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Economic Analysis of Rice Production among the Youths in Kwara State, Nigeria

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Abstract

Youths' unemployment is one the major developmental challenges facing many developing countries. However, the youths usually show apathy towards agriculture, which is a potential solution to this menace, due to perceived non-lucrativeness of the venture. In the light of this, this study assessed economic performance of youth rice farmers using Kwara State as a case study. Data were collected from 120 respondents through questionnaire using a combination of purposive and random sampling techniques. Descriptive tools, cost and return analysis, and regression model were used for the analysis. Majority of the youths were male (74.17%), married (65.83%), less educated, had no access to extension services (61.67%), small scale farmers, financed their operations with personal savings (68.33%) and had farming as a secodary occupation (73.34%). The gross margin, return to farm management and labour, gross ratio, operating ratio and return to capital invested by the farmers was ₦53,654.16/ha, ₦35,053.33/ha, 0.59, 0.36 and ₦1.80/ha respectively (1USD = ₦158). Factors influencing rice output of the respondents were quantity of seeds ($p < 0.01$), farm size ($p < 0.1$), labour ($p < 0.01$), age ($p < 0.01$), level of education ($p < 0.01$), farming experience ($p < 0.1$), access to extension services ($p < 0.01$). The major problems faceed by the youths were insufficient capital, inadequate knowledge on rice production, low output price, high input cost and transportation problems. There is need for encouraging the youth through provision of improved seeds, land, credit facility, good roads and extension services.

Keywords: Youth rice farmers, profitability, factors, constraints

1. Introduction

Unemployment has been a major problem facing many developing countries across the globe. According to estimates, the youth are the most affected in the struggle. [11] estimates that 88 million young women and men throughout the world are unemployed, accounting for 47 per cent of 186 million unemployed persons globally. Nigeria is not left out in this menace. According to [14], Nigeria's unemployment rate increased to 23.9 percent in 2011 compared with 21.1 percent in 2010 and 19.7 percent in 2009. [24] reported that out of about 170.1million estimated population of Nigeria, about 44% were below the age of 15years, 3% were at least 65years old, implying that those within the economic active population (15 – 64 years) were about 53% of the population. [10] also reported that 41.6% of Nigerian youth are unemployed. Amid this high rate of unemployment, however, previous studies have revealed that the youth have apathy towards agriculture [1, 2, 3, 12, 13].

The age in which an individual is considered youth varies around the world. The United Nations and the World Bank define "Youth" as persons between the ages of 15 and 24 years. The Commonwealth Youth Programme considers the youth as young people aged 15-29. World Health Organization view "Youth" as any member of society between ages of 15 and 34. According to [9], the youth comprises all young persons of ages 18 to 35years, who are citizens of the Federal Republic of Nigeria. On the other hand, the Children-In-Agriculture Programme (CIAP) took cognizance of the circumstances of poverty, unemployment and deprivations that are prevalent in Nigeria and some other developing countries which make some people still depend on others for survival, protection and development up to the age of 40 years to define youth as people from ages 19 – 40 years [4].

Rice is a food security crop for meeting consumption needs globally. It is the world's most important food commodity and ranks third in Nigeria. According to [25], an average Nigerian now consumes 24.8 kg of rice per year, representing 9% of total caloric intake. However, although Nigeria is the largest producer of rice in West Africa yet it accounts for 20% of sub-saharan African rice import [26]. This is in an attempt to meet the supply-demand gap of rice in the country. The consequence of this excessive

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importation is the huge drains on the country's foreign exchange earnings over time. The shift from a self-sufficient nation to an importing nation also made rice to become a strategic commodity in Nigerian economy [15].

One of the major constraints to agricultural production in Nigeria is the fact that Nigerian agriculture is still being carried out through the use of physical strength, which declines with age [13, 19]. Therefore, involvement of the youth in agriculture, especially staple food crops such as rice, is vital to facilitate production in a manner to fill in the supply-demand gap in food crops in the country. [7] opined that youths are more often open open to new ideas and practices than adult farmers. [6] posited that the youth are the active population of any nation and that their involvement in agricultural activities goes a long way in shaping the developmental height of a nation. They also argued that this will not only improve the socio-economic life of the people but also encourage development of vocational agriculture among the youths. In spite of these opportunities, the youth still perceive agriculture to be non-lucrative [3].

Lack of information on the economic performance of the youths in agricultural production as well as the profitability of their crop production entreprise may be a principal reason for the non-recognition of its importance in reducing unemployment level of youths by policy makers and relevant institutions and hence the resulting little attention given to this sector by the youths. The main objective of this study, therefore, is to assess economic performance of youths in rice production in Kwara State, Nigeria. The specific objectives are to

(i) describe the socio-economic characteristics of the youth rice farmers;

(ii) assess profitability of rice production by the youths;

(iii) examine factors influencing rice production by the youths; and

(iv) identify constraints militating against rice production by the youths.

2. Methodology

2.1 Study Area

The study was conducted in Kwara State, Nigeria. The state covers a landmass of 32,500km^2 and lies between latitudes 7° 45' and 9°30'North and longitudes 2° 30' and 6° 35' East. The state is made up of sixteen Local Government Areas (LGA). According to [16], the population of the state is about 2,371,089 people.

The state has two main climate seasons: the dry and wet season. The natural vegetation comprises wooded and rainforest savanna, with annual rainfall ranging between 1000 to 1500 mm. The annual rainfall pattern across the state extends between the months of April and October with minimum temperature ranging from 21.1^0 to 25^0 while maximum average temperature ranges from 30^0 to 35^0. These climatic conditions as well as fertile soil make the state favourbale for agricultural production. The major crop produced in the state are rice, maize, sorghum, millet and cowpea.

2.2 Sampling Procedure and Data Collection

The target population for this study was youth rice farmers in the study area. A three-stage random sampling procedure was employed to obtain the data. The first stage involved a purposive selection of Patigi and Edu LGAs of the state. This was based on the prior information obtained from the state's Agricultural Development Agency that the two LGAs are the major producers of rice in the state. This was followed by random selection of six farming communities from each LGA. The communities were Faigi, Bele, Shonga, Tada, Patako, Emi, Edogi, Rami, Sakpefu, Bissan, Gberi and Sanganuwon. The third stage involved a random selection of ten youth rice farmers from each of the selected communities, using the definition of youth by CIAP. A total of 120 youth rice farmers were used for the study. Information was sourced with the use of structured questionnaire augmented with oral interview. Data collected include socio-economic profile of the respondents, agricultural production data, prices of farm inputs used and rice output, and constraints faced in agricultural production.

2.3 Analytical Techniques

Generally, descriptive statistics such as mean, frequency distribution and percentage were used to describe the socio-economic characteristics of the youths, identify their problems and summarize data obtained from the field. Cost and return analysis was carried out to assess the profitability of rice production by the respondents. This include determination of gross margin, return to farm management and labour, gross ratio, operating ratio and return on capital invested by the repondents. Gross margin is the difference between the gross value of farm output (Gross Farm Income, GFI) and

the Total Variable Cost (TVC). It is a useful planning tool in situations where fixed capital is just a negligible portion of the farming enterprises [21, 22].

GM = GFI – TVC

Where GM = Gross Margin, GFI = Gross Farm Income (gross value of output), TVC = Total Variable Cost.

Return to farm management and labour = Gross Margin – Imputed costs

Gross Ratio is a profitability ratio that measures the overall success of the farm. The lower the ratio, the higher the the return per naira.

GR = TFE/GI

Where GR = Gross Ratio, TFE = Total Farm Expenses and GI = Gross Income

Operating Ratio is directly is directly related to the farm variable input usage [18]. The lower the ratio, the higher the profitability of the farm business.

OR = TOC/GI

Where OR = Operating Ratio, TOC = Total Operating Cost and GI = Gross Income

Return on capital invested is defined as gross margin divided by total variable cost

RI = GM/TVC

Where RI = Return on Capital Invested, GM = Gross Margin and TVC = Total Variable Cost

Regression analysis was used to determine factors influencing output of the respondents. Since economic theory does not specify a particular function relating rice output to its determinants, four different functional forms namely: linear, semi-log, double log and exponential functions were fitted. Then the lead function was chosen based on economic, statistical and econometric criteria following [8]. The functions were specified as follows:

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + U$ (Linear)

$Y = a + b_1\ln X_1 + b_2\ln X_2 + b_3\ln X_3 + b_4\ln X_4 + b_5\ln X_5 + b_6\ln X_6 + b_7\ln X_7 + b_8\ln X_8 + b_9X_9 + U$ (Semi-log)

$\ln Y = a + b_1\ln X_1 + b_2\ln X_2 + b_3\ln X_3 + b_4\ln X_4 + b_5\ln X_5 + b_6\ln X_6 + b_7\ln X_7 + b_8\ln X_8 + b_9X_9 + U$ (Double-log)

$\ln Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + U$ (Exponential)

Where,

Y = Rice output (kg)

X_1 = Quantity of seeds (kg)

X_2 = Quantity of fertilizer (kg)

X_3 = Farm size (ha)

X_4 = Amount of labour (manday)

X_5 = Age (years)

X_6 = Level of education

X_7 = Household size

X_8 = Farming experience (years)

X_9 = Access to extension services (yes = 1, no = 0)

3. Results and Discussion

3.1 Socio-economic Characteristics of Respondents

Table 1 shows detailed analysis of the socio-economic characteristics of the respondents. The gender distribution of respondents in the study showed that majority (74.17%) of the youth farmers were male. This might be because rice farming, like any crop production activity, is energy consuming and the male are capable of doing more tedious work than the females [13].

Distribution of the respondents according to age shows that the modal age group were those between the age of 36 – 40 years (25.00%) with mean age of 28.56years.

About 65.83% of the youths were married, 30.83% were single, 2.50% were divorced while 0.83% were widowed. This implies that majority of the youth rice farmers were married. These results likely suggest that rice farming is a means by which the youths cater for their family.

In the traditional agricultural production, family labour plays a significant role in farm labour supply. The average farmer first exhausts all sources of labour in his family before hiring labour in order to reduce the cost of production [27]. The amount of family labour available is usually closely related to the household size of the farming household. Eighty percent of the respondents had a household size of 2 to 6 persons. An average of four persons was obtained in the study, suggesting a low source of family labour to the youth farmers [13].

Table 1 further reveals that 60% of the respondents had formal education while 40% did not.

However, 33.33% of the respondents had primary education, 15.83% had secondary education while just 10.83% had tertiary education. This could be an indication of the lack of indication in Agriculture by graduates [13].

Distribution of the respondents according to their primary occupation shows that 26.67% of the youths had farming as their main occupation while 73.34% did not.

Table 1: Socio-economic Characteristics of the Respondents (N = 120)

Characteristics	*Category*	*Frequency*	*Percentage*
Gender	Male	89	74.17
	Female	31	25.83
Age (years)	≤ 20	19	15.83
	21 – 25	20	16.67
	26 – 30	23	19.17
	31 – 35	28	23.33
	36 – 40	30	25.00
Marital Status	Single	37	30.83
	Married	79	65.83
	Divorced	3	2.50
	Widowed	1	0.83
Household size (Number of persons)	1 – 2	18	15.00
	3 – 4	48	40.00
	5 – 6	48	40.00
	□6	6	5.00
Educational Status	No formal education	48	40.00
	Primary education	40	33.33
	Secondary education	19	15.83
	Tertiary education	13	10.83
Primary occupation of respondents	Farming	32	26.67
	Formal	53	44.17
	Non-formal	35	29.17
Farming experience (years)	1 – 8	61	50.83
	9 – 16	39	32.50
	17 – 24	18	15.00
	≥25	2	1.67
Access to extension services	Yes	46	38.33
	No	74	61.67
Farm size (hectares)	≤ 1.0	38	31.67
	1.01 – 2.50	38	31.67
	2.51 – 4.00	30	25.00
	4.01 – 5.50	7	5.83
	≥ 5.50	7	5.83
Source of fund for farm operations	Personal savings	82	68.33
	Relatives and friends	19	15.83
	Cooperatives	13	10.83
	Banks	6	5.00

Source: Field Survey, 2013

The larger group engaged either in formal occupation (mainly civil service) and non-formal occupation such as carpentary, trading, bricklaying, tailoring, painting, etc. This underscores the preference for non-farm jobs by youths [1, 12, 13].

The modal farming experience group of the respondents was 1-8 years. However, a mean age of 12.4years was obtained in the study. This signifies that rice farming is an age-long venture by the youths. However, 61.67% of the respondents had no access to extension services.

Computation from field data reveaved that farm size of the respondents ranged from 0.43 to 6.50 hectares. About 88.34% of the youths cultivated cultivated 0.43 to 4.00 hectares. Overall the average farm size of the respondents was 3.02 hectares, signifying that the youths were small scale farmers.

About 68.33% of the respondents sourced their fund mainly form personal savings, 15.83% sourced theirs from relatives and friends, 10.85% used cooperatives, while just 5.00% financed their farming operations with bank loans. This implies that personal savings is the major source of fund available to the youths. This is likely due to high interest rate charged by banks on borrowed loans and high demand as collateral for loans. These results also imply that most of the youths may not have adequate fund to finance and/or expand their rice farm.

3.2 Profitability of Rice Production by the Respondents

Table 2 shows the analysis of profitability of rice production by the respondents. The average gross

value of output of the respondents was ₦83,487.36 per hectare (USD528.4/ha) while the total variable cost incured was ₦29,833.20/ha (USD 188.82/ha). The major variable costs incured by the respondents were costs of land preparation, fertilizer and hired labour, representing 20.11%, 44.10% and 19.36% of the total variable cost respectively. Overall, a gross magin of ₦53,654.16 (USD339.58) per hectare was obtained by the respondents.

Table 2: Analysis of Profitability Respondents'Rice Farming

Variables	Value (₦/ha)*
Gross value of output/ha (A)	83,487.36
Variable Cost	
Cost of land preparation	6,000.00
Cost of rice seed/ha	3,100.00
Cost of fertilizer/ha	13,155.27
Cost of agrochemicals/ha	1,801.63
Cost of hired labour/ha	5,776.30
Total Variable Cost/ha (B)	29,833.20
Gross Margin (C) = A – B	53,654.16
Imputed Costs:	
Cost of family labour	12,442.98
Depreciation	3,010.70
Imputed rent for land	4,148.15
Total Imputed Cost/ha (D)	19,601.83
Returns to farm management and labour E = (C – D)	34,052.33
Gross Ratio {(B + D)/A}	0.59
Operating Ratio (B/A)	0.36
Return on Capital Invested (C/B)	1.80

*(1USD = ₦158)

Source: Author's Computation from Survey Data, 2013

The imputed costs of family labour, depreciation and rent for land used per hectare were ₦12,442.98, ₦3,010.70 and ₦4,148.15 respectively, giving a total of ₦19,601.83 (Note: 1USD = ₦158). Given the gross margin of ₦53,654.16 obtained, the returns to farm management and labour by the respondents is ₦34,052.33 per hectare (USD 215.52). The operating ratio for the respondents was 0.36 implying that 36% of gross income was used for operating expenses. The return on capital invested of 1.80 obtained implies that for every ₦1 invested, ₦1.80 was earned as returns from rice production. Thus, the results in Tables 2 shows that rice production by the youths was a profitable venture.

3.3 Factors Influencing the Youths' Rice Output

Table 3 shows the results of the regression analysis conducted to determine factors influencing rice output of the youths. The semi-log form was chosen as the lead equation. The selection was based on the values of coefficient of multiple determination (R^2), F-statistics, number of significant variables and the signs of the coefficients of the regression with respect to *a priori* expectation. The coefficient of multiple determinations (R^2) was 0.7303, indicating that the explanatory variables in the model explain about 73.03% of the total variations in crop yield of the respondents. Also, the F-ratio is significant at 1% (33.09), implying that the data attest to the overall significance of the regression equation. The results indicate that quantity of seeds, farm size, amount of labour, age, educational status, farming experience and access to extension services are the significant factors affecting the rice output by the youth farmers

Quantity of rice seeds used by the youths was positively and significantly related to their output at 1%. This implies that the more rice seeds are planted by the youth farmers the more their rice output. This is in conformity with prior expactation.

The farm size used by the youths also had a positive and significant effect on their output ($p<0.1$). This also conforms to *a priori* expectation, implying that expansion of farm size by the youths would increase their output of rice.

The amount of labour used by the youth farmers also had a positive and significant effect on their output. This suggests that the more labour used by the farmers the more thier output was. This is logical, as agricultural production in Nigeria, like other developing countries, still depends largely on physical strength [13, 19]

The results further revealed that the age of the youths was negatively and significantly related to their output ($p<0.000$). This implies that the older the youth is, the less the rice output. Young farmers have more physical strength to carry out agricultural production activities than their old counterparts [13, 17] also noted that the risk bearing abilities and innovativeness of a farmer, his mental capacity to cope with the daily challenges and demands of farm production activities and his ability to do manual labour decreases with advancing age. All these may plausibly explain why the output of the youths decreased with increase in age.

Level of education of the respondents was also significant at 1% and positively influenced their output. This is likely because well educated farmers readily adopt innovations and technologies that can better their returns from farm operations [5, 20].

Table 3: Regression Results on Determinants of the Respondents'Farm Output

Variables	***Linear***	***Semi–log***$^{+}$	***Double log***	***Exponential***
Constant	345.3273	567.2392	5.5617	5.8239
	(2.73)***	(2.17)**	(9.89)***	(20.37)***
Quantity of rice seeds	0.5622	101.7890	0.2158	0.0008
	(4.97)***	(4.31)***	(4.25)***	(3.28)***
Quantity of fertilizer	1.6633	20.2268	-0.0188	0.0021
	(0.59)	(0.62)	(-0.27)	(0.33)
Farm size	33.6692	75.7941	0.2504	0.0694
	(2.32)**	(1.73)*	(2.65)***	(2.12)**
Amount of labour	76.6361	134.4842	0.1764	0.0904
	(2.99)***	(2.97)***	(1.81)*	(1.56)
Age	-5.7921	-221.4479	-0.2836	-0.0081
	(-3.70)***	(-4.91)***	(-2.92)***	(-2.30)**
Level of education	73.4782	169.9288	0.3606	0.1441
	(3.02)***	(3.41)***	(3.37)***	(2.62)***
Household size	-17.2016	-65.8614	-0.1204	-0.0438
	(-1.10)	(-1.62)	(-1.38)	(-1.24)
Farming experience	2.0476	55.7281	0.1004	-0.0004
	(0.61)	(1.74)*	(1.46)	(-0.06)
Access to extension services	116.2400	115.4361	0.1349	0.1633
	(2.71)***	(2.81)***	(1.53)	(1.69)*
R^2	0.7156	0.7303	0.6222	0.5604
Adjusted R^2	0.6924	0.7082	0.5913	0.5244
F-value	30.76***	33.09***	20.13***	0.4492

Note: ***, **, * - Variable significant at 1%, 5% and 10% respectively $^{+}$Lead equation

Source: Computed from Survey Data (2013)

Table 4: Problems Faced by the Respondents in Agricultural Production

Problems	Number of Respondents	Percentage	Rank
Low output price	72	60.0	3rd
High input cost	54	45.0	5th
Inadequate credit facility	83	69.2	1st
Transportation problems	45	37.5	6th
Lack of adequate knowledge on rice farming	78	65.0	2nd
Insufficient land	69	57.5	4th

Source: Field Survey, 2013

Table 3 also shows that farming experience of the youth farmers had a positive and significant effect on their output. This means that the longer the youths engage in rice farming, the more their output is likely to be. This could result from the fact that farming experience enhances acquisition and development of relevant skills in farming.

The results further revealed that those youths that had access to extension services had better output than their counterparts that did not ($p<0.000$). This could result from the fact that extension services provide relevant information to farmers on new and improved farming techniques [23]. This may be responsible for the increase in the output of those youth farmers that had access to extension services.

3.4 Problems faced by the Respondents

Table 4 is a multiple response table of the problems faced by the youths in rice production. Sixty percent of the respondents considered low output prices as the major problem that militate against their ability to meet their optimum production needs. They lamented that the rice they produce is not usually sold for a good price, compared to imported ones. Forty-five percentage were of the opinion that high input cost was the main problem. About 69.2% of the respondents considered non-availability of credit facilities as a problem that militates against their ability to achieve their desired production level. This may result from the fact that personal savings is the

major source of fund available to the youth farmers (See Table 1).

About 37.5% of the youths complained of transportation problems. Their worries include the poor and non-motorable condition of the roads that lead to their farms. According to the respondents, the situation does not facilitate conveyance of their farm output to urban markets where they could have good prices for their output.

Another major problem faced by the youths was that of inadequate knowledge on rice farming, as identified by 65.0% of the respondents. This might result from poor access to agricultural extension services by the youths (Table 1).

About 57.5% of the youths also complained of insufficient land for rice production. They reported that most of the land in the study area were owned and used by the aged in their communities.

4. Conclusion and Recommendations

It can be inferred from this study that rice production by the youth is carried out mainly by the male. The study has also revealed majority of the youth rice farmers in the study area were married, had low level of eduction, had no access to extension services, fund their operations mainly with personal savings, practised farming as a secondary occupation on small-scale basis. Analysis of cost and returns to farm operations by the youths showed that rice farming by youths is a profitable venture. Quantity of seeds, farm size, amount of labour, educational status, farming experience and access to extension services had positive effects on rice output while age of the youths was negatively related to their ouput. The major problems faced by the youth farmers are: inadequate credit facilities, lack of knowledge on rice farming, low output price, insufficient land , high cost of inputs and transportation problems. All these problems need to be addressed in order to encourage the youth to actively engage in rice farming as a means of gainfull employment opportunity.

Based on the findings of this study, therefore, it is recommended that effort should be made by government, Non-governmental organizations (NGOs) and relevant agencies to encourage the youth, especially well educated ones, to practice rice farming. This may be through provision of land, improved rice seeds and farm machinery for the youths at no or subsidized rate. Also, there is need for agricultural development agencies to provide more extension services to the youths. This will improve their knowledge on rice farming. Besides, banks and other formal financial institutions should provide the youths credit facilities. This will enable the youths to finance and/or expand their rice farms. Moreover, good roads should be provided to make conveyance of farm output to market easy for the youths. If all these measures are put in place, there will be increase in rice production in the country and youth unemployment will also be reduced as well.

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