



**ANALYSIS OF HOUSEHOLD SAVINGS BEHAVIOUR OF DRY SEASON  
RICE FARMERS IN GOMBE STATE, NIGERIA**

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**ABSTRACT**

The study examined socio-economic determinants of household savings and constraints behaviour and poverty status of small-scale dry season rice farmers in Gombe State. A multi-stage sampling technique was used to select 357 respondents from eighteen villages for their popularity in rice production. Data were collected using structured questionnaires and were subjected to descriptive statistics for analysis. The results revealed the mean age of rice farmers was 38.76 years, 84.31% were males, 89.08% were married with mean family size of 7 persons. Also, majority (78.43%) of the farmers had formal education, with 10.51 years of experience and average farmland size holding of 1.67ha, having mean annual farm income of ₦ 846,337.10. The result also, revealed 62.34% of the farmers were savers. While the average propensity to save was 0.1634 implying 16.34% of the total households' incomes were saved; the marginal propensity to save derived from simple linear regression model was 0.1406 meaning, holding other factors constant; one-naira increase in the total farm income will result to 0.1406 level increase in household's savings. The study concluded that, obviously the increase in savings propensity among farming households may indicate their income growth and improved financial situation and hence, brings about changes in their standard of living and as well improve their farm productivity. Thus, the higher level of income occasioned by the expansion in productivity could translate into a higher level of savings. Therefore, government should provide favorable conditions for rural investment, so as to enhance expansion into other non-farm activities.

**Keywords:** Dry, Farmers, Rice, Savings and Season

**INTRODUCTION**

The term "*savings*" is broad-based meaning and contains a numerous elucidation. It therefore, indicates the act of abstaining from spending one's income on consumption expenditure; the part of the income, which is unspent, is called savings (Hagos and Singh, 2019). According to classical definition, saving is income minus consumption" and is residual in character. Savings can also be seen as stock, wherein savings stands for change in wealth over a period of time. In this sense it is regarded as the sacrifice in the present consumption for the future (Achar, 2012). Substantially, saving is future consumption, and it is an important example of an inter-temporal decision (Salam and Kulsum, 2002). However, savings is an important aspect for agricultural production in the life of rural farmers because it is used as credit for lending to needy individuals (Jalo *et al.*, 2015). To this effect, savings is seen as important for accumulation of capital required to generate future income, enable future consumption and to provide mechanism for managing risk and poverty eradication among rural farmers (Ajah *et al.*, 2017). According to Rehman *et al.* (2011), capital accumulation through personal and/or households' savings is a necessary condition for economic development. However, the bottom-line is that savings has been and continued paramount important in propelling farming households to the path of sustained economic development. In that respect, Issahaku (2011), stated that rural farmers saved in order to; cope with unexpected emergencies, buy some assets, pay for unpredictable expenses, allow for future consumption, accumulate enough funds for investment, make provisions for retirement, employ teaming unemployed youth, reap higher returns and for luxury etc. Hence, savings behaviour among rural farmers is



largely influenced by several factors such as; the individual's perception about savings, decision, ability, willingness, motivation and as well as the opportunity to save (Chilokwu, 2021). According to Ayanwale and Bamire (2000) affirmed that, the savings behaviour of farmers is less dependent on the absolute level of aggregate income, but more dependent on the socio-economic factors.

However, savings among rural farmers in Gombe State is viewed as important, as the level of progress a farmer will attain depends largely upon what he/she does with the additional incomes generated from farm and non-farm activities thereby reducing incidence and severity of poverty (Saleh *et al.*, 2019). Conversely, the level of farmers' savings in the rural areas seemed to be low, which limits their development possibilities. The poor capacity to save is a result of low farm income of the farmers. Several important questions remain unclear in the minds of many people, as to whether or not the small-scale dry season rice farmers in Gombe State have significant capacity to save. This is because most studies examined savings behaviour only at the aggregate level with little or much attention to household levels. Thus, it is worthwhile to study the households' savings behaviour among the small-scale dry season rice farmers in Gombe State. To this effect, the research was therefore, made to provide answers to the following questions; (i) what are the socio-economic characteristics of small-scale dry season rice farmers, (ii) what are the household savings behaviour of small scale rice farmers?

## **MATERIALS AND METHODS**

### **The Study Area**

Gombe State is one of the six states of the North-eastern Nigeria, situated on 9°30' – 12°30' N and 08°05' – 12°45' E coordinates, covering an area of 20,265 km<sup>2</sup> with human population of 2,857,042 million, of which 50.1% were males and 49.9% were females (National Population Commission; NPC, 2006); with annual population growth rate of 3.2% (Kurfi, 2019). Gombe State is located in the Sudan Savannah region interspersed by many rivers and waterways of the Upper Benue River Basin, a feature that supports livestock and crop productions. The study area is regarded a confluence State of economic activities in the region, and the hub for agro-business of surrounding States of Adamawa, Bauchi, Borno, Taraba and Yobe. This advantage, made the State vibrant in all respects of the economy (Gombe State Economic Empowerment and Development Strategy; GOSEEDS, 2019). According to Gombe State Government; GSG (2015), the State is multi-ethnic, which constitutes mainly of; Fulani, Tera, Bolewa, Tangale-waja, Kanuri and Hausa. Major crops produced in the State include; cereals, vegetables and fruits (GOSEED, 2019). The climate of the area is mainly characterised with a warm climate, having a mean diurnal temperatures of 35°C – 40°C during the hottest months of (March to May) and to about less than 30°C during harmattan (GSG, 2015). The area has two distinct seasons based on the amount of rainfall received; the dry season (November to April) and the wet/rainy season (May to October) with an average (850 mm) amount of rainfall received per annum in 110 to 125 days (GOSEEDS, 2019). The State is endowed with numerous solid minerals and oil deposits. Climate change due to human activities; flooding, deforestation, poor wastes management, quarry works and mineral extraction are emerging environmental challenges of the State. (GSG, 2015).

### **Sampling Procedure and Sample Size**

A multistage sampling technique was employed so that every member in the survey could have unbiased chance of being selected for the study. In stage I; three (3) local government areas (*Balanga, Kwami and Yamaltu-Deba*) notable for dry season rice production were purposively selected. In stage II, three (3) notable districts for dry season rice production were purposively selected from each of the local government areas for the study. These include; *Dadiya, Cham, Talasse* (in Balanga local government area), *Malleri, Daban-fulanai, Gaji-bauchi* (In Kwami local government area), and *Jagaji, Yemaltu, Pata* (in Yamaltu-Deba local



government area). In Stage III; two (2) villages each from the nine (9) districts were purposively selected based on their outstanding rice productivity levels in the dry seasons. These are; *Dadiya, Babambam, Kindiyo, Kulani, Bakassi, Wadaci, Malleri, Tinda, Daba, Jurara, Malam-bura, Bakari-taffi, Maiqaho, Dasan-yunusa, Dadinkowa, Gwani, Kurjele and Dumbu*. In stage IV, a total of 357 small-scale dry season rice producers were selected using simple random sampling technique proportionate to their population in each village. Thus, in determining the sample size appropriate for this study, the Taro-Yamane’s model was used. The model in its implicit form is expressed below as was employed by (Garba *et al.*, 2014; Mubigiri, 2016);

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

where;

$n_i$  = sample size (number of dry season rice farmers for the study),

$N$  = Number of registered dry season rice farmers with the Rice Farmers’ Association of Nigeria (RIFAN)

$e$  = sampling error (0.05)

1 = unity (constant)

Moreover, the Bowley’s proportional allocation technique was used to determine the corrected sample size drawn from each of the selected village. The model is expressed by Ngene (2017), as was adopted by Udeh *et al.* (2018), as follows;

$$nh = n * \frac{Nh}{N} \dots (2)$$

where:

$nh$  = Proportional number of small-scale dry season sampled from each village

$n$  = Sample size (number of dry season rice farmers to participate in the study),

$Nh$  = Total number of small-scale dry season rice farmers drawn from each village

$N$  = Number of registered dry season rice farmers in the study area.

### Method of Data Collection

Data for the study were collected using structured questionnaires and supported with oral interview in situations where the respondents did not understand the questions was conducted to allow for generation of qualitative information not captured in the questionnaire. Hence, the questionnaire contained some open-ended questions that allowed the dry season rice farmers express themselves freely on particular issues of their concerns.

### Method of Data Analysis

To achieve objectives of the study, the descriptive statistics such as; the frequency distribution, tables, means, percentage and Garrett’s ranking, were used for data analysis.

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of Dry Season Rice Farmers

The results revealed the mean age of rice farmers in Gombe State was 41.69 years. Hence, most (36.77%) of the dry season rice farmers in the study area were in the age bracket of 30 – 39 years, closely followed by 34.17% were in the age bracket of 40 – 49 years as presented in Table 1. This implies that most of the dry season rice farmers were within their economically active age. Nandi *et al.* (2014) reported similar findings and concluded that, farming population in Delta State Nigeria comprised of young and energetic individuals capable of withstanding drudgery and risks of farm business. The findings of the study also imply high prevalence of patriarchy kinship in the study area. Thus, majority (84.31%) of the dry season rice farmers in Gombe State were males, and only 15.59% constituted the female counterparts. This reflects African traditions setting where majority of the households follow patriarchy kinship whereby men are the heads of the households and women headed households exists if and only if the women were divorced or when the husbands have died (Gina, 2020). However,



the low female participation in rice production in the study area was attributed to assertions of Ayoola *et al.* (2006), implying that aside the reproduction and multiple domestic responsibilities which impinged on their time and mobility; their marital status may also likely hindered their effective participation in outdoor economic activities. The result further revealed that, majority (89.08%) of the dry season rice farmers in the study area were married; 6.16% were separated/widowed while only 4.76% of the rice farmers that were singles. This implied that, married people were more in rice farming in the study area and this could be as a result of more responsibilities they were saddled with and had the role for providing household needs of their families (Kolawole and Michael, 2021). Table 1 further shows that, 47.34% of the dry season rice farmers have family size range of 6 – 10 persons; closely followed by those with 1 – 5 persons accounting for 34.45% of the respondents with the mean of 7 persons per farm family (figure 4). This implies that rice farmers in the study area had manageable family sizes which may add to them of extra helping hands in their farm business (Maikasuwa and Jabo, 2014).

**Table 1: Socio-economic Characteristics of Dry Season Rice Farmers**

<b>Variables (n=357)</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Mean</b>
Age (years)	30 - 29	28	7.84	41.70
	30 - 39	132	36.97	
	40 - 49	122	34.17	
	50 - 59	60	16.81	
	60 - 69	15	4.20	
Household size	1.0 - 5.0	123	34.45	7
	6.0 - 10.0	169	47.34	
	11.0 - 15.0	50	14.01	
	16.0 - 20.0	15	4.20	
Dependency ratio	0.0 - 0.24	12	3.36	0.60
	0.25 - 0.49	69	19.34	
	0.50 - 0.74	202	56.58	
	0.75 - 0.99	40	11.20	
	1.0 - 1.24	34	9.52	
Land size (ha)	0.01 - 1.0	75	21.01	1.67
	1.01 - 2.0	155	43.42	
	2.01 - 3.0	99	27.73	
	3.01 - 4.0	22	6.16	
	4.01 - 5.0	6	1.68	
Experience (years)	1.0 - 10.0	215	60.22	10.51
	11.0 - 20.0	113	31.65	
	21.0 - 30.0	25	7.01	
	31.0 - 40.0	4	1.12	
Educational level	Primary Education	65	18.21	11.85
	Secondary Education	112	31.37	
	Diploma/NCE	71	19.89	
	Bachelor Degree	32	8.96	
	Others	77	21.57	
Sex	Male	301	84.31	
	Female	56	15.59	
Marital status	Married	318	89.08	
	Divorced	22	6.16	
	Single	17	4.76	

**Source:** Field survey, 2023



However, 56.58% of dry season rice farmers had dependency ratio of 0.5 – 0.74. Meaning that about 50 – 74% of this category, were socioeconomically dependents on the heads of their respective households, with the mean ratio of dependency was found to be 0.60; implying 60% of the study population do not earn/contribute anything to the welfare of their respective households. This is in consonance with the findings of Shahab *et al.* (2016) and Saleh *et al.* (2019), who in their different studies, both reported that, increase in dependency ratio decreases saving rates among low income households and vise-versa.

It can be observed from Table 1 that, the average land size of rice farmers in the study areas was 1.67 hectares. However, 43.42% of the rice farmers had land size ranging between 1.01 and 2.0 hectares; closely followed by those who have land size holdings range 2.01 – 3.0 accounting for 27.73% of the respondents. Hence, Noonari *et al.* (2016) stated that, land size had significant bearing on socioeconomic status of farmers, which reflects the accumulated farm incomes, savings, capital transfer and revaluation of assets. This trend is consistent with the conclusions of Lamberte *et al.* (2006); and Pailwar *et al.* (2010) that, large farmland ownership helps farmers to benefit from economies of scale, higher production, and income. Table 1 further depicts that, most (60.22%) of the rice farmers had farming experience range of 1 – 10 years, closely followed by 31.65% had 11 – 20 years of experience, with the mean years of farming experience of 10.51 years. According to Adamu *et al.* (2017), years of experience are the measure of managerial ability of farmers. Hence, the dry season farmers in the study area were likely to make decisions efficiently which would increase their productivity. The result further revealed that, all the dry season rice farmers in the study area have acquired one or other form of education; where 31.37% had secondary school education, closely followed by 21.57% have acquired either of Islamic or adult and non-formal education. Hence, the mean years of schooling was 11.85 years (Table 1); implying that, on the average, the rice farmers have at least attended secondary school and were enlightened.

**Distribution of aggregate farm income by household population deciles**

While the farm incomes cover the consumption expenses; the surplus was saved and as well, used as factor input in the next farming season (Saleh, 2018). The result revealed the overall mean farm income of rice the farmers was not highly concentrated but varied around the per capita of ₦ 846,337.10 per head. This according to Olowoyeye *et al.* (2018), is impressive considering the level of operations. However, the size distribution of aggregate income showed that, income share of the first decile was 17.07% of the total incomes earned by the entire population; with an average income of ₦ 1,563,043.60 per household (Table 2). The second decile had income share of 14.34% with an average income of ₦ 1,203,580.60 per household. Hence, the ninth and tenth deciles were considered the poorest households, constituting only 4.84% and 3.74% share of the total incomes respectively. This shows that, farm incomes were relatively not equally earned by the rice farmers in Gombe State.

**Table 2: Aggregate Farm Income Distribution by Household Population Deciles (n = 357)**

Deciles	Minimum (₦)	Maximum (₦)	Sum (₦)	Income share (%)	Average (₦)
1	1,287,455.55	2,726,992.25	51,580,438.80	17.07	1,563,043.60
2	1,143,668.85	1,287,181.95	43,328,901.45	14.34	1,203,580.60
3	1,030,085.55	1,141,473.15	39,133,419.30	12.95	1,087,039.43
4	949,597.50	1,028,678.40	35,673,045.75	11.81	990,917.94
5	819,289.20	943,125.00	31,301,122.20	10.36	869,475.62
6	740,307.60	818,673.60	28,215,467.93	9.34	783,763.00
7	664,508.85	739,881.30	25,134,242.70	8.32	698,173.41
8	201,070.35	664,102.80	21,862,635.60	7.23	607,295.43
9	345,580.65	497,588.55	14,609,510.40	4.84	405,819.73
10	249,023.85	343,107.45	11,303,560.80	3.74	313,987.80
<b>Total</b>			<b>302,142,344.93</b>	<b>100</b>	<b>(<math>\bar{x}</math>) = 846,337.10</b>

Source: Field survey, 2023

**Savings modes of among dry season rice farmers in Gombe State**

The result identified two major patterns through which the dry season rice farmers saved their finances; the cash and non-cash forms (Table 3). The household savings analysis showed that, Home savings and rotatory contribution methods were the major ways of savings by the dry season rice farmers in the study area. Table 4, further reveals that, household’s savings through purchase of farm produce, ranked the 3<sup>rd</sup>. This was closely followed by savings through financial self-help organisations (4<sup>th</sup>), money leading (5<sup>th</sup>) and chit-funds (6<sup>th</sup>). The reasons for increasing home savings may be for easy access to cash for immediate use, low farmers’ income level, insufficient availability of banks in the area (Odoh *et al.*, 2020).

**Table 3: Modes of Savings among the Dry Season Rice Farmers**

Modes of savings	Place of savings	*Responses	Mean score	Ranking
Cash savings	Banks	86	42	9 <sup>th</sup>
	Financial self-help Union	135	62	4 <sup>th</sup>
	Loan receivables	117	58	5 <sup>th</sup>
	Home savings/Till	206	84	1 <sup>st</sup>
	Shares in cooperatives	11	16	13 <sup>th</sup>
	Rotatory contribution	187	73	2 <sup>nd</sup>
	Chit funds	129	54	6 <sup>th</sup>
Non-cash savings	Purchase of land	103	46	8 <sup>th</sup>
	Storage of farm produce	165	67	3 <sup>rd</sup>
	Livestock keeping	114	50	7 <sup>th</sup>
	Farm machinery	35	32	11 <sup>th</sup>
	Building of house	58	38	10 <sup>th</sup>
	Consumer durables	25	27	12 <sup>th</sup>

**Source:** Field survey, 2023 \*Multiple responses

**Motives for households’ savings among rice farmers in Gombe State**

Household savings present an opportunity where smallholder farmers can overcome credit limitation by building adequate capital to invest in socio-economic and farm activities (Gikonyo *et al.*, 2022). However, Table 4 shows that, the main reason for the rice farmers to save was to smoothen future households’ consumption expenditure ranked 1<sup>st</sup>. This will in turn help to address financial stress and also to safeguard against unforeseen circumstances that might evolved during production period. Moreover, the purchase of farm inputs and for children’s’ education was ranked 2<sup>nd</sup> and 3<sup>rd</sup> reasons for rice farmers to save respectively. This was to increase their level of rice production in the subsequent farming seasons and also to enable them educate their children.

**Table 4: Reasons for Household’s Savings among the Dry Season Rice Farmers (n = 357)**

S_N	Reasons for savings	*Responses	Mean Score	Ranking
1	Smoothening future consumption/unforeseen	336	83	1 <sup>st</sup>
2	Purchase of farm inputs	314	72	2 <sup>nd</sup>
3	Children’s’ education	309	66	3 <sup>rd</sup>
4	Expansion of existing rice farm business	293	61	4 <sup>th</sup>
5	Start up new businesses	279	56	5 <sup>th</sup>
6	Accumulation of wealth/old age/retirement	268	52	6 <sup>th</sup>
7	Medical emergency	237	48	7 <sup>th</sup>
8	Housing/home appliances	216	44	8 <sup>th</sup>
9	Purchase of assets/durables	211	39	9 <sup>th</sup>
10	Settle debts/basis for loan procurement	197	34	10 <sup>th</sup>
11	Expansion of existing non-farm operations	195	28	11 <sup>th</sup>
12	Religious/Social functions	182	17	12 <sup>th</sup>

**Source:** Field survey, 2023 \*Multiple responses



**Propensity to savings among dry season rice farmers in Gombe State**

The rates of savings play an essential role in the economic development due to its significant influence on the circular flow of income supply in the economy (Iyoha *et al.*, 2003). Thus, the total households' incomes (comprising farm and non-farm income activities) of the dry season rice farmers were used in the analysis. The result therefore, revealed the mean annual rate of household's savings was ₦ 138,251.64, with the majority (62.34%) were savers and 38.66% were non-savers (Table 5). The result further revealed households' savings distribution; where 29.69% of the respondents had average household's savings of ₦ 148,535.74; followed by those who averagely saved ₦ 202,191.40 accounted for 17.37% of the respondents. Also, 10.36% of the dry season rice farmers in the study area had mean annual saving rates of ₦ 78,465.22; 3.36% saved ₦ 268,074.87; while 0.28% each had average households' savings of ₦ 363,491.08 and ₦ 444,526.99 per annum respectively. Moreover, while the mean farm income was ₦ 846,337.10; the average propensity to save (APS) was found to be 0.1635, meaning that 16.06% of the total farm income of the dry season rice farmer was saved, while the greater proportion (83.94%) was spent on households' consumption expenditure. Also, the marginal propensity to save (MPS) derived from simple linear regression model (Table 5) was found to be 0.1406, meaning that, one-naira increase in the total farm income will result to 0.1406 level increase in household's savings of the dry season rice farmers in the study area.

**Table 5: Propensity to Saving among Dry Season Rice Farmers in Gombe State**

Range of savings (₦'000)	Average savings (₦)	Frequency	Percentage
40.0 – 109.9999	78,465.22	37	10.36
110.0 – 179.9999	148,535.74	106	29.69
180.0 – 249.9999	202,191.40	62	17.37
250.0 – 319.9999	268,074.87	12	3.36
320.0 – 389.9999	363,491.08	1	0.28
390.0 – 459.9999	444,526.99	1	0.28
Non-saver	0.00	138	38.66
	<b>Total</b>	<b>357</b>	<b>100</b>
Minimum saving	40,929.58		
Maximum saving	444,526.99		
Mean saving	138,251.64		
Mean farm income	846,337.10		
A.P.S	0.1635		

Variable	Coefficient	S.E	p-value
_constant	1500769(5.33)***	2816.534	0.000
Farm income	0.1406253(48.02)***	0.0029286	0.000

N.B.: A.P.S = Average Propensity to Save; S.E. = Standard Error; Figures in parentheses are the t-values; \*\*\* (P < 0.001) = 0.1% level of significance

Source: Field survey, 2023.

**CONCLUSION AND RECOMMENDATIONS**

The study concluded that, the average and marginal propensity to save of the rice farmers were seen very nominal; which depicts the preponderance of subsistence level of the dry season rice farming in the area, operated on relatively small farm holdings by somewhat young male individuals with low formal education and having higher dependency ratio close to the unity. Thus, a strong savings performance among rice farmers serves as an important precondition for achieving growth in farm productivity, economic balance, financial/price stabilities; thereby leading to reduction in financial stress. In order to improve farmers' livelihood through diversification in farm and farm incomes, and as well brings about reduction in financial stress through savings; the following recommendations were made based on the findings of this study:



- i) There is the need to bring more land under dry season rice cultivation for improvement of the rice value chain. Governments, and private sectors should encourage increased rice production by formulating policies guided to make more land available for irrigated rice farming.
- ii) Rice farmers should provide themselves with higher returns from the non-farm livelihood activities, so as to boost their income but not at the expense of farm productivity because rural farm households are the food basket of the nation.
- iii) Also, in order to make non-saver farmer to save, financial institutions should have awareness creation, motivation training, consult program and provide productive loan and follow up their credit utilisation so that they can use it to generate additional income and this in turn motivates rural households to save in financial institutions.

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