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Evaluation of Savings Pattern among Irish Potato Farmers in Riyom Local Government Area of Plateau State, Nigeria

Udoh E.D[1]*., Abdullahi, S[2]., Ogar, B.I[1]., Udemezue, C.V[3] and Dalla, A.A[4]

[1]High Forest Research Station Awi, Cross River State, Nigeria
[2]Montane Forest Research Station Jos, Plateau State, Nigeria
[3]Federal College of Forest Resources Management Ishiagu, Ebonyi State, Nigeria; [4]Department of Agricultural Extension & Management, Federal College of Forestry Jos, Plateau State, Nigeria**:** enodonald196@gmail.com

Abstract

The financial stability and growth of crop farmers are largely influenced by their ability to save. This study explores the savings behaviors of Irish potato farmers in Riyom Local Government Area (LGA) of Plateau State, Nigeria. The objectives of the research include analyzing the socio-economic profiles of potato farmers, identifying preferred financial institutions for savings, assessing the volume of savings, determining factors influencing savings, and recognizing challenges to saving. A multi-stage sampling technique was utilized to select 180 participants. Data was gathered through a structured questionnaire tailored to the study's goals. Descriptive statistics (such as frequency distributions, percentages, and means) and linear multiple regression were applied to analyze the data. Results revealed that the average age of the farmers was 40, with 59% being male. 88% of the respondents were married, with an average household size of 7 members and an average farm size of 4 hectares. About 50% of farmers had secondary education, an average farming experience of 7 years, and an average annual income of N111,055 from farming. The most common savings methods were informal ones, including rotational savings (47%) and cooperative societies (30%), while banks were less frequently used (23%). Farmers saved an average of N38,016, which was only 34% of their total income. Factors such as age, household size, proximity to financial institutions, annual income, and membership in cooperative societies significantly influenced savings behaviors. Challenges to saving included insufficient farm income (51%), limited access to credit (43%), distance to savings institutions (31%), and bureaucratic banking procedures (26%). The study recommends that the government improve access to credit through both formal and informal financial channels and encourage commercial banks to establish branches in rural areas to address distance-related barriers.

***Keywords**: Assessment, savings patterns, financial institutions, Irish potato farmers, influencers.*

Introduction: The rural economy significantly benefits from cash crops, providing employment opportunities and generating income (Achterbosch, van Berkum, Meijerink, Asbreuk and Oudendag, 2014). Cash cropping is widely acknowledged as a crucial activity for enhancing farmers' earnings (Zhang et al., 2017) (Zhang., Kono., Hua., Zheng and Zhou, R (2017). Smallholder cash crop farmers contribute to economic development, with Senthilkumar (2017) emphasizing that cash crop expansion serves as a key driver for agro-based enterprise growth. Among Nigeria's root crops, potato ranks fourth in importance after cocoyam, yam, and cassava. It is both a food staple and a commercial commodity (Okonkwo, 2009). On the Jos Plateau, it serves as a significant income source for rural farmers. Its high energy content and ease of cultivation make it vital to urban agriculture, creating jobs and contributing to food security for around 800 million people globally (Garba, 2013). The potato industry holds potential for improving smallholder farmers' incomes, thereby addressing poverty and food insecurity (Maganga, 2012). In Nigeria, over 85% of potatoes are grown by small-scale farmers using basic tools like hoes and machetes.

One major challenge limiting agricultural productivity in many African countries, including Nigeria, is poor access to credit. This issue stems from low formal education levels and the lack of collateral among rural farmers, excluding them from conventional banking systems. Credit offered by informal financial institutions is often insufficient for significant agricultural expansion (Ike, 2009). A sustainable solution lies in enhancing savings mobilization within rural farming communities to improve capital accumulation for agricultural activities (Ike and Umuedafe, 2013). Savings involve setting aside a portion of income for future investments, consumption, or emergencies, acting as a buffer against risks and uncertainties (Bogale, Amsalu Bedemo and Belina., 2017). Savings are fundamental for economic stability (Ebissa and Kassie, 2017), enabling households to smooth consumption and finance productive investments in human and physical capital (Karlan, Ratan and Zinman, (2013). According to Osondu, Obike and Ogbonna (2015), savings are crucial for capital accumulation, future income generation, and financial resilience during crises. The capacity and willingness of households to save significantly impact capital formation and economic growth in developing countries (Oluwakemi, 2012). Savings also play a vital role in economic development, influencing the circular flow of income. Uhuegbulem., Henri-Ukoha, Osuji, Ukoha, Oshaji, (2015).

Low savings rates among smallholder farmers in Nigeria hinder agricultural development, limiting investments, productivity, and income, which perpetuates rural poverty. However, when small-scale farmers save, they can invest in agriculture and other sectors, such as improved seeds,

equipment, fertilizers, labor, land, education, trade, housing, and durable assets. Savings are positively correlated with economic growth across countries (Carroll et al., 2000), and the agricultural sector's progress depends on farmers' effective utilization of seasonal income (Ogheneruemu *et al*., 2014). Farm economic growth is driven by capital accumulation within agricultural enterprises and reinvestment through savings for improvements (Akerele and Ambali, 2012). To foster growth in smallholder cash crop farming in Nigeria, farmers must allocate a portion of their earnings to savings. As a form of capital formation, savings boost the capital stock, enhancing future income-generating capacity (Donkor and Duah, 2013). Nations with significant savings and investments often experience faster economic growth (Todaro and Smith, 2012).

Household financial behavior, including savings, is influenced by external factors like economic conditions, geography, and education, as well as internal factors such as income, consumption patterns, and educational attainment (Kozera, Głowicka-Wołoszyn, Stanisławska, 2016). Savings motives range from financial security during old age to managing uncertainty, acquiring assets, and financing durable goods or daily expenses. Environmental risks like droughts and floods highlight the importance of savings as a resilience mechanism for smallholder farmers in Nigeria (Musiime and Atuha, 2011).Despite the importance of sustained savings for economic development, rural households often prioritize consumption over savings. Policymakers have yet to implement comprehensive rural savings programs that encourage farmers to save and invest productively (Ogbonna and Eremi, 2019; Odoemenem *et al*., 2013). Savings play a crucial role in agricultural sustainability, enabling farmers to invest in inputs, cope with shocks, manage seasonality, and smooth consumption during lean periods. However, many smallholder farmers, including Irish potato growers, struggle with low savings capacity, which can hinder their ability to scale up production or withstand market uncertainties. Factors such as limited access to financial services, irregular income flows, poor financial literacy, and reliance on informal saving mechanisms have contributed to the persistence of low savings rates among Irish potato farmers in the region. Despite the recognized importance of savings for improving the financial resilience and overall livelihood of farmers, there is a paucity of empirical research on the savings patterns of Irish potato farmers in Riyom Local Government Area. While some studies have explored general savings behavior in agricultural communities, specific research focusing on Irish potato farmers in Plateau State is limited. This lack of information leaves a significant gap in understanding the factors that influence savings behavior among Irish potato farmers in the area and the potential barriers they face in accessing formal savings mechanisms or improving their savings capacity. Thus, there is an urgent need for a comprehensive evaluation of the savings patterns among Irish potato farmers in Riyom Local Government Area to identify the key factors influencing savings behavior, including socioeconomic, cultural, and institutional factors. This study will provide valuable insights into the financial challenges faced by Irish potato farmers and propose recommendations for improving their financial management strategies, thereby contributing to the overall sustainability and growth of the Irish potato farming sector in the region.

Materials and Methods: Study Area: This study was conducted in **Riyom Local Government Area** of Plateau State, Nigeria. Riyom LGA is situated in the central region of Plateau State, known for its agricultural activities, including the cultivation of Irish potatoes. The LGA is predominantly rural and is characterized by fertile soil suitable for potato farming, among other crops. The geographical coordinates of Riyom LGA are approximately **9°22′ N latitude** and **9°39′ E longitude.** The LGA shares boundaries with Bassa and Jos South areas to the north-east, Barki-ladi and **Mangu LGA** to the south-west. It covers a landmass of 768.75 square kilometres and is divided in to 3 districts namely; Riyom, Bachit and Ganawuri districts. Using the growth rate of 2.8% for Plateau, the projected population of the area is given as 155,526 people. There are two distinct seasons in the study area; the dry and the rainy seasons. The former starts from April and ends in November of each year, while the later starts from November and ends in March every year. Usually, the cold harmattan wind dominates February to March annually. The major occupation is agriculture due to the vast land available and fertile nature of the soil.

Sampling Procedure: A multi-stage sampling technique was adopted to select Irish potato farmers for the study. The first stage involved a selection of the existing three (3) districts, that is, Riyom, Bachit and Ganawuri districts. The second stage involved the random selection of two communities from each of the chosen districts, resulting in a total of six communities. In the final stage, a sampling frame obtained from the Plateau State Agricultural Development Programme (PADP) was used to randomly select 30 respondents from each of the six communities, culminating in a total sample size of 180 farmers. Primary data was collected through structured questionnaires administered via household interviews.

Data Analysis: To achieve the study's objectives, various statistical tools were employed. Descriptive statistics, including percentages and frequency distributions, were used to analyze the farmers' socioeconomic characteristics and reasons for savings. Additionally, multiple regression analysis was applied to identify the factors influencing savings, utilizing a range of socioeconomic variables.

Regression Model: The regression model was implicitly specified as follows:

$Y = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, e)$ (1)

Where:

Y = Volume of savings accumulated in a year

X_1 = Age (years)

X_2 = Sex (Dummy variable, 1 if male, 0 if female)

X_3 = Marital status (1 if married, 0 if otherwise)

X_4 = Educational status (years of formal education)
X_5 = Household size (Number of persons)
X_6 = Farm size (hectares)
X_7 = Distance to financial institution (kilometers)
X_8 = Farm income (Naira)
X_9 = Membership of organized group (Dummy variable)
e = Error term
The model was explicitly specified as:

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e \quad (2)$$

Where:
$\beta 0$ = Constant term
$\beta_1 - \beta_9$ = Regression Coefficients
Other variables are as previously defined.

Results and Discussion: The demographic characteristics of potato farmers in Riyom Local Government Area, Plateau State, provide valuable insights into the farming community. The age distribution indicates that 42% of the farmers are within the 31–40 years age range, suggesting a predominance of middle-aged individuals actively engaged in farming. Smaller percentages are in the 21–30 years (21%), 41–50 years (17%), and 51–60 years (11%) brackets, while only 9% are over 60 years. The average age of farmers is 40 years, which corresponds with findings by Fadare, Akerele., Toritseju and Okojie (2014) that most Nigerian farmers fall within the economically active age group. These demographic highlights a workforce capable of production but potentially facing challenges such as outdated infrastructure and limited access to advanced farming practices. Regarding gender, 59% of the farmers are male, and 41% are female. This disparity reflects traditional landownership norms favoring men. As observed by Olarinde and Adeyemo (2014), men often dominate farm management, whereas women play more prominent roles in marketing and trading farm produce. Such dynamics influence the division of labor in agricultural production. Marriage is prevalent, with 88% of farmers being married, indicating that farming is often a family-oriented livelihood while only 5% are single. The high proportion of married farmers suggests that farming in the region is often a family-oriented activity, where multiple family members contribute labor. This can be seen as an advantage, as it allows for shared responsibilities and a larger pool of labor, which is critical in labor-intensive agricultural practices like those found in potato farming. Education levels reveal that 50% of the farmers have completed secondary education, 41% have primary education, 4% hold tertiary qualifications, and 5% lack formal education. This relatively high literacy rate suggests the potential for adopting modern agricultural techniques. Studies have shown that better-educated farmers are more likely to embrace innovative practices, enhancing productivity and income, thereby facilitating savings.

Household sizes range predominantly from 6 to 10 members (81%), with an average size of seven. Large family sizes, common in rural areas, often provide labor for farming activities. This finding aligns with Oyekale (2012), who associated larger families with reduced reliance on external labor, thereby lowering operational costs. Most farmers (61%) have 1–5 years of farming experience, followed by 31% with 6–10 years and 8% with 11–15 years. The average farming experience is 6.9 years. According to Olaniyi *et* al. (2011), limited experience may hinder efficient resource use and the adoption of advanced agricultural practices, potentially affecting income and savings. Farm sizes range between 2 to 4 hectares for 66% of farmers, while 29% own more than 4 hectares. Only 5% manage farms of 1–2 hectares. The average farm size is 3.6 hectares. This aligns with Adeyemo *et al*. (2016), who noted that smallholder farming with limited acreage is typical in Nigeria, impacting profitability and access to credit facilities.

The average annual income of potato farmers is ₦111,055, reflecting the typical earnings of smallholder farmers in the region. This finding is consistent with Adepoju and Akinwumi (2013), who reported limited incomes among Plateau State farmers, restricting their ability to invest or save. Extension services remain limited, as 55% of farmers reported no contact with extension agents in the past year. Regular extension support is crucial for promoting innovative practices, as emphasized by Salifu, Funk, Keefe, Kolavalli (2012), who found that frequent interactions with extension agents enhance productivity and savings.

Cooperative membership is also low, with only 38% of farmers affiliated with cooperatives. Membership in such organizations offers access to credit, inputs, and agricultural information. In conclusion, the demographic and socioeconomic attributes of potato farmers in Bokkos LGA reflect patterns seen in other regions. Factors such as age, gender, education, farm size, experience, and cooperative membership significantly influence agricultural productivity and savings behavior. Addressing these factors can help improve the economic well-being of smallholder farmers.

Savings Pattern of Farming Households: The savings habits of potato farmers, as detailed in Table 2, reveal a strong preference for informal savings methods. Rotational monthly contributions are the most widely used, with 47% of respondents adopting this approach. Cooperative societies are the second most popular option, favored by 30%, while banks are the least utilized, chosen by only 23% of farmers. The preference for informal savings methods is largely due to the perceived bureaucracy and higher interest rates associated with formal banking institutions. Table 2 also highlights that farmers travel an average of 6.3 kilometers to access financial institutions. This significant distance often discourages the use of formal financial services, such as banks, and promotes a tendency toward higher consumption spending. Furthermore, the table compares household savings to their average annual income. On average, potato farmers save ₦38,016 out of an annual income of ₦111,055, representing just 34% of their earnings. This proportion is relatively low, suggesting that, despite earning a moderate

income, farmers encounter challenges in building substantial savings.

Factors Influencing Savings among Farming Households: The results of the multiple regression analysis, presented in Table 3, identify key factors influencing the savings behavior of potato farmers. The linear functional form was chosen as the lead equation due to its strong coefficient of multiple determination (R^2), the statistical significance of variables, and alignment with theoretical expectations. The model's R^2 value of 0.83 suggests that 83% of the variation in farmers' savings can be attributed to selected socio-economic and institutional factors, while the remaining 17% is explained by other factors or error. The F-value of 75.75 is significant at the 1% level, confirming the model's reliability in explaining the relationship between annual savings and its predictors. Out of nine hypothesized explanatory variables, five were statistically significant: age, household size, distance to financial institutions, annual income, and cooperative society membership. These results are summarized in Table 3.

The age of farmers has a positive and highly significant coefficient at the 1% level, aligning with expectations. This indicates that older farmers tend to save more, consistent with findings by Obalola, Audu and Danilola (2018). Older individuals often demonstrate greater frugality and financial discipline, likely driven by their financial responsibilities.

Household size negatively influences savings and is statistically significant at the 1% level. Larger households are associated with reduced savings, as increased family size leads to higher consumption needs, limiting the amount available for saving. This observation is supported by Mamman, Mustapha, Sulumbe and Abdulhamid (2019), who also found a negative relationship between household size and savings. Distance to financial institutions exhibits a negative and significant relationship with savings at the 1% level. Longer travel distances discourage farmers from saving, often leading to higher consumption spending. This aligns with the findings of Ike and Umuedafe (2013) who identified a similar negative impact of distance on savings behavior.

Farm income positively and significantly influences savings at the 1% level. As income increases, farmers are better positioned to save, corroborating the observations of Morongwa and Oluwatayo (2021) and Obalola *et al*. (2018). Higher income levels enhance farmers' capacity to build financial reserves and invest in productive activities. Contrary to expectations, cooperative society membership negatively and significantly affects savings at the 1% level. While cooperative membership is generally viewed as a savings-enhancing factor, the findings suggest otherwise in this context. Many farmers depend on cooperatives for support during times of financial distress or farming losses rather than prioritizing savings within these groups. This reliance may reduce individual saving efforts, as members focus more on collective aid than on personal financial reserves.

Constraints to Savings among Farming Households:

Table 4 highlights the major challenges faced by potato farmers in saving their income, providing insights into the barriers limiting capital accumulation. The most significant constraint is inadequate farm income, reported by 51% of farmers and ranked first. Insufficient income restricts farmers' ability to save or build capital. This issue arises from the high proportion of farm earnings allocated to essential expenses such as children's education, food, and rent, leaving little for savings. Poor access to credit is the second most critical challenge, affecting 43% of respondents. Limited availability of credit reduces rural farmers' production capacity, ultimately hindering their ability to save. The third constraint, cited by 31% of farmers, is the distance to savings institutions. Many farmers live in remote areas far from local government headquarters, where formal financial institutions like banks are typically located. This geographical barrier discourages the use of formal savings methods due to logistical challenges in accessing these institutions. Finally, 26% of farmers identified bureaucratic hurdles in opening bank accounts as a key constraint, ranking fourth. The administrative complexity of the formal banking sector discourages farmers from using banks as a savings platform.

Conclusion: This study provided valuable insights into the savings behavior of potato farmers in the study area. The findings revealed a generally low savings culture, with farmers predominantly relying on informal mechanisms such as cooperative societies and rotational savings contributions. This preference stems from the perceived challenges associated with formal banking, including complex processes and higher interest rates. Key factors influencing savings behavior were identified, including age, household size, distance to financial institutions, annual income, and cooperative society membership. These socio-economic dynamics underscore the diverse influences shaping farmers' savings decisions. Furthermore, significant constraints to savings were identified, such as insufficient farm income, poor access to credit, distance from savings institutions, and bureaucratic hurdles within formal banking systems. Together, these barriers contribute to the low savings rates observed among rural farming households.

Recommendations: To enhance savings practices among potato farmers and similar agricultural communities, the following measures are recommended: **Improve Access to Credit**: Government intervention is needed to expand rural farmers' access to credit. Empowering both formal and informal financial institutions to better serve these communities can help farmers increase agricultural productivity, enhance income levels, and save more effectively.; **Expand Rural Banking Services**: Commercial banks should establish more branches or service points in rural areas to reduce the challenge of geographical distance. Closer proximity to banking services will promote financial inclusion and encourage the adoption of formal savings methods.;**Promote Financial Literacy**: Initiate financial literacy programs to educate rural farmers on the benefits and processes of formal savings. These programs can alleviate fears about bureaucratic banking systems and equip farmers with the knowledge to engage confidently with financial institutions. By implementing these recommendations, policymakers and stakeholders can foster a culture of savings and strengthen the financial resilience of

potato farmers in Riyom Local Government Area and similar rural regions in Nigeria.

Table 1: Distribution of Irish Potato Farmers according to Socio-economic Characteristics

Variable	Frequency	Percentage	Mean
Age			
21-30	37	21.0	
31-40	76	42.0	
41-50	31	17.0	
51-60	20	11.0	
61-70	16	9.0	**40**
Sex			
Male	107	59.0	
Female	73	41.0	
Educational status			
Primary	74	41.0	
Secondary	90	50.0	
Tertiary	7	4.0	
Non formal	9	5.0	
Marital status			
Single	9	5.0	
Married	159	88.0	
Divorced	4	2.0	
Separated	3	2.0	
Widowed	5	3.0	
Household size			
1-5	70	39.0	
6-10	79	44.0	
11-15	19	10.0	
>15	12	7.0	**7.0**
Farm size			
1-3	125	69.0	
4-6	27	15.0	
7-9	18	10.0	
10-12	10	6.0	**4.0**
Farming experience			
1-5	55	61.0	
6-10	110	31.0	
11-15	15	8.0	**6.9**
Annual income			
1000-50,000	21	12.0	
51,000-100,000	67	37.0	
101,000-150,000	46	26.0	
151,000-200,000	35	19.0	
201,000-250,000	11	6.0	**111055**
Membership of cooperatives			
Yes	69	38.0	
No	111	62.0	

Source: Field survey, 2024.

Table 2: Distribution of Respondents according to Savings Pattern

Variable	Frequency	Percentage
Saving institution		
Cooperatives society	54	30.0
Rotational contribution	84	47.0
Bank	42	23.0
Distance to saving institution (km)		
<1	-	
1-5	87	48.0

6-10	65	36.0	
>10	28	16.0	6.3
Amount saved			
1000-50,000	149	72.0	
51,000-100,000	16	15.0	
101,000-150,000	9	9.0	
151,000-200,000	4	3.0	
201,000-250,000	2	1.0	38016

Source: Field survey, 2024**.**

Table 3: Multiple Regressions on Factors Influencing Savings among Irish Potato Farmers

Variable	**Coefficient**	**Std Error**	**T.value**
Constant	36.30	3.780	9.60
Age	0.254	0.042	5.97***
Sex	1.111	0.876	1.27
Marital status	1.850	2.710	0.68
Educational status	-0.397	0.647	-0.61
Household size	-2197	120	-18.31***
Farm size	0.932	0.845	1.10
Distance to financial institution	-0.635	0.260	-2.44**
Annual income	0.219	0.012	18.30***
Membership of cooperative	-10.668	0.626	-17.04***
F-value: 75.75***			
R-squared: 0.83			
Adjusted R-squared: 0.82			

** and *** indicate significance at 5% and 1% probability levels

Table 4: Distribution of Irish Potato Farmers based on Constraints to Savings

Constraint	**Frequency***	**Percentage**	**Rank**
Inadequate farm income	91	51.0	1st
Poor access to credit	78	43.0	2nd
Distance to savings institution	56	31.0	3rd
Bureaucracy of banks	47	26.0	4th

Multiple responses recorded

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