	Ogun State		Niger State		Total
	Treated Group (T)	Control Group (C)	Treated Group (T)	Control Group (C)	
Rice producers	240	288	269	320	1,117

Source: Author's computation

### 3.3 Method of Data Analysis

Both descriptive statistics and binary logistic regression model were used to analyze the data

#### 3.3.1 Descriptive statistics

Descriptive statistics such as frequencies, percentages, means, and standard deviations were employed to analyze important socio-economic factors relating to gender, age, educational level, marital status, and size of household.

#### 3.3.2 Binary Logistic Regression Model

A binary logistic regression model was used to analyze the determinants of actor's participation in IFAD value chain development programme. The Logit model is considered as a suitable analytical technique due to its ability to handle binary outcome variables (either participate or do not participate) and ascertain the factors affecting participation. It also allows for estimating the probability that an event occurs or not by predicting a binary dependent outcome from a set of observable independent or predictor variables (Habte, 2016). In term of flexibility, the logistic regression model allows the inclusion of both categorical and continuous independent variables, enabling a comprehensive analysis of factors influencing participation.

The basic logit model is given by.

$$Y = \beta_0 + \beta_i X_i + e_i \dots\dots\dots eqn (i)$$

$$Y = \beta_0 + \beta_1 D_1 + \beta_2 N_2 + \beta_3 H_3 + \beta_4 S_4 + \beta_5 F_5 + \beta_6 P_6 + \beta_7 V_7 + E_t \text{ eqn (ii)}$$

Where Y is dichotomous dependent variable which is represented as.

Y = 1, if the rice farmer participates in IFAD value chain development program; Y = 0, if the rice farmer does not participate in the intervention program.

$\beta_0$  = is the intercept

$\beta_i$  = regression coefficients

$e_i$  = error term, and

$X_i$  = independent variables (i=1, 2, 3.....n) as defined below

The independent variables specified as factors influencing actors' decision to participate are identified below:

$D_1$  = Demographic characteristics

$D_1$  = Gender, (Dummy; If yes = 1 if male, otherwise=0)

$D_2$  = Age

$D_3$  = Marital status

$D_4$  = Household size (in number)

$D_5$  = Level of education

$N_i$  = Natural capital variable

$N_1$  = Access to land and other natural resource stocks. 1=Access 0, otherwise

$N_2$  = Farm size for paddy rice (in hectares)

$H_i$  = Human capital variable

$H_1$  = Years of experience in rice activities

$H_3$  = Access to extension services. (Dummy; If yes = 1, Otherwise=0)

$S_i$  = Social capital variable

$S_1$  = Membership of registered farming group. (Dummy; If yes = 1, Otherwise=0)

$F_i$  = Financial capital variable

$F_2$  = Access to formal credit facilities (Dummy; If yes = 1, Otherwise=0)

$P_i$  = Physical capital variable

$P_1$  = Access to good road infrastructure (Dummy; If yes = 1, Otherwise=0)

$F_2$  = Access to electricity (Dummy; If yes = 1, Otherwise=0)

$F_3$  = Access to potable water supply (Dummy; If yes = 1, Otherwise=0)

$F_4$  = Access to market and market information (Dummy; If yes = 1, Otherwise=0)

$F_5$  = Distance to nearest market (in km)

$V_i$  = Vulnerability context

$V_1$  = Involuntarily being without food (Dummy; If yes = 1, Otherwise=0)

The marginal effect of independent variables indicates how much percent the probability of ( $Y=1$ ) changes when the  $X$  covariates change by one unit.

$$ME = \frac{\partial P_i}{\partial X_i} = \frac{e^{\beta_i X_i}}{(1+e^{\beta_i X_i})^2} \beta_i \quad \text{eqn (iii)}$$

## 4. Results and Discussion

### 4.1 Socio-economic characteristics of rice farmers.

Table 2 presents the socio-economic characteristics of the respondents. The result revealed that majority (91.8% and 83.4%) of the participants and non-participants respondents were male, while few (8.2% and 16.6%) of the participants and non-participants respondents were female in Niger state in comparison with majority (73.8% and 76.4%) of the participants and non-participants respondents who were male while few (26.3% and 23.6%) were female in Ogun State respectively. This result re-affirms the age-long dominance of male in rice farming activities. The age distribution shows that majority (65.7%) of participants falls between the ages 21-40 years while 44.4% of the non-participants fall between the ages 21-40 years in Niger State compared to majority 52.0% of the participants which fall between the ages 41-60 years in Ogun State. This result suggests that larger percentage of the small holder farmers are within the productive age of 21-40 years.

**Table 2:** Socio-economic Characteristics of Rice Farmers

Variables	NIGER STATE				OGUN STATE			
	Participants (Treatment Group)		Non-participants (Control Group)		Participants (Treatment Group)		Non-participants (Control Group)	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
<b>Gender</b>								
Male	247	91.8	267	83.4	177	73.8	220	76.4
Female	22	8.2	53	16.6	63	26.3	68	23.6
<b>Age (years)</b>								
≤20	10	3.7	6	1.9	5	2.1	3	1.0
21-40	177	65.7	142	44.4	83	34.6	122	42.4
41-60	52	19.3	136	42.5	125	52.0	134	46.5
≥61	30	11.2	36	11.3	27	11.3	29	10.0
<b>Marital status</b>								
Single	73	27.1	33	10.3	1	0.4	3	1.0
Married	191	71.0	254	79.4	203	84.6	237	82.3
Divorced	5	1.9	24	7.5	25	10.4	31	10.8

Widowed	0	0.0	9	2.8	11	4.6	17	5.9
<b>Household size</b>								
1-5	114	42.4	118	36.9	92	38.3	118	40.9
6-10	130	48.3	187	58.4	143	59.6	162	56.3
11-16	25	9.3	15	4.7	5	2	8	2.7
Mean	6.56		6.46		6.12		6.2	
SD	2.89		2.25		2.07		1.96	
<b>Farm size (ha)</b>								
0.5-1	158	58.7	125	39.0	50	20.8	52	18.0
1.1-2	109	40.5	83	25.9	68	28.3	84	29.2
2.1-3	1	0.4	53	16.6	52	21.7	79	27.4
3.1-4	1	0.4	48	15.0	45	18.8	67	23.3
4.1-5	0	0.0	11	3.4	25	10.4	6	2.0
Mean	1.41		2.17		2.52		2.48	
SD	0.53		1.20		1.29		1.13	
Total	269		320		240		288	

Source: Author's computation, 2022

Marital status revealed that the majority (71%) of the participants were married while 79.4% of the non-participant respondents were married in Niger state likened to the majority (84.6%) of the participant's respondents who were married, while 82.3% of the non-participant's respondents were married in Ogun state. This finding may indicate that most married people get involved in rice farming or production due to family needs and responsibility to generate more income to cater for their family members. This finding agrees with the studies of (Oruonye, *et al.*, 2021 and Kadiri, 2014) who opined that majority of rice farmers in their study areas were married.

Also, household size for rice farmers indicates that for most participants, respondents (48.3%) range between 6-10 persons while 58.4% of the non-participant respondents fall between 6-10 persons in Niger State in relation to the majority 59.6% and 56.3% who fall between the range of 6-10 persons for both participants and non-participants' respondents in Ogun state. Educational level revealed that the majority (39.4% and 28.8%) of the participants and non-participants respondents had attained a tertiary level of education in Niger State while 26.7% of the participants' respondents had attained a secondary level of education while 30.2% of the non-participants had attained a primary level of education in Ogun state. Farm size indicates that the mean size of the land area owned by participants and non-participants respondents in Niger state are  $1.41 \pm 0.53$  and  $2.17 \pm 1.20$  while the mean size of the land area owned by participants and non-participants respondents in Ogun state are  $2.52 \pm 1.29$  and  $2.48 \pm 1.13$ .

#### 4.2 Determinants of actors' participation in the IFAD rice value chain development programme

The binary logistic regression model was used to identify factors that influences the decision of smallholder rice farmers to participate in IFAD value chain development programme. The logit regression coefficients are estimated by the maximum likelihood method. Table 3 presents the result of the determinants of rice farmers' decision to participate in IFAD rice value chain development programme. A positive coefficient indicates an increase in independent variables result to an increase likelihood of participation in IFAD rice value chain development programme vice versa.

**Table 3:** Logit Regression Results

<b>Rice farmers</b>				
<b>Independent variables</b>	<b>Coeff.</b>	<b>Std. Error</b>	<b>P-value</b>	<b>Marginal Effect</b>
<b>Demographic variables</b>				
Gender	-0.117	0.182	0.519	-0.026
Age	0.058	0.111	0.602	0.013
Marital status	-0.307	0.195	0.115	-0.066
Household size	-0.051	0.036	0.157	-0.011
Level of education	-0.456	0.207	0.027	-0.096**
<b>Natural capital variable</b>				
Access to land	0.455	0.234	0.052	0.106*
Farm size	-0.187	0.063	0.003	-0.042***
<b>Human capital variable</b>				
Years of experience	0.003	0.149	0.825	0.001
Extension services access	-0.041	0.251	0.871	-0.009
<b>Social capital variable</b>				
Membership of coop. society	1.399	0.254	0.000	0.335***
<b>Financial capital variable</b>				
Access to credit	0.053	0.165	0.748	0.118
<b>Physical capital variable</b>				
Access to good roads	-0.999	0.425	0.019	-0.188***
Access to electricity	0.435	0.358	0.224	0.102
Access to potable water	-0.234	0.395	0.554	-0.050
Access to market information	-0.835	0.519	0.108	-0.158
Distance to nearest market	-0.082	0.147	0.000	-0.018***
<b>Vulnerability context</b>				
Involuntarily without food	-1.617	0.179	0.000	-0.333***
Constant	3.721	0.776		0.000***
No of observations				1,117
Log likelihood				-564,234.88
LR Chi-square (17)				365.84
Prob > chi2				0.000
Pseudo R2				0.2448
Marginal effects				;0.66440545

\* = Significant at 10%, \*\* = significant at 5%, \*\*\* significant at 1%

Source: Author computation, 2022

**Educational level:** The results show that educational level had a negative and significant influence on decision to participate in IFAD value chain development programmes (VCDP) by rice producers at 5% level. The marginal effect shows that increasing the level of education decreases the likelihood of rice producers' participation in IFAD value chain development programme by 9.6%. The implication of the result is that the level of education tends to contribute negatively to the level of value chain participation by rice farmers. The reason for the negative influence could be attributed to the fact that as farmers obtain a higher level of education through a formal system, they are more likely to give up rice farming in favour of white-collar jobs and employment in urban areas. The study's findings are consistent with those of Ndlovu *et al.*, (2021), who reported a negative influence of education on women level of participation in vegetable value chain in South Africa. This result also agrees with Sarma and Rahman (2020). However, the result differs from Randela *et al.*, (2008) who found out that highly educated farmers had higher participation rates in the agri-food market because of their superior managerial, production, and marketing abilities.



**Access to land:** Land access for farming is a factor to be considered in production which in recent time has been a constraint in agriculture. This study found that access to land had a positive effect on IFAD rice producers' participation and it was statistically significant at 10%. The marginal effect indicates that rice producers are 10.6% more likely to participate in IFAD rice value chain programme if land is made accessible for rice production. These findings are in consonant with past studies (Fasakin *et al.*, 2022; Magagula and Tsvakirai, 2020 and White, 2012) that stated that access to land has a strong effect on youth decisions to be intensively involved in agriculture, most especially in agricultural production.

**Membership of cooperative societies:** Cooperative membership has a positive and significant influence at 1% with the farmers' decision to participate in IFAD value chain development programme. The marginal effect shows that increasing the level of cooperative association increases the likelihood of rice producers' participation in IFAD VCDP by 33.5%. Meaning, as rice producers get involved in cooperative societies/association, it increases the chances of participating in IFAD value chain development programme. This agrees with the findings of (Fasakin *et al.*, 2021). The result is also consistent with the findings of Mossie *et al.*, (2020) who posited that farmers' cooperatives and associations might be an effective information exchange platform, allowing producers to share experiences to improve production and marketing decisions.

**Access to road infrastructure:** Access to road infrastructure has been shown to assist the efficient use of household resources in rural areas (Habte, 2016). Other factors that have been linked to this include access to electricity, clean water, and health. Contrary to expectation, access to road infrastructure was found to have negative and significant influence on the decision to take part in IFAD value chain development programme by rice producers at 5% level. The marginal effect reveals that rice producers are 18.8% less likely to participate in IFAD rice value chain programme as the road infrastructure increases. The results agree with the findings of Habte (2016) who found access to roads to have negative association with the probability of participation in saving and microcredit programme in rural Eritrea.

**Distance from the nearest market;** Distance to the nearest market had a statistically negative influence on rice producers' decision to participate in IFAD value chain development programme at 1% level. The marginal effect shows that rice producers are 1.8% less likely to participate in IFAD rice value chain programme as the distance from market increases. The result is consistent with the findings of Onya *et al.*, (2016) who posited that the closer a farmer is to a market, the more likely it is that they will participate in one because it is simpler to start a business when one is close to a market. Similarly, Mossie *et al.*, (2020) found out that the quantity of mango produces, supplied for sale in Ethiopia's fruit sector value chain decreases by 0.0096 quintals when the distance from farmers' homes to the nearest market rises by a minute. However, the result contradicts the findings of Awotide *et al.*, (2015) in their studies.

**Vulnerability context** has a negative effect on IFAD rice producers' participation, and it was statistically significant at 1%. The marginal effect shows that vulnerable rice producers are 33.3% less likely to participate in IFAD rice value chain programme. This is contrary to a priori expectation. This result agrees with the finding of Mossie *et al.*, (2020). However, the result is in contrast with the findings of Habte (2016) who reported a highly statistically significant positive relationship between the likelihood of participating in a saving and microcredit programme and the likelihood that negative

events will occur. This relationship indicates that the more households anticipate or experience negative events, the more likely it is that they will choose to participate in a saving and microcredit programme.

**Farm size** has a negative effect on IFAD rice producers' participation, and it was statistically significant at 1%. The marginal effect shows that as the farm size increases there is less likelihood to participate in IFAD rice value chain programme by 4.2. The findings are in agreement with research by Karli *et al.*, (2006) on the factors influencing farmers' decisions to join agricultural cooperatives in the Southeastern Anatolian Region of Turkey, which indicated that the likelihood of participation decreases with the size of the farm. However, the result contradicts the findings of Umeokeke *et al.*, (2017) and Machethe *et al.*, (2008), who posited that larger farm sizes increase farmers' likelihood of participating in the market.

## 5. Conclusion

The study revealed that level of education, access to road infrastructure, farm size, membership of cooperative, distance from the nearest market, vulnerability context and access to land played a significant role in the decision of rice producers to participate in the IFAD value chain development programme. Based on the findings of the study, the following policy recommendations were made: Since cooperative membership had been found to influence the participation of rice farmers in the IFAD value chain development program, it should therefore be strengthened among rice value chain actors as it can equally guarantee early adoption of innovation which will invariably translate to higher productivity and income. Also, vulnerability context should be harnessed in a way to reduce shock among rice farmers since it was found to influence participation in the IFAD value chain development programme. The following suggestions for further research were made: First, considering the fact the study only focuses on small-holder rice farmers' participation in the IFAD value chain development programme, there is a need to carry out a similar investigation on other rice value chain actors (rice processors and rice marketers) in the programmes. Secondly, the impact evaluation of the IFAD value chain development programme on the livelihood outcomes of rice value chain actors in all geopolitical and ecological zones of Nigeria should also be carried out.

## References

- Adi, S.S, Simon, B. P., and Aminu, S. (2020). Impact of value chain development programme (VCDP) on the farmers in Ardo-kola Local Government Area of Taraba State, Nigeria." *IOSR Journal of Agriculture and Veterinary Science*, 13(3), 08-11.
- Akinbode, S. O., Dipeolu, A. O. and Ayinde, I. A. (2011). An examination of technical, allocative and economic efficiencies in Ofada rice farming in Ogun State, Nigeria. *African Journal of Agricultural Research*, 6 (28), 6027-6035.
- Awotide, B.A., Fashogbon, A., and Awoyemi, T.T. (2015). Impact of agro-industrial development strategies on smallholder rice farmers' productivity, income and poverty. The case of contract farming in Nigeria. A contribution paper prepared for presentation

- at the *International Conference of the Centre for the Studies of African Economies (CSAE)*, Oxford, United Kingdom, 5(1): 1-33
- Bamidele, T. Olayide, O and Onigbinde, D. (2019). Assessing IFAD value chain development programme on productivity and income of smallholder farmers in Obafemi-Owode and Yewa North Local Government Areas of Ogun State, Nigeria. *African Journal of Sustainable Development*. 9 (1), 1- 22
- Donovan, J., Franzel, S., Cunha, M., Gyau, A., & Mithöfer, D. (2015). Guides for value chain development: a comparative review. *Journal of Agribusiness in Developing and Emerging Economies*, 5(1), 2-23.
- Fasakin, I. J., Ogunniyi, A. I., Bello, O. L., Mignouna, D. Adeoti, R., Bamba, Z., Abdoulaye, T., and Awotide, B. A. (2022), Impact of intensive youth participation in agriculture on rural households' revenue: Evidence from rice farming households in Nigeria. *MDPI Agriculture*, 12(5): 584.
- Garbero, A., Diatta, D., and Olapade, M. (2018). Impact assessment report: Agricultural value chains support project, Senegal. IFAD, Rome, Italy
- Habte, A. T. (2016). The impact of microfinance on household livelihoods: Evidence from rural Eritrea. *Doctor of Philosophy in the Department of Economics, University of the Western Cape*.
- Heeks, R. (2013). Actor-network theory for development. Working Paper Series. *Centre for Development Informatics, Institute for Development Policy and Management, SED University of Manchester, Manchester, M13 9PL, UK*
- Kadiri, (2014). Evaluation of paddy rice production in Niger Delta Region: A strategy for sustainable rural development. *An unpublished Ph.D. Thesis submitted to the Post Graduate School, Federal University of Technology, Owerri*.
- Karli, A., Bilgic, A., & Celik, Y. (2006). Factors affecting farmers' decision to enter agricultural cooperatives using random utility model in the Southeastern Anatolian Region of Turkey. *Journal of Agricultural and Rural Development in the Tropics and Subtropics*, 107(2), 115-127
- Machethe, C., Jagwe, J., & Ouma, E. (2008). Transaction costs and smallholder farmers' participation in banana markets in the Great Lakes Region. *Department of Agricultural Economics, Extension and Rural Development, University of Pretoria*
- Magagula, B. and Tsvakirai, C. Z. (2020), Youth perceptions of agriculture: influence of cognitive processes on participation in agri-preneurship. *Development practices*, 30: 234-243.
- Margono, T and Sugimoto, S., (2011). The barriers of the Indonesian extension workers in disseminate agricultural information to farmers. *International Journal Basic Applied Sciences* 11 (2), 7302- 4747.
- Mossie, M., Gerezgiher, A. , Ayalew, Z & Nigussie, Z (2020.) Determinants of small-scale farmers' participation in Ethiopian fruit sector's value chain, *Cogent Food & Agriculture*, 6:1, 1842132,
- Ndlovu, P.N. Thamaga-Chitja, J.M, and Ojo, T.O (2021). Factors influencing the level of vegetable value chain participation and implications on smallholder farmers in Swayimane KwaZulu-Natal.
- Omoare, A.O. and Oyediran, W. O (2017). Assessment of factors affecting rice (*oryza spp.*) value chain (RVC) in Ogun and Niger States, Nigeria. *Global Journal of Agricultural Research*, 5(4): 43-59. Published by European Centre for Research Training and Development UK ([www.eajournals.org](http://www.eajournals.org))

- Onya, S.C., Oriala, S. E., Ejiba, I. V and Okoronkwo, F. C. (2016). Market participation and value chain of cassava Farmers in Abia State. *Journal of Scientific Research & Reports* 12(1): 1-11.
- Oruonye, E. D., Tukura Ejati Danladi, J. M. and Wilson-Osigwe, M. U. (2021) The impact of IFAD-value chain development programme to rice yield and income among smallholder farmers in Ardo-Kola LGA, Taraba State, Nigeria. *Journal of Agricultural Science and Food Technology*, 7(4): 66-74.
- Randela R, Alemu, Z.G, and Groenewald, J.A (2008). Factors enhancing market participation by small-scale cotton farmers. *Agreko*. 2008; 47(4):451-469.
- Serman, P. K. and Rahman, M. M. (2020), Impact of government agricultural input subsidy card on rice productivity in Rajbari District of Bangladesh: Application of endogenous switching regression model. *Universal Journal of Agriculture Research*, 8(5): 131-145
- Seuwou, P., Banissi, E., Ubakanma, G., Sharif, M.S & Healey, A. (2017). Actor-network theory as a framework to analyze technology acceptance model's external variables. The case of autonomous vehicles. *International Conference on Global Security, Safety and Sustainability* 305- 320
- Tang, J-W, Chen, M-L, & Chiu, T-H. (2018). An exploratory study on local brand value development for outlying island agriculture: Local food system and actor-network theory perspectives. *Sustainability*, 10(9), 4186
- Umeokeke, N. J., Okoruwa, V. O., Adeyemo, T. A. (2017), Impact of electronic-wallet system on farmer's welfare in Oyo State, Nigeria. *International Journal of Social Economics*, 44(4): 474-480.
- VCDP Nigeria (2022). Who we are, [http://vcdpnigeria.org/who we are/](http://vcdpnigeria.org/who-we-are/) Accessed on December 20, 2022.
- White, B. (2012). Agriculture and the generation problem: Rural youth, employment, and the future of farming. *IDS Bull*, 43: 9-19.
- Zawawi, N. H. M, (2018). Actor-Network Theory and Inter-organizational management control. *International Journal of Business and Society*, Vol. 19 S2, 2018, 219-234

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