



Benefits of Financial Credit among Smallholder Farmers

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Abstract

The smallholder farmers in the developing countries are struggling to remain in agribusiness due to inadequate access to agricultural finance. It was against this background that this study analysed the benefits of financial credit among smallholder farmers in Plateau State, Nigeria. The specific objectives were to: (i) describe socio-economic characteristics of the farmers; (ii) determine the sources of credit available to the farmers; (iii) examine the perceived benefits of credit obtained by the farmers; (iv) identify the factors influencing accessibility of credit to the farmers; (v) ascertain the constraints to credit accessibility among the farmers. Two-stage random sampling technique was used to select 120 respondents. A structured interview schedule was used to elicit information from respondents. Data collected was analysed using descriptive statistics, and spearman rank correlation analysis. The results of this finding revealed that mean age of the farmers was 45 years. Majority of the farmers (43.3%) had secondary education. Preponderance (84.2%) of respondents practiced farming as primary occupation. Most (89.2%) of the respondents sourced their credit from money lenders. Increase in income and ability to send children to school were perceived benefits of credit obtained by the respondents. The farmers' access to credit was significantly influenced by farming experience, farm size, level of education and annual income. The study therefore recommended that government should make adequate and timely provision for soft loans among the potato farmers since most of the farmers sourced their loans from money lenders which attracts high interest rate that may kill potato business.

Keywords:

Access,
Collateral,
Credit,
Income,
Productivity

1. Introduction

Irish potato (*solanum tuberosum* L.) is a starchy, tuberous crop from the family *Solanaceae*, genus; *solanum*, species; *S.tuberosum*. Irish potato is the world's fourth largest food crop, following rice, wheat and maize. The Inca Indians in Peru were the first to cultivate potatoes around 8000 B.C to 5000 B.C. In 1536, Spanish conquistadors conquered Peru and discovered the flavours of potatoes and carried them to Europe. Europe found potato easier to grow and cultivate than other staple crops such as wheat and oats. It is a native of the western hemisphere and it's believed to have originated somewhere between Mexico and Chile, possibly in Andes highlands of Bolivia and Peru. It later spreads to other places like England and Ireland.

Potato arrived late in Africa around the turn of the twentieth century. Irish potato production in Africa is estimated at 25 million metric tonnes with yield per hectare of 13,215.4 kg/ha, and per capita consumption (fresh and processed) of 18.76 kg/capita/year (FAOSTAT, 2019). Algeria is the leading producer of Irish potato in Africa with a production of 4,606,400 metric tonnes, followed by Egypt (4,325,480 metric tonnes) and South Africa (2,450,540 metric tonnes). Nigeria's production of 1,284,370 metric tonnes ranks seventh in Africa after Morocco (1,924,870 metric tonnes), Tanzania (1,749,201 metric tonnes) and Kenya, the fourth to sixth largest African producers (FAOSTAT, 2019).

The planting stuck has been received from Ireland hence, the name 'Irish Potato'. Irish potato was introduced to Nigeria in the later part of the nineteenth century and early twentieth century by the European notably the tin miners in Jos plateau, (Okonkwo et al., 1995). Irish potato give the highest yield per unit area among roots and tuber crops in Nigeria and that it brings more income to farmers than other roots and tuber crops. The production and marketing of Irish potato in the highland zones of plateau state has become an integral part of the rural economy, both at the rainy and dry seasons as it is cultivated as a rain-fed and dry season crop (Okeke and Ikponmwosa, 2012). According to Okonkwo et al, (1995) planting of rain-fed potato takes place from late March to August depending on the local conditions while harvest occurs three to four months later, from July to November. Irrigated productions start from late October through January with harvest in January, February, March and April.

Irish potato is grown in an open area with adequate access to sunlight in a fertile and well-drained soil, with PH between 5.5 and 6.5. Irish potato is grown for food as well as a commercial crop. It is a major source of income among the rural farmers in many African countries. Irish potato is by far the most fruitful and efficient tuber crop in the world in terms of tuber yields and days to maturity. The crop matures in about sixty (60) to ninety (90) days as compared to nine and twelve months for yam and cassava respectively (NRCRI, 2005).

Moreover, in order to improve food production in Nigeria, various strategies have been developed by the past and present government including stakeholders at all levels; one of such strategies is hinged on the need to increase farmers access to credit to increase productivity, while others focus on agricultural diversity (Osabohien et al., 2020a). Those strategies are necessary because, in developing countries, especially in sub-Sahara Africa, the agricultural sector accounts for more than 50% of the entire labour force and it contributes significantly to the Gross Domestic Product (GDP) (Matthew et al., 2019).

1.1 Statement of the Problem

About three-quarter of the world's poor that are majorly involved in agricultural activities live in rural areas (World Bank, 2018; Marris, 2018). The production of food across the African continent, especially in Nigeria, agriculture contributes a crucial proportion of activities engaged and captures about 80% of total industry size with livestock, forestry and fishing accounting for the balance of 20% (Osabohien et al., 2020). Irrespective of crucial role plays by agriculture, its contribution to GDP has currently dropped as a result of low yields resulting from constrained or limited access to credits by smallholder farmers. The sector's contributions to GDP dropped from 31% (113.64 billion USD to 78 billion USD between 2013 and 2017 (Nevin et al., 2019).

Potato farming has a major impact on the lives of the farmers like creating a sustainable standard of living income. The same applies for those in the value chain sector (marketing, sales and logistics). In recent years, Irish potato has witnessed a growing demand in Nigeria. This comes mainly from consumers who have come to realize its health benefits. Currently, Nigeria is the eight largest producers of Irish potato in Africa, the yield per year 843,000 tonnes. Both potato production, its consumption and demand are growing fast; this is because of the consumption classes and thus the primary source of income for the rural farmers in Jos south local government area of Plateau state.

The growth and productivity of Irish potato is still hindered by limited access to agricultural input especially finance in form of credit. It is however unfortunate that in spite of numerous banks established to promote agricultural credit in Nigeria, there is still a shortage and or lack of empirical information on the rural farmers' benefits and access to credit in the study area. On this note it has resulted in the slow developmental performance of the nation's agricultural sector especially in potato production. It is also imperative to note that despite the importance of agriculture in the growth and development of Nigeria economy, the sector is still faced with numerous problems among which is lack of finance especially agricultural credit to finance most of the agriculture investment which are mainly small scale in nature.

Therefore, there is a need in accelerating the processes of rural farmers' transformation by various governments in the area of poverty alleviation, provision of rural infrastructure and skill acquisitions, agricultural extension, and in the development of agricultural credit establishments that will enhance rural farmers' livelihoods in Nigeria at large and the study area in particular.

Several authors have worked on agricultural finance or credit in the past but none of them has researched on the benefits of credit among smallholder farmers most especially in Nigeria. For instance, Nermin and Eray (2020), proved the effect of agricultural loans on agricultural production value and agricultural production amount. Oluwamayokun (2018), reviews more literature on smallholder agricultural finance. Hence, it is on this background that the study aimed to investigate the benefits of financial credit among smallholder farmers in Plateau State, Nigeria.

Hypothesis

H₀₁: There is no significant relationship between some selected socio-economic characteristics of the respondents and the perceived benefits of credit obtained by the Irish potato farmers.

Justification for the Study

The findings of this research will provide answers to the sources of information on the operation of credit institutions in the study area. The result from this research is expected to help the government and policy makers to establish agricultural credit window that will enhance or scale up smallholder farmers' livelihoods. To fellow researchers, this research will validate the existing literature in the area of credit procurement for agricultural productivity especially in Irish potatoes production. This research will serve as references to other researchers who may wish to carry out further study on the subject matter or related areas. Finally, this research will contribute to the body of knowledge by helping to expose the most inherent problems or needs of the farmers in accessing the credit / soft loans for agricultural production.

2. Materials and Methods

2.1 Study Area

The study was carried out in Plateau State. The city is divided into three local government areas of Jos North, Jos South and Jos East. Plateau state is a state in the middle belt of Nigeria that is celebrated as "The home of peace and Tourism". With natural formations of rocks, hills, and waterfalls, it derives its name from the Jos-Plateau with a population of about 900,000 residents. Though situated in the tropical zone, a higher altitude means that the plateau has a near temperate climate with an average temperature of between 13 and 22°C, it enjoys a more temperate climate than much of the rest of Nigeria. These cooler temperatures have, from colonial times until the present day, made Jos a favourite holiday resort for both tourists and expatriates based in Nigeria. The state grows crops like maize, guinea corn, Irish potato, cassava, yam and Acha (sometimes referred to as "hungry rice") as staple food. With the nature of the weather, a lot of vegetables and fruits are grown.

Irish potato was introduced to Nigeria in the early 19th Century when it was first planted in the Jos Plateau (Taiy et al., 2017; Tadesse et al., 2018). Plateau State has an average maximum temperature of 31.7°C and a minimum temperature of 15°C. The highest temperatures are recorded in the months of March to May while the lowest temperatures are between December and January (Harmattan months). Thus, a rainfall season running from April to October and a dry season with a cold dry harmattan wind that prevails over the state from November to February. This gives the state a near temperate climatic condition that favours the cultivation of crops like Irish potato which require an optimum temperature of 15°C for tuber formation (Okonkwo et al., 2009). The Jos-Plateau meets this condition in both rainy and dry season, thus making the crop one of the most important root crops grown on the Jos-Plateau. It is currently widely cultivated in commercial quantities in Plateau state. The State is notably the most important area for potato production in Nigeria as over 80% of Irish potato produced in the country come from Plateau State (Muhammed et al., 2016).

2.2 Population for the study

The population for the study consisted of all Irish potato farmers in Jos South Local Government Area of Plateau State, Nigeria.

2.3 Sampling Procedure and Sample size

A two-stage sampling technique was used to select respondents. The first stage was proportionate random selection of 5 percent of the 104 villages in Jos south Local Government Area to give five (5) villages. The selected villages include; Anguldi, zawan, Gero, K.vom, and Ran Gyel. The second stage involved random selection of 30% of farmers that engaged in Irish potato production in the study area. A sample size of 120 was used for this study.

2.4 Measurement of Variables

Dependent variable

The dependent variable for the study was the perceived benefits of credit to Irish potato farmers. This was measured using a Four-point likert- type scale. A list of possible benefits of credit was drawn and respondents were asked to indicate the extent to which they agree or disagree with the statement on a scale of one to four as follows:

Strongly agree=4, Agree= 3, Disagree= 2, Strongly Disagree= 1.

Factors influencing accessibility of credit

A four-point likert-type scale was used to measure the factors influencing the accessibility of credit for Irish potato production. A list of possible factors that could influence the accessibility of credit was drawn and respondents were asked to indicate the extent to which they agree or disagree with the reasons on a scale of 1- 4 as follows:

Strongly Agree=4, Agree= 3, Disagree= 2, Strongly Disagree= 1

2.5 Data Analysis

The data collected from the field survey were subjected to both descriptive and inferential statistical analyses. To analyse and summarise farmers' perception of benefits and factors influencing accessibility, statements were rated on a four-point continuum scale (4 being agree and 1 being strongly disagree). Frequency and percentage were calculated for the perceived benefits and accessibility to summarise the data. Hence, each statement on perception of the respondents was ranked based on mean rank obtained by Friedman's test as follows:

$$\text{Mean rank} = \frac{12}{n_r k(k+1)} \sum R_i^2 - 3n_r(k+1)$$

Where k = number of columns (treatments)

n_r = Number of rows (- blocks)

R_i = Sum of the ranks

Spearman Rank Order Correlation Coefficient was used to establish the relationship between selected socioeconomic characteristics and the perceived benefits of credit as follows.

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

Where ρ = Spearman's rank correlation

d_i^2 = Difference between the two ranks of each observation

n = Number of observations

3. Results and Discussion

3.1 Socioeconomic Characteristics of the Respondents

Results in Table 1 shows that most (56.7%) of the respondents were between the age of 31- 50 years, 32.5% were above 50 years while 10.8% were below 30 years. The average age of the respondents was 45 years which indicates that Irish potato farmers in the study area were in their productive age. This result suggests that majority of the farmers in the study area are young farmers who are within the age bracket in which people are innovative and active at work (Akinbode, 2013). These farmers therefore can make meaningful impact in agricultural production when adequately motivated with the needed credit.

Above average (56.7%) of the respondents were male while 43.3% of the respondents were female. This shows that males were more involved in Irish potato farming than females in the study area and this could be as a result of the hectic nature of Irish potato farming. This is because farming operations require a lot of energy and is labour intensive especially in the rural areas where crude farm implements are usually used. This agrees with the finding of Olaitan (2006), that small-scale farming is being carried out mostly by males, while females involve in light farm operations such as processing, harvesting and marketing. Majority (69.2%) of the respondents were married and 18.3% were single. This reveals that most Irish potato farmers in the study area were married. This implies that most of the respondents were held with more responsibilities. The result also implies that income sources might be diversified by majority of the farmers. This agrees with the findings of Basse et al., (2014b) who stressed that, family needs and responsibilities allow married people to be more involved in income diversification strategies.

Of 120 respondents, 45.8% had less than or equal to 10 years' experience, 45.8 percent of the respondents had 11 – 20 years' experience and 8.3% of the respondents had over 20 years farming experience. The average year of farming experience was 13.3years. This shows that most of the Irish potato farmers in the study area were more experienced in their enterprise. Farmers having more experience in farming business have higher tendency towards using available sources so as to increase their farm output. Preponderance (86.7%) of the respondents had less than or equal to 5 acre of farm land and 13.3% of the respondents in the study area had over 6 acre of farm land. This implies that they were mostly small-scale farmers.

Below average (43.37%) of the respondents had secondary education, 35.0% had only primary education. 16.7% had tertiary education while 5.0 percent had non-formal education. The implication is that, the level of education of farmers affects adoption of new technologies, decision making process, investment behavior and influence farmers' labor and income positively.

On annual income, 65.8% of the respondents earned between ₦120000- ₦400,000, 21.7% had an annual income between ₦40000 and ₦70000 and 12.5% earned above ₦700,000. The average annual income was ₦112,852. This

implies that they are low income earners. Farming is their primary occupation and source of income while their major source of information was through the radio.

Majority (64.2%) had extension contact annually, 8.3% had weekly contact and 27.5% monthly. Farmers who have a frequent contact with extension agents are expected to have more information that will positively influence their demand for and access to credit.

Table 1. Socio-economic Characteristics of the Respondents (n=120)

Variables	Frequency	Percentage	Mean
Age			
≤ 30 years	13	10.8%	45 years
31 – 50 years	68	56.7%	
>50 years	39	32.5%	
Sex			
Male	68	56.7%	
Female	52	43.3%	
Religion			
Christianity	91	75.8%	
Islam	29	24.2%	
Marital status			
Single	22	18.3%	
Married	83	69.2%	
Widow/widower	15	12.5%	
Farming experience			
≤ 10 years	55	45.8%	13.3 years
11 – 20 years	55	45.8%	
>20 years	10	8.3%	
Farm size (ha)			
≤ 5	104	86.7%	3.0
> 5	16	13.3%	
Level of education			
Non-formal education	6	5.0%	
Primary education	42	35.0%	
Secondary education	52	43.3%	
Tertiary education	20	16.7%	
Annual Income			
< ₪120,000			₪112,852.5
₪120,000- ₪400,000	79	65.8	
₪400,001- ₪700,000	26	21.7	
> ₪700,000	15	12.5	
Farming as primary occupation			
Yes	101	84.2%	
No	19	15.8%	
Source of information			
Radio	44	36.7%	
Television	36	30.0%	
Internet	5	4.2%	
Neighboring farmers	20	16.7%	
ADP	15	12.5%	
Extension contacts			
Weekly	10	8.3%	
Monthly	33	27.5%	
Yearly	77	64.2%	

Source: Field Survey, 2019.

3.2 The Sources of Credit Available to the Respondents

Table 2 shows the sources of credit available to Irish potato farmers in the study area. Majority (89.2%) of the respondents sourced their credit from money lenders while 35.0% of the respondents sourced their credit from family and friends. 32.5% of the respondents sourced credit from microfinance bank 15.8 percent sourced credit from co-operative societies while only 2.5% sourced their credit from commercial banks. This result shows that only a small percentage of Irish potato farmers in the study area had access to formal sources of credit. This result is however similar to that of Jenapati and John (2009) who discovered that farmers in Mumbai rarely have access to corporate sources of finance.

3.3 Perceived Benefits of Credit obtained by the Respondents

Table 3 shows the ranked benefits of credit obtained as provided by Irish potato farmers in the study area. The most perceived benefit of credit obtained was increase in income and it was ranked 1st with a mean score of 3.5, acquisition of more farm land and increasing farm productivity were both ranked 2nd with an equal mean score of 3.4. Affordability of farm machines (ms=3.0) and increase in farm input (ms=3.0) were ranked 3rd respectively. Ability to send children to school (ms=2.8) ranked 4th. Ability to invest in other agro-allied businesses ranked 5th with mean score of 2.6 while increase in economic growth ranked 6th with a mean score of 2.5.

Table 2. Sources of Credit Available to the Respondents

Sources	Frequency	Percentage
Commercial Banks	3	2.5%
Microfinance Banks	39	32.5%
Cooperative Societies	19	15.8%
Money lenders	107	89.2%
Family and Friends	42	35.0%

Table 3. Perceived Benefits of Credit obtained by the Respondents

Benefits	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Rank
Increase in income	80(66.7%)	26(21.7%)	6(5.0%)	8(6.7%)	3.5	1 st
Acquisition of more farm land	63(52.5%)	46(38.3%)	5(4.2%)	6(5.0%)	3.4	2 nd
Increasing farm productivity	71(59.2%)	28(23.3%)	16(13.3%)	5(4.2%)	3.4	2 nd
Affordability of farm machines	25(20.8%)	74(61.7%)	15(12.5%)	6(5.0%)	3.0	3 rd
Increase in farm inputs	37(37.8%)	33(27.5%)	43(35.8%)	7(5.8%)	3.0	3 rd
Ability to send children to school	31(25.8%)	48(40.0%)	19(15.8%)	22(18.3%)	2.8	4 th
Ability to invest in other Agro- allied busines	23(19.2%)	37(30.8%)	46(38.3%)	14(11.7%)	2.6	5 th
Increase in economic growth	10(8.3%)	46(38.3%)	57(47.5%)	7(5.8%)	2.5	6 th

3.4 Factors Influencing the Accessibility of Credit

Table 4 shows ranking of the factors influencing the accessibility of credit. The first ranked factor is the availability of near-by financial institutions (ms=3.5). Rigid lending policies and collateral requirement were both ranked 2nd with an equal mean of 3.0. Educational level and financial cost were ranked 3rd and 4th with mean scores of 2.6 and 2.4.

The factors identified in the study are not similar to those of Enya and Alimba (2008) in which the authors found that character, book-keeping, collateral and availability of credit institutions are the most significant factors to accessing loans in Abia State.

3.5 Constraints to Credit Accessibility

Table 5 shows constraints faced by Irish Potato Farmers in accessing credit facilities. The most severe constraint as identified by the respondents was unavailability of guarantor (ms= 2.64). Inadequate collateral was also a major constraint (ms=2.60) results further shows that other constraints faced by the farmers in the study area in order of severity include; high interest rates (ms=2.50) inadequate farm size (ms=2.38); poor farm records (ms=2.02); However, the least identified constraints to credit accessibility was no/little farm experiences and religious beliefs on interest rates with an equal mean score of 2.01. This finding is in tandem with CBN (2018), which mandated guarantor and interest rate as key factors before the release of agricultural credit.

Test of Hypothesis

H₀₁: There is no significant relationship between some selected socio-economic characteristics of the respondents and perceived benefits of credit obtained by the Irish potato farmers.

Spearman Rank Order Correlation was used to examine the relationship between socio-economic characteristics and perceived benefits of credit obtained by Irish potato farmers in the study area. It was discovered that age and religion of the respondents did not have significant relationship with the benefits of credit obtained. This implies that these factors are not good predictors of benefits in the study area. As depicted in Table 6, farming experience, farm size, level of education and annual income had positive and significant relationship with perceived benefits from credit obtained. Farming experience had a correlation coefficient of 0.121 which means that any unit increase in the amount of experiences garnered in the cultivation of potato will increase the benefits to be obtained from credit accessed. Farm size had rho of 0.218 which indicates that for a unit increase in the size of farm land there would be an increase in the benefits from credit facility. This result contradicts the conclusion of Ogheneruemu and Dominic (2020), who opined that farm size had a negative influence on the probability of having benefit of high profitability level. Level of education had coefficient of 0.231 which implies that, farmers with higher level of education will benefit more than those in the lower level. Annual Income had a correlation coefficient of 0.387. This shows that potato farmers with higher income enjoy more benefits from credit obtained than those with lower income.

Table 4. Factors Influencing the Accessibility of Credit

Factors	Strongly agree	Agree	Disagree	Strongly disagree	Mean	Rank
Availability of near-by financial institutions	90(75.0%)	14(11.7%)	5(4.2%)	11(9.2%)	3.5	1 st
Rigid lending policies	41(34.2%)	50(41.7%)	17(14.2%)	12(10.0%)	3.0	2 nd
Collateral requirements	27(22.5%)	70(58.3%)	16(13.3%)	7(5.8%)	3.0	2 nd
Educational level of farmers	12(10.0%)	51(42.5%)	48(40.0%)	9(7.5%)	2.6	3 rd
Financial cost	16(13.3%)	48(40.0%)	22(18.3%)	34(28.3%)	2.4	4 th

Source: Field Survey, 2019.

Table 5. Constraints to Credit Accessibility

Constraint	Not a constraint	Not severe	Severe	Very severe	Mean
Unavailability of guarantor	30(25.0%)	20(16.7%)	33(27.5%)	37(30.8%)	2.50
Inadequate collateral	20(16.7%)	23(19.2%)	62(51.7%)	15(12.5%)	2.60
High Interest rates	15(12.5%)	40(33.3%)	55(45.8%)	10(8.3%)	2.64
Inadequate farm size	7(5.8%)	66(55.0%)	41(34.2%)	6(5.0%)	2.38
Poor farm records	47(39.2%)	38(31.7%)	20(16.7%)	15(12.5%)	2.02
No/little farm experience	41(34.2%)	47(39.2%)	21(17.5%)	11(9.2%)	2.01
Religious believes on interest rate	30(25.0%)	56(46.7%)	28(23.3%)	6(5.0%)	2.01

Table 6. Correlation Analysis Showing the Relationship between Selected Socio-economic Characteristics of respondents and the perceived Benefits of Credit Obtained by Irish potato farmers

Variables	Rho	Sig (p value)	Remark
Age	0.097	0.612	Not Significant
Religion	0.112	0.061	Not Significant
Farming Experience	0.121	0.041	Significant
Farm Size	0.218	0.000	Significant
Level of Education	0.231	0.000	Significant
Annual Income	0.387	0.000	Significant

4. Conclusion and Recommendation

There are several researches on farm credit but none has contributed to potato farmers' accessibility of credit, which is the reason why this research was conducted. Farmers need credit to scale up their farming enterprises and progress in farming business but government has made little or no effort to assist them in that regard. Federal Government have staged many agricultural programmes as strategies for rural and agricultural development such as agricultural inputs subsidy under growth enhancement scheme, anchor borrower and states inputs distribution programme for smallholder farmers. But all failed to address the core issue of credit facilities or soft loans to farmers which will allow them to prepare for seasonal farming activities like land clearing and preparation before getting inputs from government. Even many of these inputs were not timely distributed to farmers, however, a top-down

approach might have been used to implement the programmes instead of bottom up. The study therefore recommended that government should make adequate and timely provision for soft loans among the potato farmers since most of the farmers sourced their loans from money lenders which attracts high interest rate that may kill potato business.

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