

Contribution of the newly established Rice Mills on poverty reduction in Kebbi State

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Abstract

Agriculture and agriculture related activities (such as rice milling/processing) were agreed to generate more employment, income and reduce poverty among smallholder farmers. This study therefore examined the role of the newly established rice mills (Labana and Wacot rice mills) on reducing poverty among smallholder farmers in the State. 120 smallholder farmers were selected purposively and interviewed and data were analysed by the use of Descriptive, Gross Margin (GM) and sample t-test analysis. The results obtained showed that Labana and Wacot rice mills have reduced the poverty level of smallholder farmers with 53.3% of the smallholder farmers experiencing very low poverty level after compared to 5.8% before the establishment of the rice mills in the state. The growth margin analysis revealed that the Total Cost of production (TC) incurred by the respondents averaged N 192, 219.49/ha, with an average Total Revenue (TR) of N 316,870.13 gives a Gross Margin (GM) of N 160,419.35, and the paired sampled t-test results showed farmers income has significantly increased as a result of the newly established rice mills and this indicates the rice mills has increased the farmers income which will invariably increase their purchasing power and in turn reduce poverty. This study would assist policy makers to strategize more on up scaling and establishment of rice mills and other crops processing industries to ensure all year-round production of rice and other crops which will in turn increase employment and income of farmers, reduce poverty and improve their standard of living.

Introduction

Agricultural processing is an important source of employment and income for the rural farmers. Rice milling industries plays a vital role in processing paddy into milled rice thereby enhancing the food supply chain and foster economic development (Ayila, A., & Asom, 2011). According to Isa & Steve, (2014); Siwar, Idris, Yasar, & Morshed, (2014) rice production and processing activities generate employment, increase income and reduces poverty among the poor in developing countries.

Rice farming serves as one of the most economic activities in Nigeria, a country known for its rich soil and favourable climate (Sahel, 2015). It serves as a vital source of livelihood for the country's millions of farmers by providing them with adequate food and income (Banjo et al., 2025; Musa et al., 2024)

The issue of poverty in developing countries is a paradox. It is a case of poverty in the midst of plenty, despite the continents natural and human resource potentials,(Emmanuel, Issahaku, & Agebase, 2023; Jamalludin Sulaiman & Jamalludin Sulaiman, Azlinda Azman, Senadjki Abdelhak, 2014)

But rice milling operations in developing countries is gaining an unprecedented patronage due to the recent government policy on rice imports and domestic production (Aung, 2012; Suharyanto., Darwanto., & Widodo, 2014). Rice milling is therefore an important economic factor of the rice value (Ajala & Gana, 2015; Moses, Ongbele, & Rhoda, 2019). Rice milling in Nigeria has helped smallholder farmers to find an avenue where they can adequately sell their paddy to the rice mills at a very good and profitable market price (Danbaba et al., 2019) in addition to employment opportunities and other financial and technical supports(Angbiku & Abimiku, 2021). The objectives of any government agricultural programme is to introduce modern mills and other modern methods of processing foods in order to lighten farmers drudgery or hardship (Danbaba & Bakare, 2020) as well as to improve their income levels and general conditions of living (Aung, 2012). However, although modern food processing technology was introduced into the country since the colonial period, it has only recently become widespread (Mateos et al., 2010; Sanusi, Akinoso, & Danbaba, 2017)

Nigeria is among the largest producers of rice in Africa and currently up scaling value addition in rice production business in which many rice milling industries are being established especially in the northern region (Angbiku & Abimiku, 2021). Hence, little or no research has been conducted to ascertain the impact of rice milling industries in the State.

It is in recognition of this problem that this study aimed at examining the contribution of the newly established rice mills on poverty reduction in Kebbi State. In which the findings of this study are expected to assist policy makers to strategize more on up scaling and establishment of rice mills and other crops processing industries to ensure all year round production of rice and other crops which will in turn increase employment and income of farmers, reduce poverty and improve their standard of living.

Objectives of the Study

The general objective of the study was to examine the contribution of the newly established rice mills on poverty reduction in Kebbi State of Nigeria. The specific objectives are to:

- 1) To determine poverty levels among smallholder farmers before and after the newly established rice mills.
- 2) Examine the contribution of rice production to the income of rice farmers in the study area.

Literature Review

Rice Production and Processing in Nigeria

Globally rice has become the most widely cultivated and consumed cereal crop due to its vitality and acting as the primary food source and essential livelihoods for more than half the human population (Aung, 2012; C. K. Daudu, A.A. Yakubu, I. J. Sambo, E. Okworie (Mrs.), J.O. Adeosun, 2014; Siwar et al., 2014). Rice is the major cereal crop cultivated and consumed in all parts of Nigeria, but its production is primarily carried out by smallholder farmers who most a times do not consider efficiency of production (Bitrus, Yakubu, Patrick, & Stephen, 2021). However, over dependence on rain-fed rice production coupled with low investments in dry season/irrigated rice production, makes the country the heavily growing

rice importer(Wudil, Ali, Aderinoye-abdulwahab, & Raza, 2019). Nigeria has the capacity and potential of becoming a great rice producer and exporter if adequate attention is given towards production, processing and marketing by the policy makers and other stake holders thereby increasing farmers income and reduce poverty (Isa & Steve, 2014).

Advent of rice processing industries across rice producing areas had been linked to rural employment, increase in farmers income, poverty reduction and overall improvement of standard of living of value chain involved (Bitrus *et al.*, 2021; Fujimoto, 1976; Isa & Steve, 2014). Enormous efforts and attempts are made in Nigeria to revive and create new rice milling industries and create rural employment and income (Mgbenka & Mbah, 2016). This pattern of agricultural employment opportunity has since changed, particularly with the introduction of agro-processing industries that are making significant impact on the working and living conditions of especially the rural farmers.

Kebbi state is now becoming one of the most rice producing area in the country with an annual output of over 3.56 million metric tonnes, driven by extensive wet and dry season farming. The establishment of Anchor Borrowers Scheme, LABANA and WACOT rice mills in the state attracts a significant number of farmers going into rice production within the states lowlands, Rima River flood plains and its fertile uplands areas (Baraya, Handoyo, Ibrahim, Badayi, & Muhammad, 2023; Gona Ayuba, Maikasuwa Mohammed Abubakar, 2023).

Methodology

This section contains an explanation of the research methodology which begins with the location of the study area, population and sample of the study, sampling procedure, questionnaire design, data collection procedures and data analysis methods and techniques

Study Area

The study was carried out in Kebbi State of Nigeria. The state has a total land area of 36,800 km² and a population of 3,256,541 people and is located between latitude 10°8'N and 13°15'N and longitude 3°30'E and 6°02'E. Kebbi state was created out of a part of Sokoto in 1991. Kebbi State is bordered by Sokoto State, Niger

State, Zamfara State. There are four emirate councils (Gwandu, Argungu, Yauri, Zuru), and 35 districts in the State. Agriculture is the main occupation of the people especially in rural areas, the crops produced are mainly grains; animal rearing and fishing are also common.



Figure 1: Showing study locations

A sampling frame was drawn from rice producing households in the area and the criterion were willingness to participate in the study. Gender sensitiveness was given a priority stage of the sampling process. A purposive random sampling technique was adopted to select a total of 120 rice farmers from the two LGAs with rice mills. The data collected for the study was from primary source. The instrument for the collection of the primary data was a structured questionnaire.

The data collected covered the ranked perception of respondents on the contribution of the newly established rice mills on their welfare. Available secondary data for the study was important for literature purpose.

Data analysis was carried out using descriptive statistics, Gross Margin analysis and Paired sample t-test analysis to achieve objectives of the study.

Gross Margin Analysis

Gross Margin analysis was carried out to determine the profitability of rice production in the two Local Government Areas. The gross margin is estimated as the difference between total revenue and total variable cost in rice production.

$$GM = TR - TC$$

Where:

GM = Gross Margin

TR = Total Revenue

TC = Total cost of production

Paired Sample T-test

Paired sample t-tests were used to compare and determine whether there is statistical evidence that the mean difference between the paired observations (before and after) is different from the zero.

Ho: $\mu_1 = \mu_2$

H₁: $\mu_1 \neq \mu_2$

Specifically, the paired sample t-test can be stated thus:

$$t = \frac{\bar{\chi} \text{ diff} - 0}{S\bar{\chi}}$$

$$\text{Where } S\bar{\chi} = \frac{S \text{ diff}}{\sqrt{n}}$$

Where,

$\bar{\chi}$ difference = sample mean difference

n = sample size

S diff = sample standard deviation of the differences

$S\bar{\chi}$ = estimated standard error of the mean

Results and Discussion

Poverty levels among smallholder farmers before and after newly established rice mills

Table 1. showcased the perception of the respondents with regards to the poverty levels before and after the establishment of the newly rice mills in the, the findings therefore revealed that Labana and Wacot rice mills have reduced the poverty level of smallholder farmers with 53.3% indicating very low poverty level after compared to 5.8% before the establishment of the rice mills in the state. And this deduce that the newly established rice mills has played a major role in alleviating the poverty status of the respondents from marginal to very low, through provision of market, good price for their produce and employment opportunities. Therefore the newly established rice mills can be said to be a potential means increasing incomes and poverty reduction for rural farmers, as confirmed by the work of (Esheya, 2024; Idisi, 2019; Ngozi, Okeke, R, & U, 2024).

Table 1: Poverty levels among smallholder farmers before and after newly established rice mills

Variable	Frequency (Before)	Percentage (Before)	Frequency (After)	Percentage (After)
Poverty Levels				
Very Low	7	5.8	64	53.3
Low	34	28.3	51	42.5
Marginal	54	45	4	3.3
High	25	20.8	1	0.8
Total	120	100	120	100

Contributions of Rice Production to the Profitability of Rice Farmers in the Study Area

The gross margin analysis is shown in Table 2 below. It indicates how smallholder farmers achieved a positive return as a result of markets provided by the newly establishment of the rice mills.

Table 2: Gross margin analysis results

S/N	Cost and yield(ha)	Mean
1	Total cost of production (TC)	N192, 219.49/ha
2	Average Yield (kg)	2,816.63kg
3	Price/Kg	N 112.5
4	Total Revenue (TR) = (Yield x Price)	N 316,870.85
5	Gross margin (GM) = (TR – TC)	N 124,651.38
6	Return on investment (ROI = GM/TC x 100)	64.8% (0.648)

As indicated in the Table 2 above smallholder farmers in the study area were able to achieve profit in their production activities due to a better market provided by the rice mills. As shown the average gross margin of all the respondent is N124, 651.38 after deductions. The return on investment also shows that the percentage of profit earned for each Naira (N) invested, meaning a rice farmer earned N0.648 for every N1 you invested. This results is supported by the work of (Bitrus et, al., 2021) whose findings showed a gross margin per hectare at ₦75,087.4 indicating production of rice among the farmers is profitable as the GM estimated has a positive value.

This however can be supported by the findings of the paired sampled t-test result in Table 3. Below which shows that the mean value for the income of respondents after (N264,400) was greater than the mean value of their income before (N155,600) the newly established rice mills and T- statistics (10.183)

is greater than the t-critical (1.980), thereby implying that there is a significant difference between the two incomes (i.e. the income before and after the newly established rice mills).

Table 2, Paired sampled t- test result on stallholder farmer's income

Time period	Mean (N)	Standard deviation	t critical	t statistics	P value
Income Before	155600	133052.4	1.980	10.183	0.000*
Income After	264400	213736.7			

This result can be supported by the work of Moses et al., (2019) and Isa & Steve (2014) who reported that farmers had achieved a positive annual income from rice production that helped in reducing their poverty level. Hence, the study conclude that income of the respondents has increased which will in turn reduce poverty amongst them.

Conclusion

Based on the study findings, the results shows that the newly established rice mills production activities contributed a lot in poverty reduction among the smallholder farmers in the study area with 53.3% indicating very low poverty level after compared to 5.8% before the establishment of the rice mills in the state. In addition, the average gross margin of all the respondent is N124, 651.38 after deductions. The return on investment also shows that the percentage of profit earned for each Naira (N) invested, meaning a rice farmer earned N0.648 for every N1 you invested. The study therefore concluded that income of the respondents has increased and in turn would reduce poverty amongst them. This study therefore would strengthen policy makers to upscale and provide an integrated policies on rice mills and other crops processing industries to ensure all year round production of rice and other crops which will in turn increase employment and income of farmers, reduce poverty and improve their standard of living.

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