DETERMINANTS OF FARM LABOUR UTILISATION IN RICE PRODUCTION AMONG RURAL HOUSEHOLDS IN SOUTH-EAST, NIGERIA

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ABSTRACT

The study evaluated the determinants of farm labour utilisation in rice production among rural households in South – East, Nigeria. It described the socio-economic characteristics of the respondents and analysed the factors affecting farm labour utilisation in rice production. Multi-stage sampling procedure was used to select 221 respondents from three States of South – East Nigeria. Data was collected through structured questionnaire and analysed using percentages and regression analysis. Results show that the mean number of persons who have migrated was 4, 42.9% were members of cooperative organisation while 56.8 % of the respondents did not have access to credit. Access to capital (90.1%), competition for labour (73.2%), migration (67.6%) and availability of improved rice production technologies (56.2%) were the major factors affecting labour utilisation. There was a significant relationship between age, membership of cooperative society and number of months of peak labour and labour use at 5% level of significance. The study concludes that rice farmers do not have access to capital and improved rice production technologies and recommends that more capital should be made available for rice farmers while government should improve rural infrastructure to mitigate migration.

Keywords: Labour use, rice production, utilisation, rural household.

INTRODUCTION

Rice production is the major agricultural practice in some States in Nigeria. Although rice can be grown in all the geographical zones of Nigeria depending on the variety, the area of land used for rice cultivation is small. About 3.7 million hectares of land is used for the cultivation of rice in Nigeria whereas Nigeria has the potentials of cultivating about 5 million hectares (Philip, Jayeoba, Ndripaya, and Fatunbi, 2018). The amount of money set aside for rice importation, if redirected into the improvement of rice production such as supporting both small scale and large-scale rice cultivation and milling of rice grown in Nigeria to meet international standards would enable Nigeria to meet its rice demand and maybe export rice to neighbouring countries.

For agricultural production, rural farmers use such production inputs as land, labour, machinery, and fertilisers. Rice production among rural households in the Southeastern part of Nigeria is mainly a small-holder agricultural activity by farmers who combine these factors of production with the aim of increasing output thereby improving the living standard of their households. Manawiyah (2021) identified lack of availability and access to labour as a factor inhibiting optimal production of rice. According to Komatsu, Saito, and Sakurai (2022), increase in labour availability will lead to a decrease in time wastage with an improved efficiency which will lead to increase in rice production with fewer inputs. Specifically, the study

i. described the socioeconomic characteristics of the respondents
ii. ascertained labour utilisation among respondents
iii. determined the factors affecting labour utilisation by respondents

The hypothesis for the study tested for significant relationship between determinants of labour utilisation and labour use for rice production

METHODOLOGY

The study was carried out in South- East agro-ecological zone of Nigeria. South-East is one of the six geo-political zones in Nigeria. The zone consists of Abia State, Anambra State, Ebonyi State, Enugu State and Imo State.

Multi-stage sampling procedure was used to select the respondents for the study. Three States namely Abia, Ebonyi and Anambra were purposively selected out of the five States in the South-East agro-ecological zone**.** This is because these States are predominantly rice producing areas**.** At the second stage, two Agricultural Development Programme (ADP) extension zones engaged in rice production were selected from the list of rice producing zones in each of the States to give a total of six zones. In the third stage, two ADP blocks involved in rice production were selected from each of the six blocks to give a total of twelve blocks. In the final stage, 20% of sample of farmers who were engaged in rice production were selected from each of the blocks to give a total of 221 respondents.

Labour utilisation in rice production was measured by asking respondents to provide information on number of labourers engaged on their farms per day, number of hours spent as well as number of days spent per week. To ascertain the determinants of labour utilisation and labour use for rice production, this study employed multiple regression model as specified in equation 1

$Y = f(X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + e_i)$ ……Equation 1

Where Y_1 = Labour utilisation (Number of hours spent on rice farm by labourers); X_1= Age of respondents (years); X_2 = Health condition (no of

times respondent was absent from farm due to ill health); X_3 = Sex (Male =1, Female =2); X_4= Extension contact (Number of times respondent had contact with extension agent); X_5= Access to farm credit (measured as access to credit = 1; no access to credit = 0); X_6 = Rural – urban migration; (Number of people that travel from the household for economic reasons);
X_7= Labour seasonality (Total number of months of peak availability of labour); X_8= Membership of cooperative (measured as member = 1; non-member = 0)

RESULTS AND DISCUSSION

Socioeconomic characteristics

Results in Table 1 show that rice production in the study area was dominated by male farmers as majority (73.30%) of the respondents were male. This is also true of the individual States as male farmers constituted (80.14%), (69.80%) and (74.15%) of rice farmers in Abia, Anambra, and Ebonyi States respectively. This agrees with the findings of Ojo, Baiyegunhi, Danso-Abbeam, and Ogundeji (2020), who opined that the involvement of women in rice production activities is very low despite their potential to contribute to rice farming. Also, Wabi, Vanhove, Idohou, Rodrigue, Hounkpèvi, Kakaï and Van Damme (2022) had in a previous study put the blame for low level of involvement of women in rice production on the inability of women to adequately access the essential socio-economic factors affecting rice production, which include resource endowment and capital as well as land.

Data in Table 1 show that 45.04% of the respondents were within the age range of 41-50 years. The mean age of the respondents was 46 years. This implies that the respondents were within the active age. Attamah, Aguh and Agwu (2023) had in a previous study found the mean age of rice farmers in Abia State to be 48 years. The result also shows that 3.39% of the respondents were aged within 61-70 years. Rice production is labour intensive as it requires much energy for agronomic practices such as land preparation, weed control and harvesting. Table 1 also shows that majority (57.20%) of the respondents were not members of any cooperative association. Majority of the respondents from Ebonyi State (56.50%) were members of co-operative societies, while only 23.30% and 48.30% of the respondents from Abia and Anambra States; respectively were members. This agrees with Wabi et al (2022) who in a previous study reported low involvement of rice farmers in cooperative societies. Since majority were not members of cooperative societies, their access to farm resources like agro-inputs, credits and even extension contact might be lean. Difficulty in accessing these resources may hamper respondent's ability to utilise labour services for rice production.

Furthermore, Table 1 shows that majority (85.07%) of the respondents were absent from farm for less than 4 days in a month due to ill health. The table also revealed that 12.43% reported that they were absent from farm for 4-7 days in a month due to ill health. The mean number of days the respondents were absent from farm due to ill health was 3 days in a month. In Ebonyi State, the mean number of days respondents were absent due to ill health in a month was 5 days and this was the highest when compared to Abia State (3 days) and Anambra State (2 days). While Hawkes and Ruel (2020) had Stated that there is a two-way linkage between agriculture and health; Pinga et al. (2022) reported that opportunities abound for an increase in rice production through the deepening of labour use hence reduction in number of days of labour availability will have a negative effect on labour utilisation in rice production.

From Table 1, 63.12 % of the respondents did not have contact with extension agents in a year. This is a challenge to rice production and processing as respondents may not have access to improved technology that should bring about increase in their income with its attendant improvement in their standard of living (Izuogu, Olaolu, Azuamairo and Njoku, Kadurumba and Agou, 2023). Results from Abia State shows that 63% of respondents in Abia State had no contact with extension. This is indeed a challenge to rice production in the state. Okpara, Atoma, Doroh and Ovharhe (2022) had described the level of extension contact among rice farmers to be low. The efficiency of extension organisations in providing information to farmers on improved technologies would play a significant role in the level of farmers' understanding of labour utilisation. Attamah et al. (2023) had in a previous study recommended that extension should increase the frequency of visit to at least once in a month to allow for more productive engagement among rice farmers. Rice farmers experienced an increase in the productivity as extension contact increased (Musaba and Mukwalikuli, 2019).

Table 1. Distribution of respondents according to their socio-economic characteristics(n=220)

Variables	Abia	Anambra	Ebonyi	Pooled	
	%	%	%	%	
Age (Years)					
20-30	0.7	0.7	2.7	1.4	
31-40	22.6	19.4	24.5	22.2	
41-50	45.2	43.0	46.9	45.0	
51-60	26.0	34.9	23.1	28.01	
61-70	15.5	2.0	2.7	3.4	
Mean ($\bar{x}$)					46
Gender					
Male	80.1	69.80	74.1	73.3	
Female	19.9	30.	25.8	26.7	
Membership of Co-operative					
Yes	23.3	48.3	56.5	42.8	
No	76.7	51.7	43.5	57.20	
Number of persons that have migrated					
0-3	62.3	63.8	58.3	61.8	
4-7	24.7	31.5	33.5	30.0	
8-11	8.9	2.0	6.0	5.7	
12-15	4.1	2.7	2.0	2.5	
Mean ($\bar{x}$)				4	
Absence from farm due to ill health in a month (Days)					
0-3	65.1	92.6	2.7	85.1	
4-7	30.1	4.7	97.3	12.4	
8-11	4.8	2.70	0	2.5	
Mean ($\bar{x}$)				3	
Extension Contact					
Yes	37.0	37.6	36.1		36.9
No	63.	62.4	63.9		63.1
Access to Credit					
Yes	32.20	41.6	55.8		43.2
No	67.8	58.4	44.2		56.8

Source: Field survey

As rice productivity increases, revenue from rice production is expected to increase which will alleviate the cost of hiring extra labour for rice production. Farmers often perceived extension service delivery as an essential tool for improvement in agricultural production.

Result presented in Table 1 further shows that 56.80 % of the respondents did not have access to credit. Majority of the respondents in Abia State (67.80%) and Anambra State (58.40%) did not have access to farm credit. This may be attributed to low level of extension contact and inability of respondents to join co-operative organisations. Previously, January, Rwegasira and Tefera (2018) had indicated that insufficient credit possesses a major challenge to the utilisation of labour and other agricultural inputs among farmers in Nigeria and India (Shigwan, Meshram, and Dalvi, 2019). The implication of this was that personal savings often constitutes the major source of fund for maintaining farms in the study area.

Labour utilisation by respondents

Entries on Table 2 show that 46.2% of the respondents engaged between 4-6 person on their rice farms in a day. Ebonyi state had the highest percentage (54.7) of the number of persons engaged on the farm per day. The mean number of persons engaged on the rice farm by respondents in the zone was 5 persons. In a previous study, Saror, Pinga, and Gomez (2021) observed that scarcity of labour affected the number of persons who worked on agricultural farms in Benue State. Akintobi, Ajah, Idu (2021) reported that the inability of the farmers to guarantee payment at the prevailing wage rate per day may reduce the number of labourers available for agricultural production activities.

Also, the table shows that 50.3% of the respondents spent between 7-9 hours on their rice farms daily. 8.9% of respondents in Abia State spent less than 3 hours per day on their rice farms. The mean number of hours spent on rice farms by respondents was 7 hours. Iraoya, and Isinika (2020) had reported in a previous study that even though livelihood diversification cushioned the effects of

risk in agricultural production, it accounted for reduction in the number of hours farmers spent in their farms.

From Table 2, 87.9% of the respondents spent more than 3 days per week on their rice farms with 4 days as the mean number of days spent in the rice farms. Competition for labour among arable crops as well as engagement in off farm activities may influence the number of days spent by respondents in their farms. Effective labour utilisation in rice production requires being able to constantly respond to changes in labour availability especially during peak periods of labour demand for agronomic practices.

Table 2. Labour utilisation in rice production

Variables	Abia	Anambra	Ebonyi	Pooled
Number of workers on rice farm/day	%	%	%	%
1-3	31.9	27.9	19.6	24.5
4-6	34.7	49.1	54.7	46.2
7-9	21.1	12.9	21.8	18.6
10-12	12.3	10.1	3.9	8.8
Mean ($\bar{x}$)				5
Number of hours spent on farm/day				
1-3	8.9	12.8	17.8	39.5
4-6	12.6	67.8	23.5	34.6
7-9	76.8	16.3	57.8	50.3
>12	1.7	3.1	0.9	1.9
Mean ($\bar{x}$)				7
Number of days spent on farm/week				
1-2	17.6	5.8	12.9	12.1
3-4	68.9	74.8	9.1	50.9
4-6	12.4	11.6	76.8	33.6
7	1.1	7.8	1.2	3.4
Mean ($\bar{x}$)				4

Source: Field survey

Factors affecting labour utilisation for rice production

Majority of the respondents (67.60%) agreed that migration affects labour utilisation for rice production as shown in Table 3. Table 1 shows that 61.8% of the respondents had less than 4 members of their families, who had travelled to the urban centres on economic reasons. Factors that affect labour utilisation in rice production were capital (90.1%), competition for labour among arable crops (73.2%) and Rice production technologies (56.2%).

According to Adepoju and Obialo (2022), migration is one of the reasons for the declining trend in labour availability for agricultural production. Chidiebere-Mark, Ohajianya, Obasi, Onyeagocha (2019) had identified rural-urban migration to be responsible for high labour rates in rice production.

Also, the result agrees with Akite, Okello, Kasharu, and Mugonola (2022) who reported that competition with farmer's man days for labour in rice production may compromise work quality and quantity which will lead to inefficiency

Obisesan (2019) identified the adoption of output enhancing technologies in rice production as a means of reducing the cost of labour on the farm. Akite et al (2022) had earlier suggested that where the size of cultivable land for rice production cannot be increased, use of responsive technologies will boost production. Labour demand and utilisation is influenced using rice production technologies. Use of technologies will reduce rural – urban migration and enhance the participation of youths in rice production. Also, with low level of utilisation of technologies in rice production, there will be a decrease in efficiency resulting from an increase in cost of labour, poor quality of products and post-harvest losses. Access to labour saving devices is therefore a prerequisite for increased production and efficiency.

Table 3. Factors affecting labour utilisation in rice production

Factors	**Abia**	**Anambra**	**Ebonyi**	**Pooled**
	%	**%**	**%**	**%**
Availability of adults	61.0	59.3	49.6	56.6
Access to road to farm	45.9	54.2	48.1	49.4
Migration	71.5	77.1	54.2	67.6
Schooling of children	31.7	47.5	87.1	54.3
Capital	89.0	91.2	90.1	90.1

Factors	Abia %	Anambra %	Ebonyi %	Pooled %
Health condition	13.1	16.6	19.3	16.3
Climate change	12.2	16.3	32.3	20.3
Tools and equipment	46.6	49.0	48.8	48.1
Rice production technologies	54.7	52.4	61.2	56.1
Competition for labour among arable crops	76.1	67.3	76.1	73.2
Government policies	45.1	51.4	34.4	43.6

Source: Field survey

Determinants of labour utilisation in rice production

Table 4 is the multiple regression results showing the parameters that are significant in rice production and processing in the study area. Out of the eight explanatory variables captured in this study, only 5 (age, health, access to farm credit, number of months of peak labour and membership of cooperative) were found significant at 5% level of significance. This means that only these five variables exerted significant influence on labour use in the study area. The result of the regression analysis also shows that the R^2 was 0.342 which implies that 34.2% of the variations in labour use in rice production was accounted for by these variables under consideration in the study.

Health condition showed a negative relationship with labour use which implies that for every increase in the number of times respondents were absent from farm due to ill-health, there was a reduction in labour use by 0.16%. Iseghohi (2021) in a previous study reported that productivity reduces as health condition deteriorates. Healthy people have higher level of productivity than their counterparts who are not (Folarin et al., 2023). Health considerations plays a significant part in farmers' decision making. Unfortunately, there has been a disconnection between the health and agricultural sub-sectors (Hawke and Ruel. 2020). This disconnection threatens efforts which are targeted at raising the living standard of farm households.

Age showed a positive significant relationship with labour use, which implied that for every unit increase in age at a given level of other variable inputs will increase the value of labour use. These findings agree with Ojo et al (2020) who reported an increase in rice output as the age of the farmer increases. The possible reason for this is that the older farmers are more experienced in rice production than the younger ones.

Number of months of peak labour showed a positive relationship with labour use in the study. This implies that as the number of months of peak labour availability for the respondents increased, there was an increase in labour use by the respondents.

Membership of cooperative society was significantly related to labour use in the study area. As respondents identify with cooperative societies, it will enable them to have access to services provided by these organisations which may invariably assist them in labour use. For instance, being a member of a cooperative association may present opportunities for accessing and utilising information on labour use in rice production (Aboajah, Onjewu, Chia, and Okeme, 2019). Ezeokafor et al. (2019) had reported that one of the effects of cooperative membership was that member's credit needs were met through agricultural cooperative. This is expected to facilitate their access to hired labour for members.

Table 4. Multiple regression estimates of relationship between labour use and selected factors affecting rice production

Variable	Abia State (Linear)	Anambra State (Exponential)	Ebonyi State (Linear)	Pooled (Linear)
Constant	2.110	9.759	6.408	3.611
	(0.931)	(6.439)***	(3.161)***	(2.916)**
Age	0.056	0.21	0.002	0.035
	(2.280)**	(1.134)	(0.067)	(2.301)**
Health Condition	-0.040	-0.025	-0.084	-0.157
	(-0.377)	(-2.786)***	(-0.420)	(-2.216)**
Sex	-1.194	-0.122	0.036	-0.327
	(-2.586)***	(-0.394)	(0.069)	(-1.178)
Extension contact	-0.021	-0.128	-0.128	0.462
	(-0.048)	(-0.442)	(-0.283)	(1.878)
Access to farm credit	-0.254	0.916	1.622	0.669
	(0.565)	(3.016)***	(3.443)***	(2.688)**
Rural-Urban Migration	-0.111	-0.182	0.155	-0.045

Variable	Abia State (Linear)	Anambra State (Exponential)	Ebonyi State (Linear)	Pooled (Linear)
	(-1.196)	(-0.424)**	(1.588)	(-0.846)
Number of months of peak labour	0.135	0.266	0.448	0.482
	(0.607)	(1.936)	(2.128)**	(4.307)***
Membership of cooperative society	1.816	0.266	-2.810	0.542
	(3.002)**	(1.936)	(-6.053)***	(2.145)**
R	0.646***	0.586***	0.499***	0.577***
R^2	0.317	0.434	0.249	0.342

Source: Field survey.
Figures in parenthesis are t -values

CONCLUSION AND RECOMMENDATION

The study concludes that young people are involved in rice production. Many rice farmers are not members of cooperative society. The number of extension contact is low. Also, capital, migration and access to technology affects labour utilisation in rice productions. More labour will be available for rice production with an increase in capital, reduction in migration and increase in rice production technologies. The study therefore recommends that rice farmers should join cooperative societies while governmental and non-governmental organisations should make to ensure availability and access to improved technologies available and accessible by rice farmers.

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