

Income Determinants of Small Scale Farmers in Wamakko Local Government Area of Sokoto- Nigeria

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ABSTRACT: *Small scale farming is predominant occupation among the rural populace in Northern region of Nigeria, but have suffered serious setback as a result of many challenges such as inadequate technological farm tools, support from government, marketability of the farm product etc. These economic and environmental conditions make it difficult for small scale farmers to cultivate sufficient crops that will be enough for their personal consumption and for commercial purposes. In this study, we examine the factors that determine income level of small scale farmers in Wamakko. A sample of 106 small scale farmers based on multi-stage sampling technique were examined using structured interview, both descriptive (simple percentages) and inferential (Ordinary Least Squares regression-OLS) statistics were applied to analyse the sourced data. The study found that farm size, Household (family) size, stock of farm output and subsidy have significant positive impact on the income level of small scale farmers in Wamakko while access to credit and farming experience have positive but not significant influence on the level of income. The study recommends development of idle land which can be used for farming and value creation. Subsidy regimes from the government should be maintained and its scope needs to be widened, this will accommodate and empower more small scale farmers to maximize their potentials and raise their standard of living.*

KEY WORDS: *Small-scale farming, Income, Wamakko LGA, OLS*

Date of Submission: 22-11-2018

Date of acceptance: 08-12-2018

I. INTRODUCTION

Extreme poverty is overwhelmingly rural, majority of the world's poor live in rural areas and depend on agriculture and agriculture related small industries and services for a living. These include small scale farmers, landless wage laborers, pastoralists and artisanal fishers (Ogunleye, 2010). Of these are the world's 450 million small scale farming households who cultivate less than two hectares (Food & Agricultural Organization-FAO, 2005). World Development Report asserts that agriculture remains the main source of livelihoods for an estimated 86 per cent of rural people (2.5 billion people) and for many countries the main opportunity for sustained, employment-based growth (World Bank, 2017). The agricultural sector-broadly defined to include crop, livestock, forestry, fisheries, and wildlife- is the backbone of the economies of most Sub-Saharan Africa countries and will continue to be so in the foreseeable future. The key role of agriculture in Africa's economy life is apparent- agriculture accounts for 35 per cent of the continent's Gross Domestic Product, 40 per cent of its export, 70 per cent of its employment, and more than 70 per cent of the population depend for their livelihoods on agriculture and agri-business (Kijne, 2015).

Small scale farming is predominant occupation in Northern region of Nigeria more specifically in Sokoto, but have suffered a serious setback as a result of many challenges confronted by the small scale farmers such as constrained access to markets, lack of sensitization and technology transfers to farmers, lack of association forums between small scale farmers and pesticide multinationals and low levels of technology adoption. As a result, Nigeria remains among the relatively poor countries in Africa, with more than 80% of people living below the poverty line and between 1.5 and 3.5 million people dependent on food assistance at any given time (World Bank, 2017). These economic and environmental conditions make it difficult for small scale farmers to cultivate sufficient crops that will be enough for their personal consumption and for commercial purposes (Byela, 2015).

However, in the early 1960s agriculture is known to be the back bone of the economy before the discovery of crude oil in the early 1970s when agriculture was severely neglected by the government and many farmers engaged in the farming activities, this indeed result in rampant poverty as oil industry cannot provide employment to the growing population in Nigeria (Ogubuabor, 2013). Nonetheless, efforts were been made by various administrations to revamp and restore the glory of the agricultural sector but economic history provides us with ample evidence that these efforts have not make significant impact to the rural farmers that are fully engaged in farming as their source of livelihood, this is mainly due to lack of economic diversification and structural transformation, weak institutions, lack of developmental state as well as indiscipline and corruption (Apata et al, 2015). Although the present administration in 2015 lunched Anchor Borrowers Fund through the Central Bank of Nigeria which will give small scale farmers access to credit facilities to enhance their farming activities, indeed is a welcome development going by the preliminary assessment by agricultural expert as well as scope of the programme, but there is the need for consistency and commitment toward reaching the target and active farmers if output and employment levels are to be raised and poverty alleviation is at the forefront of the programme.

Nevertheless, many studies have highlighted the challenges faced by small scale farmers as well as how small scale farming help in curbing poverty in the society. Sokoto District Development Plan (SDDP) in 2014 stated that the proportion of household incomes emanating from agricultural activities is about 80%. The question is what are the major problems of small scale farming which if address will make significant impact on poverty alleviation in Sokoto state. Scholars have equally debated on those problems confronted by small scale farmers, in terms of farm tools, lack subsidy from government access to credit (see Olawepo, 2010; Binvyo&Ajab, 2012; Ogubuabor, 2013; Byela, 2015; Apata et al, 2015, Sallawu, Tanko, Nmadu&Ndanitsa, 2016). The studies concentrated on how small scale farming improve living standard of farmers and failed to inquire on some key income determinants of small scale farmers (Stock of farm output, subsidy and Household size). This study moves further to examine the determinants of small scale farmers' income in Wamakko LGA of Sokoto by accommodating the above listed variables in the analysis. It is against this background that this paper seek to answer the following questions: What determines the annual income level of small scale farmers in Wamakko? Does small scale farming reduce poverty incidence among farmers based on socio-economic factors influencing their income level? To this end, the paper is organized into six sections including this introduction. Section two reviews relevant and related literature; section three presents the methods used by the paper to achieve its objectives; section four covers interpretations and discussion of results; section five provide the concluding remarks and section six proffers some recommendation.

II. REVIEW OF LITERATURE

Small scale farming is often associated with backwardness, non-productive and non-commercial subsistence agriculture (Kristen et al, 2010). A small scale farmer is describe as one whose scale of operation is too small to attract the provision of the services she/he needs to be able to significantly increase productivity (Kristen (1998). Small scale farming or small scale holders are also known as family farming ranges from substance to influence or inconsistency surplus production for marketing purpose (Fraser, 2010). According to Zithutha (2010), small scale farming is one practiced in rural areas on a small scale basis with purpose of feeding family members and selling surplus. Small scale farming had opportunities such as high land potential, presence of land water source, a rapidly growing infrastructure, availability of cheap labor and market (Lake, 2007).

The World Bank (2000) described rural farmers in Nigeria as small scale operators, tenants or landless, characterized by low in come and high nutritional deficiency. They also have limit edassets, large family size and high dependency rates. Despite their situation, the serural farmers and their farms collectively form an important foundation on which the nation economy revolves. The significance of rural farming can thus ,not be over emphasized as rural areas form the food basket of the nation, and amaj or source of export materials. The fortunes of poor rural farmers can be determined by a number of factors. The initial distribution of income accruing to the rural farmer stands out as the most accessible determinant of the rural standard of living, since it is most quantifiable factor and them ostreliable asmajority of the people in the rural areas are pre-dominantly farmers (Olawepo, 2010).

Adedayo,(1985) suggested that the income levels of rural communities may be attributed to certain crucial factors, and understanding these factors may hold the keys to effective rural development policy making. This in part led to the submission of Olatona (2007),that a closer look at the determinants of rural income provide sanin-depth knowledge into the factors that explain low income yields and poverty in rural regions where these rural farmers constitute about 90%ofthetotal population (Olayemi, 2001;Olatona,2007).

Chaplin,Davidova,andGorton(2002) as cited in Olawepo (2010) observed that size of house hold farms,level of farmer'seducation are the determinants of income diver sification,and that diver sification might be a feasible way out of vicious circle of fragmented farms, low productivity and poor profitability by improving the asset based and education of poorest farmers.Lending credence to this, Adebayo,Akogwuand Yisa(2012) point edout that educational level, membership of cooperatives and non-farm income are variables that significantly increase income diversification of farm house holds while farm sized ecreases the income diversification of households.Bekeluand Abdi-khalil(2013) revealed that age, land size,and averaged istance from mark ethave negative significant influence on the household's decision towards diversification,while family size,number of extension visit per year and education boost income diversification among small scale farmers.Income diversification, savings and investment and their determinants of small scale farmers was examined by Olawepo (2010) and Sallawu et al. (2016) with output level, access to credit, farm- size as key determinants.

Acutel and constraint and absence of well operating land market may preven thouse holds who possess particular skills or abundantlab our from exploiting their comparative advantageous position, and seasonality of farming activity results in unemployment and under employment for a significant proportion of the labour force during most periods of the year. Evidences abound that among the rural poor the farming house holds are poorer. But the non-farm sector offers potential to absorb a growing rural labour force, slow rural-urban migration, contributes to national income growth and promotes a more equit able distribution of in come (Lanjouw,1997;Fikru,2008).

III. METHODOLOGY

3.1 Study Area

Wamako is a Local Government Area in Sokoto State, Nigeria. Its headquarters are in the town of Wamako (or Wamakko) on the Sokoto River. It has an area of 697 km² and a population of 179,619 at the 2006 census. The concentration of wealth, prestige, the political power and religious learning centers in Wamakko attracted large numbers of rural-urban migrants, both from the neighboring state and from distance regions. Presently the ongoing projects in Wamakko are Sokoto State University, National Youth Services Corps camp (NYSC), Amusement Park. As of 2010 the research conducted by National Bureau of Statistics, the estimated rural –urban migrants in the area is about 4,536 and it's increasing at the rate of 10% annually. Wamakko Local government is mainly populated by Hausa people. It also comprises four villages: Kammata, Gwamatse, KauranKimaba and KokaniCidawa. The inhabitants are mostly farmers and animal rearers but the initial inhabitants were Sulubawa but now the area were dominated by Hausa.

3.2 Data, Sampling Technique and Sample Size, and Model Specification

Primary data sourced through structured question naire was used by the paper. Multi-stage sampling technique was employed in the collection of primary data for this study.In the first stage, four villages in the Local Government Are aware selected.In these cond stage, one community each was randomly selected from the selected villages, giving a total of 4 communities (Kalambaina, Kasarawa, Kwalkwalawa and Cidawa). In the third stage,sampling of farm house holds in each community was determined proportion ately using Yamane's(1967) for mulaas adopted by Agu and Udoh(2012).

$n=(1)$

$$\frac{N}{1+N(e)^2}$$

where: n = sample size; N = finite population; e = limit of tolerable error (level of significance= 0.05)and1 = constant. Datawerecolectedusingstructured questionnaire.Data for thisstudywasanalyzed using both descriptive and inferential statistics. Toanalyzethedeterminantsof small scale farmer's income, multiple regressionmodelwas used.

Following Olawepo (2010) and Sallawu et al. (2016),theregressionmodel isdefined and specified as;

$$Y = \alpha + FS\beta_1 + HHS\beta_2 + OSI\beta_3 + ATC\beta_4 + SUBD\beta_5 + EDU\beta_6 + EXP\beta_7 + SFO\beta_8 + \mu \quad (2)$$

Where;

Y = annual income of small scale farmer

FS = farm size

HHS = household size

OSI = other sources of income

ATC = access to credit facilities

SUBD = subsidy from government and non-governmental organizations

EDU = educational level

EXP = Years of farming experience

SFO = Stock of Farm Output/month

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ & β_6 are the coefficients of the regression model

α = intercept (constant) of the model

μ = error term

OLS regression model was used to test the hypothesis formulated for his study. In testing the hypothesis, the estimated coefficients in the OLS model were used. The statistical significance of the estimated coefficient aided the confirmatory tests.

IV. RESULTS AND DISCUSSIONS

Table 1 describe the socio-economic characteristics of small scale farmers in Wamakko LGA with most the respondents being male (92 = 96%) as opined by Okere and Shitu (2012) that most of the farmers in rural areas are mainly men. Also, the dominant age group in the small scale farming activities are mostly youth between the ages of <30-49 years, this conforms to the findings of Awoniyi and Salman (2012). From the analysis, house hold size in the study are genuinely substantial with an average of 5 members. This is inline with the finding of Okere and Shittu (2012) who affirmed that larger households may have to depend on more income generating activities for sustainable live lihood than smaller sized house holds. Most of the respondent attended the Qur'anic school (72 = 77%) with only few having access to western education. Furthermore, majority of the farmers have the opportunity to access credit and support from the government with more than 90 (93%) of the farmers were given credit/loan support at a point in time. An average of 21 years of experience in farming was recorded among the respondents and 1.4 hectares as average farm size among the respondents.

Table 1: Socio-economic Factors of Small Scale Farmers in Wamakko LGA

Variables	Frequency	Percentage	Mean(StandardDev.)
Age			
<30	20	21.20	
30-39	61	64.66	
40-49	11	11.66	
50-59	9	9.54	
> 59	5	5.3	25.2(5.3)
HouseholdSize			
1-5	69	73.14	
6-10	22	23.32	
11-15	6	6.36	
>15	9	9.54	5.2.(11.67)
YearsofExperience			
<11	11	11.66	
11-20	31	32.86	
21-30	52	55.12	
31-40	7	7.42	
> 40	5	5.30	22.5(7.3)
FarmSize			
0.5-2.0	91	96.46	
2.5-4.0	11	11.66	
4.5-6.0	3	3.18	
>6.0	-	0.00	1.46(16.4)
Gender			

Male	92	97.52	
Female	14	14.84	
Mode of Acquiring Land			
Educational Level			
None	4	4.24	
Quranic	72	76.32	
Primary	5	5.3	
Secondary	20	21.2	
College of Education	2	2.12	
Polytechnic	3	3.18	
Yes	94	88.87	
No	12	11.32	
Subsidy			
Yes	59	55.66	
No	47	44.34	
Other Sources of Income			
Yes	32	30.19	
No	74	69.81	
Source: Field Survey, 2018.			

Subsidy regime from the government also covers majority of the small scale farmers in the study area as more than 55% of the respondents enjoy one type of subsidy or the other and about 45% of them did not enjoy any support in form of subsidy from the government. In term so flevel of education, only 3.18% had tertiary education in the study area. It can be seen that the literacy level of farm house holds in the study area was relatively low. This is in line with the findings of Awoniyi and Salma (2012) who point ed out that low education all evel among farming house holds undoubtedly affect their income diver sification patterns and that generally, there is a low level of education among the rural farming house hold sand this has implications for their income-earning capacity as there spondents may lack there quired skill to secure well paid jobs. Apart from farming activities, only 30% of the respondents have other sources of income for their livelihood and about 70% of them have no any other source of income aside small scale farming.

Table 2: Result of the Regression Model
Dependent Variable (Y) = Annual Income (AI)

Independent variables	Coefficients
Educational Level	-0.016 (0.726)
Household Size	0.078 (0.000)***
Years of Experience	0.112 (0.168)
Farm Size (Hectares)	0.282 (0.008)***
Access to Credit	0.008 (0.929)
Other Sources of Income	-0.213 (0.297)
Stock of Farm Output	0.263 (0.085)**
Subsidy	0.411 (0.015)***
R ²	0.589
F statistics	15.119***

Source: Author's computation using SPSS software version 20.0, values in the paranthesis represent the t-ratios of the estimated parametres and *, ** & *** represent 10%, 5% and 1% significant level respectively.

Table 2 shows that the coefficient of educational level is -0.016, which is not significance at 1%, 5% and 10% level, this indicate that annual income of small scale farmers is not determine by educational level. Household size's coefficient is measured as 0.078 and significance at 1% level, this shows that annual income is determine by the size of household. As family size increase by 1%, annual income will also increase by 0.078%. The coefficient of farm size is 0.282, which is significance at 1% level, this indicates that there as farm size increase by 1 hectare annual will increase by 0.282%. The coefficient of stock of farm output is 0.263 and significance at 5% level, this indicates that annual income is determine by stock of farm output. As stock of farm output is raised by 1% annual income will increase by 0.263%. Subsidy has a positive and statistically significant impact on annual income of small scale farmers with coefficient of 0.411, as small scale farmers' access to government subsidy regimes is raised by 1%, their annual income will increase by 0.411%.

However, from Table 2 the value of F statistics is 15.119, *** is significance at 1% level, this indicate that model is fit and adequate in explaining the relationship between the dependent variable (Annual income of small scale farmers) and the independent variables captured in the model. The Coefficient of Determination (R²) is measured as 0.589, this implies that over 58% of the variation in annual income of small scale farmers is explained by the independent variables captured in the model (educational level, family size, farming experience, farm size, access to credit, other source of income, stock of farm output and subsidy from

government). Only 42% of the variation is caused by other factors not captured in the model specified by the study.

In a nutshell, the findings revealed that farm size, family size, stock of farm output and subsidy all have significant impact on annual income of small scale farmers, this shows among the eight variables captured in the study only four variables have influence on annual income of small scale farmers in Sokoto metropolis. However, the study further revealed significant relationship between small scale farming and poverty alleviation among small scale farmers in Wamakko based on the level of income they earned annually and impact of the socio-economic determinants on their livelihood. Hence poverty alleviation can be enhanced through small scale farming activities. This conforms the findings of Awoniyi and Salman (2012), Okere and Shitu (2012), Sallawu et al. (2016) and Olawepo (2010), and deviate from the findings of Apata et al. (2015), Ogubuabor (2013) and Byela (2015).

V. CONCLUSION AND RECOMMENDATIONS

From this view, based on the findings of this study, it was concluded that, farm size, stock to farm output, household (family) size and subsidy from government have statistically significant positive impact on annual income of small scale farmers in Wamakko. While educational level, access to credit, other sources of income and years of experience exert no statistically significant impact on small scale farmers' income in the study area. Deducting from the above, the following recommendations are proffered;

1. Since there exist a positive relationship between subsidy and annual income, the government's subsidy regimes both state and local levels should be consistent and its scope needs to be widen in order to accommodate a significant number of small scale farmers. The subsidy should not be restricted only on fertilizer rather be extended to other farm tools such as pesticide, improved seed, simple machineries, this will aid small scale farmers to fully utilized their potential and attract those who are not engaged in the farming activities.
2. By fully utilizing their land holdings, small scale farmers can produce more output for their subsistence and market. This will raise their living standard and free them from shackles of poverty and hunger.
3. Small scale farmers with large household size should utilized all capable members of the family in farming to maximize output per head and the annual income of the household. This will go a long way in keeping many hands busy and raising the welfare of the household at large.

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Gummi,U. M."Income Determinants of Small Scale Farmers in Wamakko Local Government Area of Sokoto- Nigeria"*International Journal of Humanities and Social Science Invention (IJHSSI)* 7.1 (2018): PP 74-81