



## MICROECONOMIC ANALYSIS OF SAVING DETERMINANTS AMONG SMALL-SCALE MILLET PRODUCERS IN GOMBE STATE, NIGERIA

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### ABSTRACT

The study examined savings determinants among small-scale millet producers in Gombe State. A multi-stage sampling technique was used to select 108 farmers from three autonomous farming localities of Dukku Local Government Area. Data were collected using structured scheduled interview and were subjected to both descriptive and inferential statistics for analysis. The results revealed the mean age of millet farmers was 45.99 years, most (52%) of which had family size range of 1–10 persons. The result also revealed the preponderant level of subsistence farm business, operated on average (3.8 ha) farm size by low annual income earners (₦ 293,978.46) with little or no formal education (7.06 years); having higher dependency ratio close to a unity; and had 21.26 years of experience. The coefficient of multiple determinations ( $R^2$ ) 0.9882; implies that 98.82% variations in the total savings were influenced by the socioeconomic characteristics included in the linear regression model. The results further revealed that, the aggregate farm income and farm size was significant ( $P < 0.01$ ) and ( $P < 0.05$ ), respectively. The dependency ratio was critical ( $P < 0.01$ ); thus, unit change in the dependency ratio leads to a decrease in savings by ₦ 43.06. However, diversification into the non-farming activities could improve the saving capacities of the rural households. Therefore, there is the need to encourage favorable conditions for rural investment, so as to enhance expansion into other non-farm activities. The higher level of income occasioned by the expansion in productivity could translate into a higher level of savings.

**Keywords:** Determinants, Dukku, Farmers, Gombe, Millet, Savings.

### INTRODUCTION

Agriculture remains the largest sector of the Nigeria's economy as it employs more than 70% of the population especially those living in the rural areas and contributes about 40% of the Gross Domestic Product (GDP) (Ugwumba and Omojola, 2013). Farm businesses in Nigeria are mostly carried out by smallholder farmers which account for about 90% of the total farm outputs [Central Bank of Nigeria; CBN] (CBN, 2007). However, millet production in Gombe State like in any other parts of northern Nigeria is mostly carried out by smallholder farmers; characterized by small farm holdings, old age, low productivity, hence low farm income and savings (Obayelu, 2012). According to the life cycle hypothesis (LCH), individuals save to finance their expenditures in the future; also, used as buffer-stock and whenever the time is bad it is used for smoothening consumption; thus, saving is the amount left after consumption (Abid and Afridi, 2010). However, the determinants and patterns of saving differ from place to place. For instance; in the rural areas, the marginal propensity to consume (MPC) is more than the marginal propensity to save (MPS) which seems to be vice-versa in urban centres (Ugwumba, 2013). Thus, a strong saving performance is an important precondition for achieving microeconomic growth, macroeconomic balance, financial and price stability



(Adewuyi *et al.*, 2007; Babatunde *et al.*, 2007). Although, while the impact of savings at macro levels is well documented, researches on the micro levels are still quite a few and much is left to be deliberated. Given the situation at hand, it is of utmost importance to study factors affecting individual and household savings and to appraise on the possible ways of how farmers can save more out of their little farm incomes. In view of that, the study therefore sought to achieve the following specific objectives; (i) to describe the socio-economic characteristics of millet farmers in the study area; (ii) to determine factors that influenced savings among millet farmers in the study area.

## **MATERIALS AND METHODS**

### **The Study Area**

Dukku is a Local Government Area of Gombe State Nigeria. It is on 10°49'00"N; 10°46'00"E coordinates; 474 m above sea level, covering an area of 3,815 km<sup>2</sup> with a population of 207,190 as at 2006; with a population growth rate of 3.2% per annum, and the majority being members of *Fulani* and *Bolewa* ethnic groups with some little pockets of *Kanuri* settlements [Gombe State Economic Empowerment and Development Strategy; GOSEEDS] (GOSEEDS, 2010). It Shares common boundaries with Nafada and Funakaye to the east; Bauchi State to the west, Akko and Kwami to the south and south-east respectively (GSG, 2015). The climatic condition of the study area is typical of the Sudan savannah zone, characterized by long dry season and short rainy season having annual average (870 mm) amount of rainfall; with a mean diurnal temperatures of 39.4°C during the hottest month of April and to about less than 16.7°C during harmattan (GSG, 2015). The economy of people of Dukku depends largely on production and marketing of a wide variety of cereal crops and livestock.

### **Sampling Procedure**

A multistage sampling technique was used to select a total of 108 small-scale millet farmers in the study area. In the first stage; Dukku Local Government Area was purposively selected for its popularity in millet production in the country. In the second stage; three autonomous farming localities; *Hashidu*, *Kunde* and *Zange*, were purposively selected. In the third stage; six communities were purposively selected for their outstanding performance in millet outputs in the study area. However, a disproportional simple random sampling technique was used to select six millet farmers each from the farming communities in the fourth stage so as to ensure fairness and adequate representation of each locality (Alamu and Olukosi, 2010).

### **Method of Data Collection**

A cross-sectional data for the study were obtained from the primary sources using the structured scheduled interview. This instrument was found to be most appropriate and effective for data collection from the sampled population, because most of them were assume to have low levels of formal education. That is to say, illiteracy is high among the rural communities of Dukku Local Government Area of Gombe State as established by (Adamu *et al.*, 2017).

### **Method of Data Analysis**

There are many analytical tools available for use in research of this kind and the choice depends on the availability of appropriate data (Ya'u *et al.*, 2017). However, to achieve the specific objectives of the study, both the descriptive statistics (such as the frequency distribution, tables, means, percentage, pie chart, bar chart and line graphs); and inferential statistics (such as the multiple linear regression model) were used.

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of Millet Farmers in Dukku L.G.A. Gombe State

The socioeconomic determinants of savings include age, years of educational attainment, household size, farming experience, farm size, total output, gross farm income, dependency ratio, and consumption, type of occupation, non-farm income, service charge, transport costs, and income.

#### Age distribution of millet farmers

In agricultural value chain, age of farmers is seen as important variable as it reflects the performance and level of both technical and economic efficiencies of the individual or households (Oseni, 2010). The results revealed that, majority (60.19%) of millet farmers in the study area were in the age bracket of (26 – 45 years); with the mean of 46 years old of age (Figure 1a). This implies that, there was significant number of productive, energetic and active individuals that could involve in various forms of farm and non-farm activities. Olowoyeye *et al.* (2018) concluded that, these farmers were strong enough to bear the tedious tasks involves, hence improved their incomes and savings. Moreover, Figure 1b shows the rate and pattern of savings relative to increasing age of the respondents. The result revealed that age and savings rate have direct relation. Shahab *et al.* (2016) and Obayelu (2012), both reported increase in age of farmers, savings also increased. This was because the aged farmers were more resourceful in their productive ventures. But in contrast with Nwibo and Egwu (2012), that individuals' savings will peak in prime earning years and fall as the savings are drawn down to finance consumption during retirement years.

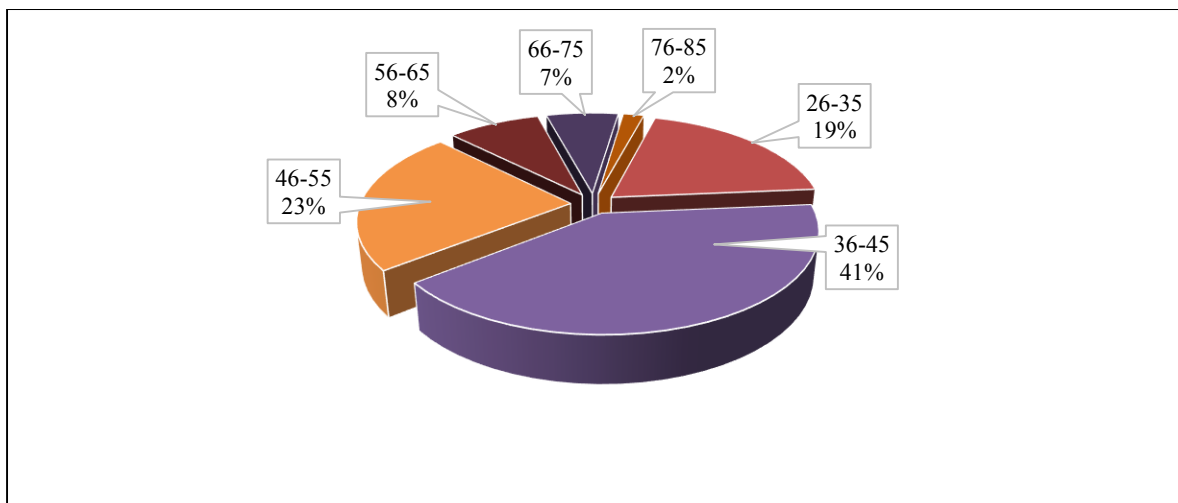


Figure 1a: Age distribution of millet farmers

Mean = 45.99 years

Source: Field survey data, 2017

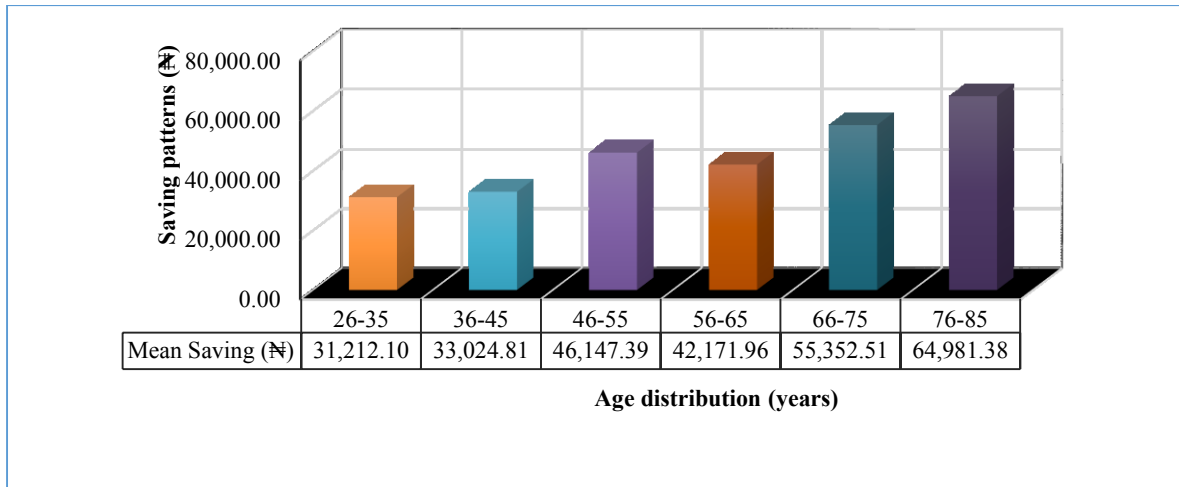


Figure 1b: *Saving patterns by age distribution*

Mean of saving = ₹45,481.69

Source: Field survey data, 2017

**Distribution of millet farmers based on household size:**

Household size refers to the total number of individuals that are living under same roof and feeding from the same pot. It is an important socioeconomic variable that determines availability of family labour supply and consumption (Iheke *et al.*, 2008). However, the results revealed that majority (52%) of the respondents had household size range of 1 – 10 persons; with the mean of 11 persons per family (Figure 2a). The result coincides with Pius and Odjurwuedemie (2006) and admitted that, the farmers had manageable family sizes which may add to them of extra helping hands in their farm businesses. But in contrast with Okeke (2007), large family size had negative consequences, because the family heads bear heavy burden which greatly undermined their investment and savings capacities. However, as against the established facts by Umar *et al.* (2014) and Nuhu *et al.* (2015); Figure (2b) depicts that, as the household size increases, savings rate and capacity also increases. This was because large family sizes in the study area tend to realize more outputs than those with few family members. Despite consumption increases with large household; but, cheap family labour was available, investment capacity also improves; thereby enhances the savings behaviour of the households (Saleh, 2016).

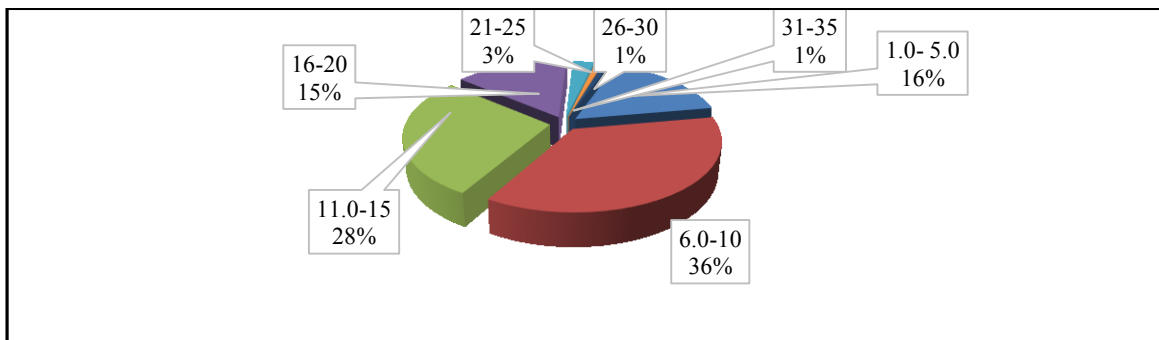


Figure 2a: *Household size distribution*

Mean = 11 persons

Source: Field survey data, 2017

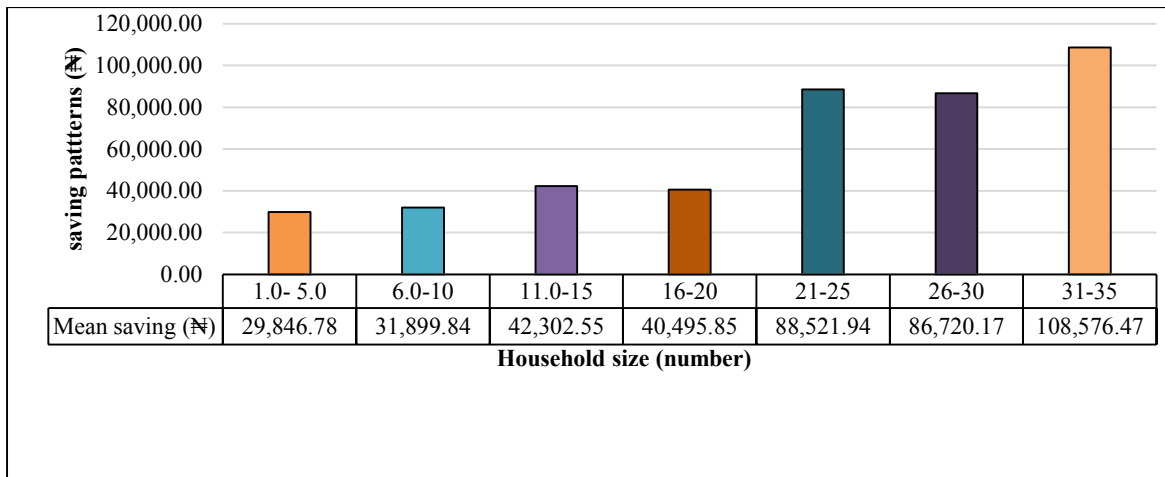


Figure 2b: *Saving patterns by household size*

Mean = ₦ 61,194.80

Source: Field survey data, 2017

### Distribution of millet farmers according to dependency ratio

Most of the economic theorists used dependency ratio, or those under age (< 15 years) and over age ( $\geq 65$ ) as a share of the total household composition, who do not contribute significantly to the overall income of the household (Shahab *et al.*, 2016). Thus, higher ratio of (1); negatively affects the savings capacity of an individual. However, the result revealed that 19% of millet farmers in the study area had dependency ratio of 0.5 – 0.59 (figure 3a). This implies that about 50 – 59% their family members were socio-economically dependents. The mean ratio of dependency was found to be 0.65; implying that, 65% of the study population does not earn anything funds for their families. This is in consonance with Shahab *et al.* (2016), who reported that, most farm families in the developing nations had higher dependency ratio. However, Figure 3b proves a reduction in the number of dependents relative to a working age population that eased household budget constraints leads to increasing savings; thus, consistent with the life cycle hypothesis LCH. Similarly, Kibet *et al.* (2009) and Rehman *et al.* (2010) posited that an increase in household will bring about increase in dependency ratio and as such is bound to cause a decline in saving. Therefore, high rate of household dependency could lead to increase in non-farm business expenses such as payment of school fees, hospital bills, clothing, ceremonies, feeding, housing as well as the purchase of other household consumable items (Shahab *et al.*, 2016).

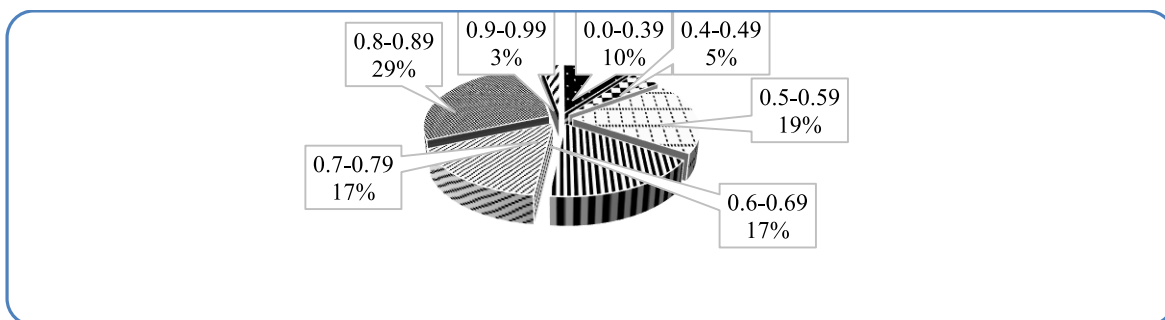


Figure 3a: *Dependency ratio of millet farmers*

Mean = 0.65

Source: Field survey data, 2017

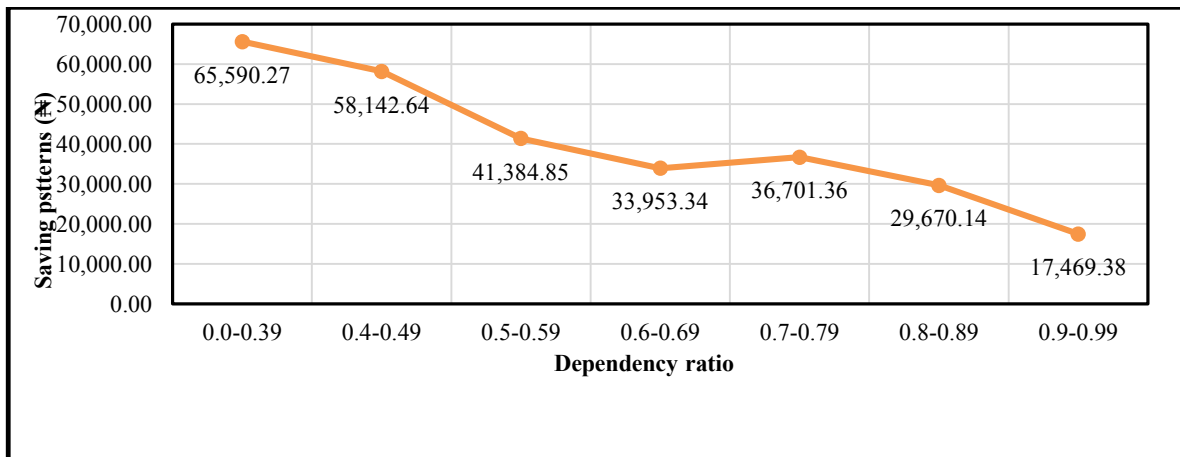


Figure 3b: *Saving patterns by dependency ratio*

Mean = ₹ 40,416.0

Source: Field survey data, 2017

**Distribution of millet farmers according to farm size**

Increase in hectareage outputs reflects level of income with its multiplier effect on the level of savings which can be mobilized. It can be observed from Figure (4a); the average farm size holding of millet farmers in the study areas was 3.8 hectares. The land holding reflects the accumulated saving, capital transfer and revaluation of assets. Size of farmland is considered as the biggest asset for the rural households as it can be accumulated in terms of money and productive asset at the time of financial emergency (Isshaku, 2011). Moreover, Figure 4b depicts the rates and patterns of saving among millet farmers relative to their farm size ownership. The result revealed that farmers with small farm size saved less than those with large farm size with the mean rate of saving (₹68,249.87). The finding is in agreement with the permanent income hypothesis (PIH); that, households who owned large farmlands could increase the level of their disposable income and savings by producing additional outputs. This trend is consistent with the conclusions of Pailwar *et al.* (2010) that, large farmland ownership helps farmers to benefit from economies of scale, higher production, and income.

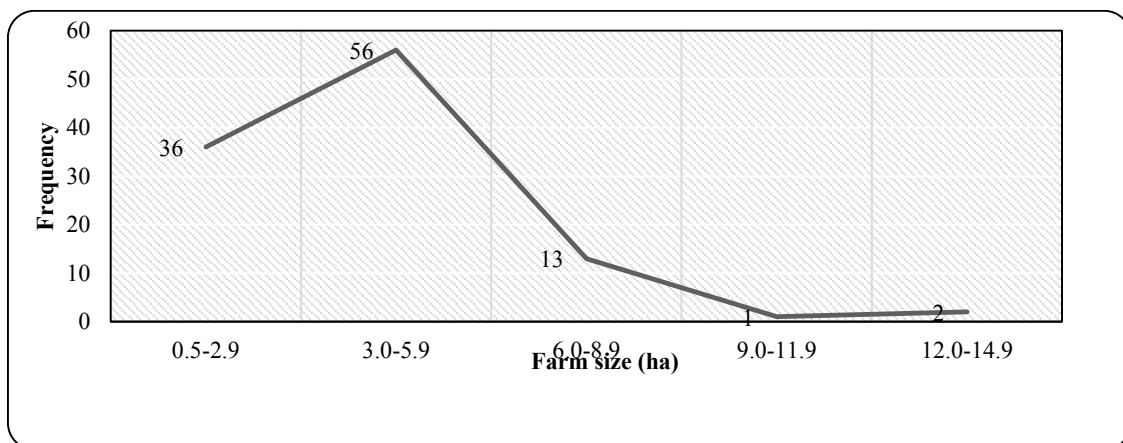


Figure 4a: *Distribution of millet farmers based on farm size*

Mean = 3.8 hectares

Source: Field survey data, 2017



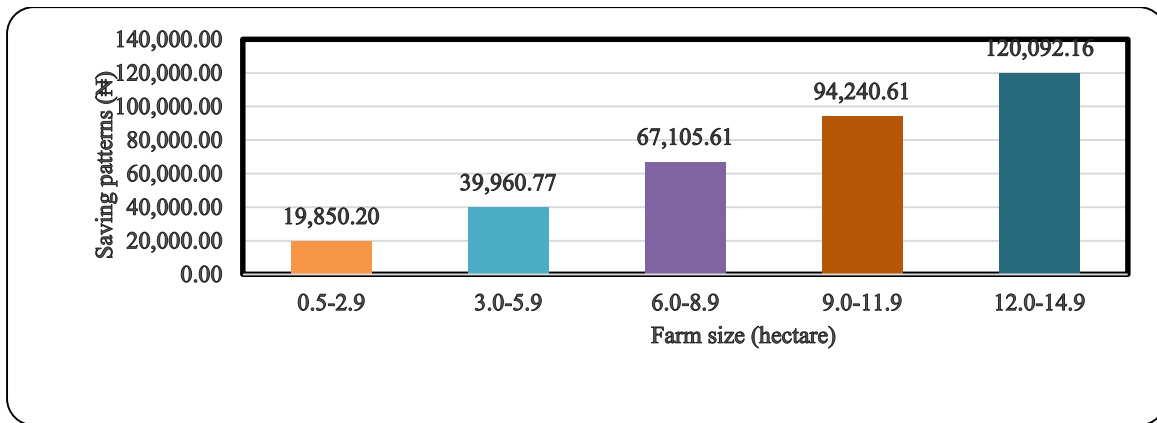


Figure 4b: *Saving patterns by farm size*

Mean = ₦ 68,249.87

Source: Field survey data, 2017

### Distribution of millet farmers based on gross farm income

Aggregate farm income of individual or household farmers is the sum of all monetary incomes determined through Income Approach; which includes total sales of grains, husks and stalks. However, the result revealed the minimum and maximum aggregate incomes of ₦41,262.00 and ₦1,004,640.00 per cropping season, respectively; with the mean of ₦293,978.46 (Figure 5a). This shows that, millet farmers in the study area made considerable incomes which was above the poverty line of ₦375 incomes per day [Food and Agriculture Organization; FAO] (FAO, 2011). The finding agrees with Olowoyeye *et al.* (2018) who concluded that, the income was impressive, considering the level of operations. Moreover, Figure 5b shows the mean rate of savings by income distribution was ₦ 23,195.80 per head per annum. The low savings was attributed to subsistence levels of operation (Akpan *et al.*, 2011). The result of this study concurs with Lahiri (1989) who justified the economic theories of consumer behaviour and concluded that, increase in income level is bound to lead to the increase in saving. This implies that, the sustainability of farm business in the study area has been linked to farmers' commitment which is directly related to their incomes and savings.

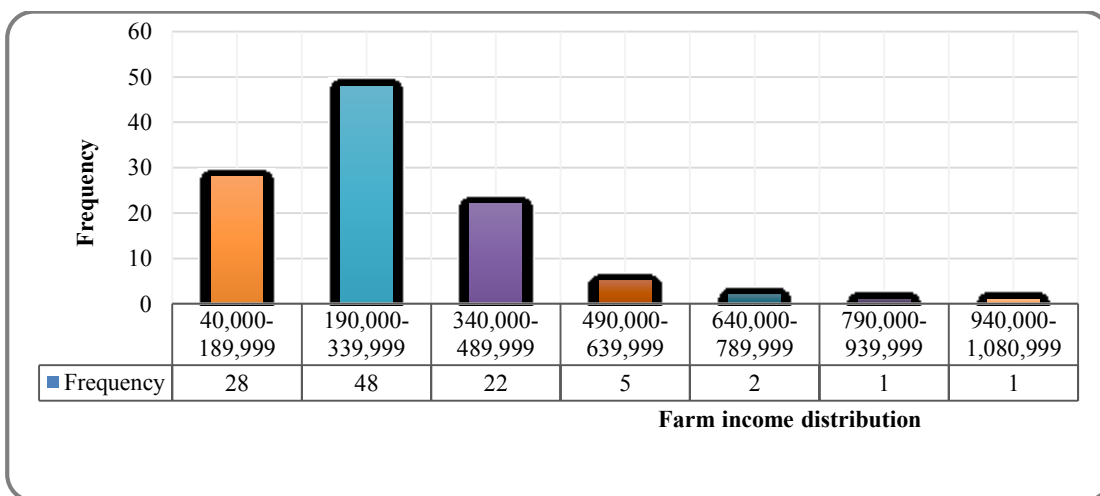


Figure 5a: *Gross farm income distribution*

Mean = ₦293,978.46

Source: Field survey data, 2017

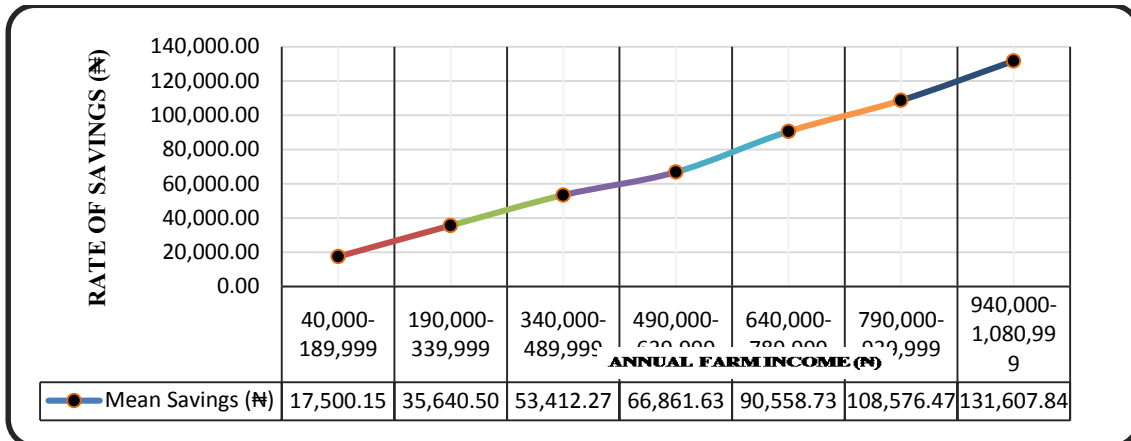


Figure 5b: Saving patterns by farmers' incomes

Mean = ₦23,195.80

Source: Field survey data, 2017

### Distribution of millet farmers according to level of education attained

According to the life cycle theorists, education is the main determinant of higher earnings and savings as well. The result therefore, revealed that majority (85%) had achieved either basic or Qur'an education, and only few (1%) that attained tertiary education. The average years spent in school was 7.06 years (Figure 6a). This means educational level of the respondents was very low; an indication of low adoption of agriculture innovations in the study area (Nwibo and Mbam, 2013). Relative to the savings behaviour and in line with the educational attainment of millet farmers in the study area; Figure 6b shows that, savings decreased with the increase in educational levels. The finding is in accordance with Rehman *et al.* (2010) who reported inverse relation between educational attainment and saving behaviour of rural farmers of most of developing countries. This was attributed to those with higher educational attainment tend spend more in taking good care of their family in terms of good feeding, payment of children's school fees and buying of ostentatious goods. But the result disagrees with Ghafoor *et al.* (2010), who found that household savings and education attained by rural farmers in rural South East Asia were related. Singh and Urmila (2015) emphasized that education assists the households to better utilize efficiently whatever available resources in the rural area. Thus, the higher the level of education of individual or household, the stronger is the demand for his/her services in relation to supply.

### Distribution of millet farmers based on years of experience

Years of experience are a measure of the period an individual farmer was involved in millet production; and plays a very important role in every human endeavour. It is the basis of skills acquisition and success in agribusiness (Mafimisebi and Okunmadewa, 2006). However, Table 1 reveals that, most (39.81%) of the millet farmers in the study area had farming experience range of 11 – 20 years, with their average rate of annual saving of ₦34,629.04. The result further revealed the mean years of farming experience and rate of saving was 21.26 years and ₦48,114.11, respectively. This could infer that, the more the years of experience the less the number of participants; hence the more the ability of the farmers to save. Oluwoyeye (2018) found similar findings and stressed that, experience in agricultural value chain has been identified as a key qualitative variable for farm output. Individuals with longer farming experience tend to utilize savings mobilization more efficiently than the new entrants. One may



conclude that the longer a farmer stays in millet production in the study area the more the stability and regularity of income which can in-turn determine his/her saving capacity.

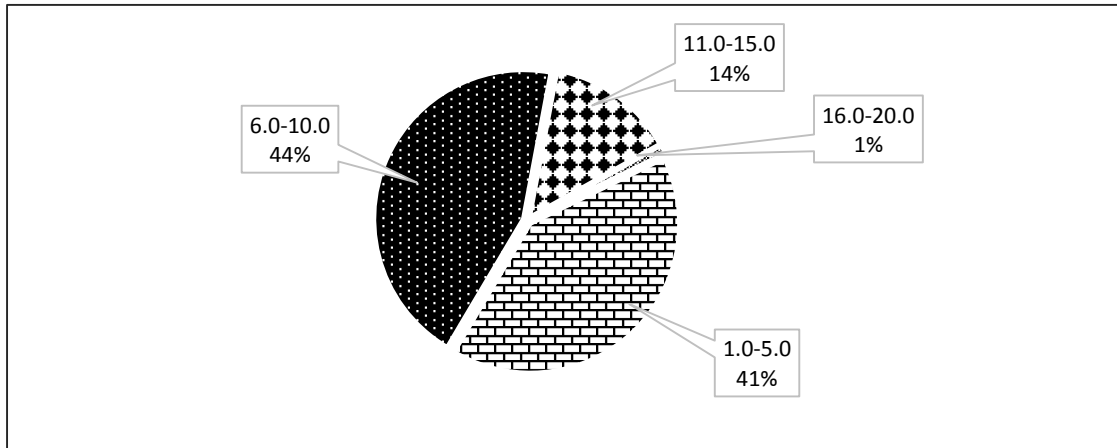


Figure 6a: *Years of educational attainment*

Mean = 7.06 years

Source: Field survey data, 2017

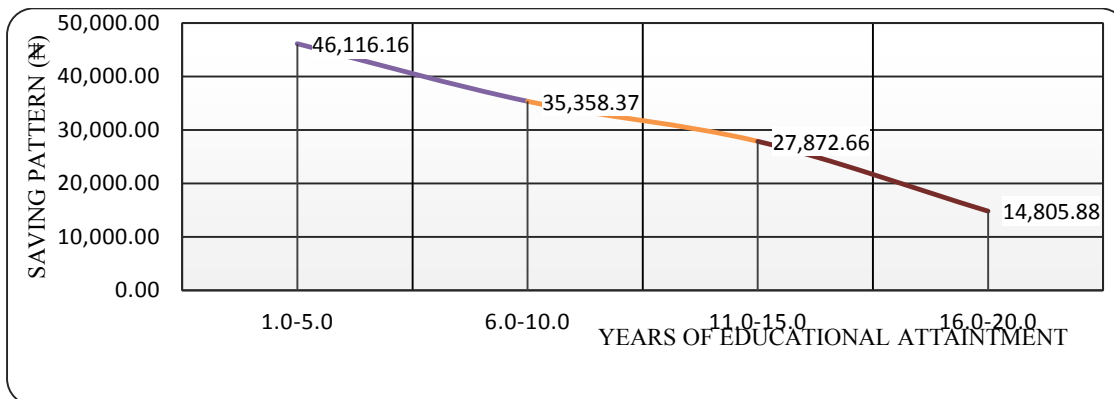


Figure 6b: *Saving patterns by educational attainment*

Mean = ₹ 31,038.27

Source: Field survey data, 2017

**Table 1:** Distribution of Millet Farmers by their Years of Experience and Rates of Saving

Experience (Years)	Frequency	Percentage	Average savings (₹)
01 – 10	19	17.59	31,405.29
11 – 20	43	39.81	34,629.04
21 – 30	28	25.93	39,364.88
31 – 40	12	11.11	51,618.86
41 – 50	4	3.07	64,241.39
51 – 60	2	1.85	87,425.21
<b>Total</b>	<b>108</b>	<b>100</b>	<b>288,684.67</b>
<b>Mean</b>	<b>21.26 years</b>		<b>48,114.11</b>

Source: Field survey data, 2017



Socio-economic Factors that Influence of Saving of Millet Farmers in the Study Area

The study has been conceptualized that, the individuals' ability to save depends on socioeconomic factors; where the relative incomes and dependency ratios were assumed the most important determinants of savings among others, in the study area. The results revealed the coefficient of multiple determinations (R^2) was 0.9882; meaning that 98.82% variations in the average amount saved by millet farmers were influenced by their socioeconomic characteristics included in the model (Table 2). The F-ratio was significant (P<0.01); meaning that the independent variables have adequately described the dependent variable included in the model. Moreover, the result revealed that, the dependency ratio had negative coefficient (P<0.01). This concurs the assertion of Kibet et al. (2009), who posited that an increase in household by birth brings about increase in the dependency ratio, and as such bound to cause a decline in the saving capacity. Furthermore, the result revealed a positive relationship (P<0.01) of farm income to saving. Thus, the marginal propensity to save of millet farmers in the study area was ₦13.10. This proves the microeconomic theory of Keynes; which postulates that, holding other factors constant, savings increases with the increase in the levels of aggregate incomes over time. The findings were in accordance with the works of Ghafoor et al. (2010); Jamal et al. (2014); Salam and Kulsum (2002), and Ahmad and Asghar (2005) findings were in accordance with the works of Ghafoor et al. (2010); Jamal et al. (2014); Salam and Kulsum (2002) all reported that, income had positive and significant (P<0.01) association with household's savings. But, Adeyemo and Bamire (2005) findings were in accordance with the works of Ghafoor et al. (2010); Jamal et al. (2014); Salam and Bamire (2005) justified that, the saving behaviour of most farmers in the developing countries is less dependent on the absolute aggregate incomes. Moreover, the coefficient of farm size was positive and significant (P<0.05) and Orebiyi and Fakayode (2005) findings were in accordance with the works of Ghafoor et al. (2010); Jamal et al. (2014); Salam and Fakayode (2005) concluded that, this was plausible to the fact that, at some levels, the larger the farm size, the higher is the possibility of the farm output and productivity of the farmer concerned. This will eventually translate to a higher income and hence higher savings.

Table 2: Linear Regression Function of Socio-economic Variables and Savings of Millet Farmers

Table with 4 columns: Predictors, Coefficients, Standard error, and t-values. Rows include (constant), Age (X1), Household size (X2), Dependency ratio (X3), Farm size (X4), Gross farm income (X5), Educational attainment (X6), Farming experience (X7), R-square, F-value, and D-W. statistics.

\* P<0.1; \*\* P<0.05; \*\*\* P<0.01 level of significance

Source: Field survey data, 2017



## CONCLUSION AND RECOMMENDATIONS

Conventionally, saving is assumed more difficult among small scale farmers; but this study adds evidence to the fact that, even low-income earners can do save from their little earnings, especially when given the opportunities. Evidently, apart from the dependency ratio; all other socioeconomic variables had positive influence on savings behaviour of millet farmers in the study area. The marginal propensity to save of the rural communities is seen very nominal; this depicts the preponderance of subsistence level of farm businesses in the area, operated on relatively small farm holdings by somewhat aged individuals with little or no formal education having higher dependency ratio close to the unity. The following recommendations were made:

1. With due consideration of income factor of millet farmers in the study area; one way to improve the saving level is to implement policies that will improve productivity and income of households through the provision of loans by the concern agencies.
2. Increased involvement of government services that support microeconomic activities in the rural areas such as the supply of; electricity, water, extension services and marketing channels is of great importance. These could motivate households to increase their production, income and hence saving.
3. The dependency ratio observed in this study results from high underemployment and unemployment rates among the households. To improve on saving capacity relative to this variable; there is the need to increase investment and thus employment in rural-based agripreneurship in the study area.
4. Diversification into the non-farming activities could improve the saving capacities; therefore, there is the need to facilitate and encourage for rural investment situations, in order to enhance diversification into other non-farm activities by the governments and other agripreneurs; so that the level of income could translate into a higher level of savings rates.

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