Uniosun Journal of Agriculture and Renewable Resources

UJARR

FULL LENGTH RESEARCH PAPER

Drivers of Non-Farm Income Diversification (NFID) among farming households in Moro Local Government Area of Kwara State, Nigeria

Ambali, O.Y., Yusuf. Z. A. and Nofiu, N. B.

Department of Agricultural Economics and Extension Services, Kwara State University, Malete, Nigeria

***Corresponding author:** yusufolatunji25@gmail.com*

A B S T R A C T

The study explores the factors driving the choice and level of non-farm income diversification (NFID) among farming households in Moro Local Government Area of Kwara State, Nigeria. One hundred and twenty respondents mainly from farming households were drawn from the study area through a 2-stage sampling procedure and data were collected with the aid of structured questionnaires. Analytical tools such as descriptive statistics, double-log function and multinomial logit regression model were used to analyse the data. Results of the study revealed that the majority (78%) of the respondents were male, aged (73.4%), married (93%) with 57% literacy level. The respondents realized an average income of ₦23,583 per month from NFID. Determinants of the level of income generated from NFID were education level (Z=2.14), household size (Z=2.72) and farm size (Z=1.70). Moreover, the choice of various NFIDs was significantly driven by household size and level of education. The study recommends that households should improve their level of education so as to improve their skills of NFIDs.

Key words: Non-farm activities, income, diversification, livelihood

INTRODUCTION

Nigerian agriculture is largely dominated by smallholder farmers who are mainly rural dwellers. These farmers are confronted with numerous challenges such as poor land accessibility, poor infrastructural facilities, vulnerability to drought and poor market opportunities with the resultant effect of low returns on farming enterprises (Oluwatoba *et al*., 2021). In spite of these challenges, smallholder farmers still account for about 70% of the total food production in the country (FAO, 2021). Low economic returns

of agricultural production among the rural settlements has resulted to high level of poverty incidence and since agriculture alone cannot reduce the prevailing level of poverty among the rural folks, households tend to diversify into various non-farm activities to improve their living standard.

The term "income diversification" has attracted various definitions by experts in the field of business over time. Ellis (2000) defined diversification of livelihood as a process by which households generate various collection of activities and social support capabilities in their strife for survival and improvement in their standards of living. According to Adebola *et al.*, (2018), income diversification refers to an increase in the number of sources of income or the balance among the different sources. In a similar vein, Sunday *et al.,* (2013) viewed diversification as movement into new fields as well as stimulation and expansion of existing enterprise. Thus, non-farm income diversifications (NFID) may be referred to various non-farm activities by which farmers generate additional income in order to better their standard of living. Non-farm income includes both off-farm wage labour and non-farm self-employment (Escobal, 2001).

The importance of NFIDs in most part of the world cannot be underscored, especially in rural Africa where non -farm activities account for about 40 to 45% of the average rural household income (Mulatu *et al.*, 2017). Wan *et al.,* (2016) pointed out that non-farm diversifications help farming households spread their enterprise risks and livelihood sustainability, offer more remunerative activities to augment agricultural income, provide income potential during the off- farm season and offer a coping strategy for unforeseen farming failure. Matthew and Adesope (2007) indicated that rural dwellers in Nigeria engaged in multiple livelihood diversification activities such as trading, carpentry, bicycle repairs arts and crafts like mat weaving and basket making to supplement earnings from agriculture. From the foregoing, non-farm diversification can thus be viewed as a rational risk mitigation strategy that rural households employ in response to lack of opportunities for specialisation in their farming enterprises. In consistence with this, Maniriho and Nilsson (2018) opined that rural farm holders have been found to diversify their income sources thus, allowing them to spread risk and enhance income generation.

Like many other rural dwellers in Nigeria, farming households in Moro Local Government Area (LGA) of Kwara State engage in various NFIDs such as hunting, local building and construction, petty trading, hand craft and transportation to supplement their sources of income and meet up with their financial obligations. Factors influencing the level of income generated from such NFIDs is yet to be investigated. Though in many parts of Nigeria and other parts of the world, studies have emerged on NFID especially in relation to its influence on households' welfare as well as its impact on risk mitigation among rural farming household (Adelekan &Omotayo, 2017; Odoh and Nwibo, 2017; Gebru *et al.*, 2018; Salam *et al.*, 2019; Sarker *et al.*, 2020). But none of these studies focused on the factors driving the

choice of a particular NFID. Hence, this study focused on examining the determinant of level of income from NFIDs as well as the drivers of the choice of various NFIDs in Moro LGA of Kwara State.

MATERIALS AND METHODS

Study Area

The study was conducted in Moro LGA of Kwara State lying between latitude 8^{O} $24^{'}$ and 83^{O} $6^{'}$ North of the Equator and longitude 4^{O} $10^{'}$ and 4^{O} $36^{'}$ East of the Greenwich Meridian (Ajadi *et al.*, 2016). Kwara is bounded by Benin to the west and by the other Nigerian states of Niger to the north, Kogi to the east, and to the south by Ekiti, Osun, and Oyo. The major food crops produced in the State includes cassava, yam, cocoyam, maize, millet, sorghum and rice. The vegetation type lies between the tropical rainforest and the Guinea Savana with average rainfall of about 1381.9mm and average temperature of about 36^{o}c with land area of about 36,825 square kilometres (Ajibade and Ojelola, 2004). The main ethnic groups are Yoruba, Fulani, Nupe with an inclusion of Hausa. The common non-farm livelihood diversifications in Moro include hunting, local building and construction, petty trading, hand craft, transportation, artisanal fishing among others.

Sampling procedure and sample size

A two-stage sampling procedure was employed for selection of the respondents. Stage one involved random selection of 4 villages from Moro LGA, namely; Elemere, Asomu, Omoni-etile and Shao while the second stage entailed proportionate random selection of 120 respondents from the 4 selected villages.

Model specification

Four functional forms of multiple regression were fitted to examine the factors influencing level of diversification among the household and the double-log was chosen as the lead equation based on the econometric criteria such as the highest R^2 value and the number of significant variables. These are given as:

$$L=b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e \quad \text{Equation (1)}$$

$$LnL= b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e \quad \text{Equation (2)}$$

$$LnL= b_0 + b_1\text{Ln}X_1 + b_2\text{Ln}X_2 + b_3\text{Ln}X_3 + b_4\text{Ln}X_4 + b_5\text{Ln}X_5 + b_6\text{Ln}X_6 + e \quad \text{Equation (3)}$$

$$LnL = b_0 + b_1\text{Ln}X_1 + b_2\text{Ln}X_2 + b_3\text{Ln}X_3 + b_4\text{Ln}X_4 + b_5\text{Ln}X_5 + b_6\text{Ln}X_6 + e \quad \text{Equation (4)}$$

where;

L = Level of NFID measured as the amount of non-farm income generated per month (₦/Month)

X_1 = Age of the household head (years)

X_2 = Farming experience (years)

X_3 = Educational level (years of schooling)

X_4 = Household size (adult equivalent)

X_5 = farm size (acre)

X_6= Marital status (married =1, not married = 0)

b_1, b_2.....b_5 = Estimated coefficients

e = Error term

Multinomial regression model

Following Baiyegunhi *et al.* (2022), a multinomial logit regression (MNLR) model was employed to analyse the factors that determine the choice of NFID among the respondents. This approach involves examining the choice of certain NFID among the various non-farm livelihood practiced by the farming households.

Consider a rational household held$_{ith}$, with a main objective of maximising his non-farm income diversification, NFID$_i$ by comparing the benefits generated by j alternative diversification strategy. This rational household held will select package a over any alternative package j if the associated net benefit is positive. Thus, $\Delta W_{\mathrm{i}} = \mathrm{W}_{\mathrm{i}a} - \mathrm{W}_{\mathrm{ij}} > 0, j \neq a$.Therefore, the MNLR choice function for the i$_{th}$ NFID can be specified as:

$$W_{ij}=\beta_{j\mathrm{i}}X_{ij}+e_{ij} \qquad \text{Equation (5)}$$

where:

W_{ij} = denote the 4 alternative choices of non-farm income diversification (j=1, 2, 3,4,) respectively.

X_{ij} = explanatory variables that determine the choice of NFID$_i$ and they are as defined in equation (1)

β_{ji} = is the parameter associated with X_{ij}
e_{ij} = is a stochastic error term

RESULTS AND DISCUSSION

Socio economic characteristics of the respondents

Table 1 presents the result of the socioeconomic characteristics of the respondents. Majority (82.5%) of the farming household heads were male. This implies that males engage in farming activities than the female counterpart in the study area. This is in line with Omotayo (2016) who reported that males are predominant gender among the farming household heads in Nigeria. More than half (56%) of the respondents were between the age bracket of 21- 50 years and the mean age was 49 years, indicating that the respondents were within the active age group and were agile to diversify to various NFDI for their livelihood. Apurba and Sudipa (2020) observed that the adoption of livelihood diversification is influenced by age of household heads in coastal community of Bangladesh. In terms of marital status, 77.5% of the respondents were married and this implies high level of social responsibility. Ambali and Bakari (2015) posited that married people are expected to have high level of responsibility than the unmarried people and this may necessitate the need for income diversification among households in order to improve their standard of living.

The result also revealed that 68.3% of the respondents had a household size of 6-10 persons and the mean household size was approximately 8 persons, implying that the respondents had a relatively large family. Rationally, it is expected that the size of a household is linked to the need for diversification of income among households. In term of experience in farming, 63.33% of the farmers had over 20 years of farming experience and only few (10.83%) were having 1-10 years of experience. The mean farming experience

was 31 years and this connotes that most of the farmers had tangible experience in farming business. More than half (57%) of the household heads had formal education ranging from primary to tertiary education which conversely suggests that majority of the respondents were literate and had minimum level of education that could enable them to imbibe various livelihood diversification options. Finding further shows that 84% of the respondents had a farm size of 1-10 acres for their farming activities and only few (15.8%) of them operated their farm with more than 10 acres of farm land. The estimated mean farm size was 7.4 acres, indicating that the respondents were small scale farmers (Kwapong *et al*., 2021). The finding concurs with Mgbenka *et al*. (2015) who reported that majority of farmers in Nigeria are small holder farmers.

Table 1: Distribution of Respondents by Socio Economic Characteristics

S/No.	VARIABLE	CLASSES	FREQUENCY	%	MEAN
1	Gender	Male	99	82.50	
		Female	21	17.50	
2	Age	21-30	7	5.80	49.01
		31-40	25	20.80	
		41-50	35	29.20	
		51-60	35	29.20	
		>60	18	15.00	
3	Marital status	Single	27	22.50	
		Married	93	77.50	
4	Household size	1-5	21	17.50	8.25
		6-10	82	68.30	
		>10	17	14.2	
5	Farming experience (Years)	1-10	13	10.83	30.84
		11-20	31	25.83	
		>20	76	63.33	
6	Level of education	No formal education	52	43.30	
		Adult education	5	4.20	
		Primary	33	27.50	
		Secondary	26	21.70	
		Tertiary	4	3.30	
7	Size of farmland (acre)	1-5	62	51.70	7.38
		6-10	39	32.50	
		11-15	12	10.00	
		>15	7	5.80	

Source: Field Survey, 2021

Types and level of income generated from non-farm income diversification

Table 2 shows the result of the types and the level of income generated from NFIDs. Larger proportion (36.7%) of the household heads engaged in trading as their non- farm livelihood diversification, followed by hunting (25%) and building and construction (20.8%). The finding is consistent with Aderinoye-Abdulwahab *et al.* (2015) that most farmers participate in rural marketing as their off-farm livelihood venture in Nigeria. In terms of the level of income generated, 68.33% of the respondents earned between ₦1,000-20,000 on monthly basis from their NFID activities while only few (5.00%) got over ₦60,000 per month. The mean monthly income from NFID was ₦23,583 and this implies that the NFIDs were substantial means of augmenting major source of income as the recorded average is nearly up to the current minimum wage in Nigeria.

Table 2: Distribution of Respondents by the Types and the Level of Income Generated from NFIDs

S/No.	VARIABLE	CLASSES	FREQUENCY	%	MEAN
1	Types of non-farm diversification	Hunting	30	25.00	
		Transportation	15	12.50	
		Building construction	25	20.80	
		Trading	44	36.70	
		Others	6	5	
2	Level of monthly NFID generated (₦)	1,000-20,000	82	68.33	23,583
		21,000-40,000	24	20.00	
		41,000-60,000	8	6.67	
		>60,000	6	5.00	

Source: Field Survey, 2021

Determinants of the level of income generated from non-farm diversification

Result in Table 3 shows determinants of the level of income generated from NFID. The coefficient of education level, measured as a proxy of years of schooling, all things being equal, was positive and significant at 5% level. This means that farmers with higher level of education choose to diversify more into non-farm activities and as a result get larger amount of income than the less educated farmers. The finding corroborates Yeboah *et al.*, (2019) who opined that achievement of higher level of education improves farmers' prospects to secure off-farm employment opportunities and raises their ambitions outside agriculture. Household size had a positive and significant influence on level of non-farm income diversification at 1% level, meaning that the larger the household size, the greater the amount of income generated from NFID. This can be argued that farmers with larger household size might be prompted to intensify their efforts in alternative

livelihood source of income in order to cater for their larger family. This is line with Salam, Bauer and Palash (2019) that farmers engage in non-farm activities in order to augment their income for the livelihood sustenance of their large family. Farm size had a negative and significant influence on level of diversification at 10% level, indicating that farmers with larger farm size tend to be less interested in diversifying to non-farm income in comparison with small scale operators. This could probably because such farmers with larger farm size may be preoccupied with keeping their large acreage of farmland in good shape and as a result may find it difficult to diversify to any form of non-farm enterprise. Another reason might be attributed to the fact that such farmers with large acreage of land may be relatively self-sufficient in terms of food provision and income generated from farming enterprise and as a result not interested in diversifying to another means of livelihood. The remaining factors such as age, farming experience and marital status posed no significant influence on the level of income generated from NFIDs.

Table 3. Determinants of the Level of Non-Farm Income Diversification.

Variable	Coefficient	Standard error	Z-statistic	Probability level
X_1 (Age)	-238.05	371.09	-.641	.523
X_2(Farming experience)	220.82	254.712	.867	.388
X_3 (Education level)	3740.319	1749.707	2.14	.035**
X_4 (Household size)	1699.97	624.944	2.720	.008***
X_5 (Farm size)	- 642.28	379.134	1.694	.093*
X_6 (Marital status)	-7068.60	8492.561	-.832	.407
R-squared	0.731638			

Source: Field Survey 2021, *, **, *** Indicate 10%, 5% and 1% level of significant respectively

Drivers of the choice of non-farm income diversification

Table 4 presents the result of factors driving the choice of non-farm income diversifications among the respondents. Hunting was considered as a reference category among the sources of NFIDs. For transportation means of livelihood diversification, result indicates that an increase in age, level of education and household size of the respondents significantly increases the likelihood of diversifying into transportation relative to hunting at 1%, 5% and 1% significant level respectively. This implies that the more aged, more educated and larger the household size of the respondents; the greater the probability of diversification to transportation relative to hunting. The finding may be alluded to the fact that aged and educated household held may perceive

transportation as a relatively less tedious means of livelihood and thus prefer it over hunting which requires high level of agility. This concurs with Sagan, Sarah and Tony (2015) who reported similar findings on their study on drivers of bush meat hunting and perceptions of zoonoses in Nigerian hunting communities. The farm size also had positive and significant impact on the likelihood of diversifying into transportation at 10%, indicating that the higher the farm size the greater the likelihood of diversification to transportation relative to hunting.

Diversification to local building and construction was positively influenced by marital status (β=18.70) at 1% level of significant which indicates that being married increases the probability of diversifying into local building and construction than hunting. Unlike hunting that is a seasonal means of livelihood diversification, building and construction is a regular source of non-farm income which a married individual farmer may prefer to augment his farm income to cater for his family. Variables such as the level of education (β= -2.70) and farm size (β= -7.54) had negative and significant at 5% and 10% level of probability respectively, implying that the higher the education level and farm size; the lesser the likelihood of diversifying into local building and construction.

Petty trading as a means of livelihood diversification was positively and significantly driven by household size at 5% level, meaning that the larger the household size of the respondents, the greater the probability of diversification to petty trading instead of hunting. This may stem from the fact that trading is considered as an emergency source of income which farmers with larger household explore to cater for his family and this is in tandem with Aderinoye-Abdulwahab *et al*. (2015). The coefficient of the education level and farm size were found to be having a negative and significant influence on likelihood of diversifying to petty trading. This shows that farmers with high level of education and lager farm size were less likely to diversify to petty trading.

The choice of other means of livelihood diversification such as vulcanizing, carpentry and tailoring was positively and significantly determined by the respondents' level of education and farm size at 10% and 1% level respectively. Farming experience and the household size had negative and significant effect on the likelihood of diversifying to other means of livelihood. This connotes that the respondents that were highly experienced in farming and with larger household size were less likely to diversify to other means of livelihood relative to hunting.

Generally, the choice of various NFIDs was significantly driven by level of education and household size. This corroborates the findings on the determinants of the level of income generated from NFIDs (Table 3) and also in line with previous studies by Gebru *et al.* (2018) and Yeboah *et al.* (2019) that education and family size play significant role in livelihood diversifications among households.

Table 4. Multinomial logistic model of drivers of the choice of non-farm income diversification among the farming households

Non Farm Diversification	Coefficient	Standard Error	P-value
Transportation			
X_1 (Age)	3.15	0.08	0.00***
X_2 (Farming Experience)	1.70	1.46	0.25
X_3 (Education level)	2.09	0.92	0.02**
X_4 (Household size)	18.63	1.36	0.00***
X_5 (Farm size)	4.53	2.67	0.048*
X_6 Marital Status (married=1, single=0)	-19.76	731.51	0.99
Local building and construction			
X_1 (Age)	-5.77	4.73	0.22
X_2 (Farming Experience)	0.75	2.12	0.73
X_3 (Education level)	-2.70	1.30	0.04**
X_4 (Household size)	-.90	1.60	0.57
X_5 (Farm size)	-7.54	3.89	0.05*
X_6 Marital Status (married=1, single =0)	18.70	1.57	.00***
Petty Trading			
X_1 (Age)	-1.55	3.09	0.61
X_2 (Farming Experience)	-1.26	1.32	0.34
X_3 (Education level)	-3.77	1.65	0.02**
X_4 (Household size)	2.45	1.20	041**
X_5 (Farm size)	-4.75	1.15	0.00***
X_6 Marital Status (married=1, single =0)	-1.59	1.52	0.29
Others			
X_1 (Age)	0.91	2.88	0.75
X_2 (Farming Experience)	-20.47	1.57	0.00***
X_3 (Education level)	1.21	0.68	0.073*
X_4 (Household size)	-17.64	1.42	0.00***
X_5 (Farm size)	19.50	0.86	0.00***
X_6 Marital Status (married=1, single =0)	-0.16	1.36	0.91
LR chi2(30)	324.31		
Prob > chi^2	0.02		
Pseudo R^2	0.69		
Log likelihood	-57.15		

Source: Field Survey 2021.

CONCLUSION AND RECOMMENDATIONS

In conclusion, farming households in Moro local government area of Kwara State majorly partake in trading and hunting as their non-farm livelihood diversification. Level of education, farm size and household size influenced the amount of income

generated from NFIDs among the respondents. Likewise, the choice of various NFIDs was driven by level of education and farm size. Thus, the study suggests that households should improve their existing level of education so as to further improve their skills of non-farm income diversifications. More so, farmers with larger household size should expand their level of non-farm income diversification activities in order to cater for their large family.

REFERENCES

Adebola, S. D., Bola A. A., Abiodun O. O., Abeeb T. O., and Afees B. A. (2018). Effect of income diversification on household's income in rural Oyo State, Nigeria. *Economica*, 14(1): 12-20.

Adelekan, Y.A. & Omotayo, A.O. (2017). Linkage between Rural Non-Farm Income and agricultural productivity in Nigeria: A Tobit-two-stage least square regression approach. *The Journal of Developing Areas*, 51(3): 317-333.

Aderinoye-Abdulwahab, S.A., Nwachukwu, S.C., Salawu, O.L. and Popoola, P. O. (2015). Assessment of livelihood activities of rural farmers in Kwara State, Nigeria. *Ethiopian Journal of Environmental Studies and Management*, 8(2):120-129.

Ajadi, B.S. Adaramola, M.A. Adeniyi, A. and Abubakar, M.I. (2016). Effect of effluents discharge on public health in Ilorin Metropolis, Nigeria. *Ethiopian Journal of Environmental Studies and Management*, 9(4): 389-404

Ajibade, L. T. and Ojelola, A. O. (2004). Effects of automobile mechanics activities on soils in Ilorin. In Nigeria Geo-Studies Forum. *An International Journal of Environmental and Policy*, 2(1):18-27

Ambali, O.Y., Bakari, U.M. (2015). A Socio-economic analysis of small ruminant marketing in Mubi zone of Adamawa State. *Adamawa State University Journal of Agricultural Science*. 3(1): 55 - 61.

Apurba, R. and Sudipa, B. (2020). Determinants of Livelihood diversification under environmental change in coastal community of Bangladesh. *Asia-Pacific Journal of Rural Development*, 30(1–2) SURE OF THIS????: 7–26.

Baiyegunhi, L.J.S. Akinbosoye, F. and Bello, L. O. (2022). Welfare impact of improved maize varieties adoption and crop diversification practices among smallholder maize farmers in Ogun State, Nigeria. *Heliyon*, 8(5): 1-8.

Bourguignon, F., Fournier, M. and Gurgand, M. (2007). Selection bias corrections based on the multinomial logit model: Monte Carlo comparisons. *Journal of Economic Survey*, 21(1): 174–205.

Ellis F. (2000). The Determinants of rural livelihood diversification in developing Countries. *Journal of Agricultural Economics*, 51(2): 289-302.

Escobal, J. (2001). The Determinants of non-farm income diversification in rural Peru. *World Development*, 29(3): 497–508.
Food and Agriculture Organisation (FAO) (2021). *Nigeria at glance*.

https://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/

Gebru,G. W. , Ichoku, H. E. and Phil-Eze, P. O. (2018). Determinants of livelihood diversification strategies in eastern Tigray region of Ethiopia. *Agriculture & Food Security,* 62(7): 1-9.

Kwapong, N.A., Ankrah, D.A., Anaglo, J.N. (2021). Determinants of scale of farm operation in the eastern region of Ghana. *Agric & Food Secur* 10, 31. https://doi.org/10.1186/s40066-021-00309-6.

Maniriho, A. and Nilsson, P. (2018). Determinants of livelihood diversification among Rwandan households: The role of education, ICT and urbanization. *East Africa Research Papers in Economics and Finance, EARP-EF No. 2018:24*

Matthew N. E. C. and Adesope, C. O. N. (2007). Livelihood diversity strategies of rural women in Imo State, Nigeria. *The Nigerian Journal of Agricultural Extension*, 10: 117-123

Mgbenka, R.N., Mbah, E.N.and Ezeano C.I. (2015). A review of small holder farming in Nigeria: Need for transformation. *Agricultural Engineering Research Journal*. 5(2):19-26

Mulatu, T. D., Derartu, H. and Abune, S. (2017). Factors affecting off farm income diversification and its effects on rural household poverty in Ethiopia. *International Journal of Agricultural Economics, Extension and Rural Development,* 3(9): 103-115

Odoh, N.E. and Nwibo, S.U. (2017). Socio-Economic determinants of rural Non-farm households income diversification in Southeast Nigeria. *International Research Journal of Finance and Economics*. Issue 164:1-13. http://www.internationalresearchjournalOffinancean deconomics.com

Oluwatoba, J.O., Thomas, S. J., Milu M., Adebayo B A., Lenis-Saweda, O. L. and Titus, O.A. (2021). "A revisit of farm size and productivity: Empirical evidence from a wide range of farm sizes in Nigeria". *World Development*, 146(1): 1-4.

Omotayo, A.O. (2016). Economic Synergy between Rural Off-farm Income and Households' Poverty in Ekiti State, Nigeria. Journal of Human Ecology, 56(2):99-106

Salam, S., Bauer, S., & Palash, M. S. (2019). Impact of income diversification on rural livelihood in some selected areas of Bangladesh. *Journal of the Bangladesh Agriculture University,* 17(1):73–79.

Sagan, F., Sarah, B.P. and Tony, L.G. (2015). Drivers of bush meat hunting and perceptions of zoonoses in Nigerian hunting communities. *PLOS Neglected Tropical Disease*. 9(5): e0003792. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4441483/.

Sarker, M. N. I., Wu, M., Alam, G. M., and Shouse, R. C. (2020). Livelihood diversification in rural Bangladesh: Patterns and determinants in disaster prone riverine islands. *Land Use Policy*, 96(1):1-11.

https://doi.org/10.1016/j.landusepol.2020.104720

Sunday, A. E. Clement, A. U. & Eteng, U.O. (2013). Beyond oil: Dual imperatives for diversifying the Nigerian economy, *Journal of Management and Strategy*, 4(3): 81-93

Wan, J., Li, R., Wang, W., Liu, Z., Chen, B. (2016). Income Diversification: A Strategy for Rural Region Risk Management, *Sustainability*, 8(10): 1-13.

Yeboah, F.K., Jayne, T., Muyanga, M. and Chamberlin, J. (2019). Youth access to land, migration and employment opportunities: Evidence from sub-Saharan Africa. *IFAD Research Series*, 53: 1-50