

Socioeconomic Determinants of Involvement in Rice Enterprises in Southwestern Nigeria

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Abstract: This study assessed socioeconomic determinants of involvement in rice enterprises in south-western Nigeria. Multi-stage sampling procedures were employed for the study. Both qualitative and quantitative methods were used for collecting data for the study. The results show that socio-economic characteristics such as age, level of education, marital status, household size and income, determines the level of involvement in rice enterprises. The mean age of the rice entrepreneurs was 47.79 years, majority of them were married with a mean household size of 6.35 and most had formal education. The mean monthly income for the respondents was N47, 146.06. The Pearson's Product of Moment Correlation (PPMC) analysis shows a negative and significant correlation between age of respondents and involvement in rice enterprises for overall respondents ($r=-0.221$, $p<0.05$). The regression analysis reveals that age and years of formal education are significant determinants of involvement in the rice enterprise.

[Oluwatoyin Bukola Chete (Ms). **Socioeconomic Determinants of Involvement in Rice Enterprises in Southwestern Nigeria.** *Rep Opinion* 2018;10(1):36-40]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). <http://www.sciencepub.net/report>. 7. doi:[10.7537/marsroj100118.07](https://doi.org/10.7537/marsroj100118.07).

Keywords: involvement, rice enterprises, south-western Nigeria

1. Introduction

Nigeria is the largest producer of rice in the West African sub-region (Oikeh *et al.*, 2013). The potential land area for rice production in Nigeria is 5 million hectares while only about 1.7 million hectares of this land is presently cropped for rice (Oikeh *et al.*, 2013). The main production ecologies for rice in Nigeria are rain-fed upland, rain-fed lowland or shallow swamp, irrigated rice, deep-water or floating rice and tidal mangrove swamp. Yields are highest for the irrigated systems followed by the rain-fed lowland systems and the mangrove swamp systems (Ezedinma, 2005). Yield is lowest in the deepwater/floating systems. Together the rain-fed upland and low-land account for 77 per cent share of the national rice producing area in Nigeria (Ezedinma, 2005). Onu *et al.* (2015) confirmed that between 1980 and 2013, a total of 60,111,000 thousand metric tons of rice was domestically produced in Nigeria. In 2012, rice yield was estimated at 1.88 tonnes/hectare, while area planted stood at 2.685 million hectares (FAO, 2015). Local rice production in the 2011/2012 season was about 2.7 million tonnes with demand estimated at about 5.2 million tonnes which represents 0.52 rice sufficiency in 2011/2012 production season (Nosiru *et al.*, 2014).

Socio-economic characteristics - age, level of education, marital status, household size and income determines the level of involvement in rice enterprises. Age is an important demographic variable useful for targeting programme interventions (Ajah and Ajah, 2014). Moreover, old age may be problematic because of the physically demanding nature of agriculture and may therefore limit level of involvement. Marriage

confers additional responsibilities which might reduce the time dedicated to the enterprise, thereby impacting negatively on level of involvement in rice enterprises. (Igboji, *et al* 2015).

A higher level of education is in general associated with greater literacy which enables the farmer to relate with new techniques of production and adopt improved seed varieties. (Maji, *et al.*, 2012).

A larger household size avails more labour for farm use which would invariably increase the level of involvement, (Roy and Hamid, 2014) but could also be a burden by diverting away time and resources the entrepreneur would have devoted to the enterprise to caring for the household. A higher level of income generated from the rice enterprise would increase involvement because it enables the farmers to feed their households and meet other communal obligations (Fonjong and Athanasia, 2007).

The objective of the study is to assess socioeconomic factors determining involvement in rice enterprises in south-western Nigeria.

2. Material and methods

2.1 Study area

This study was carried out in Southwestern Nigeria. The South-west zone lies between latitudes 5°N and 9°N with an area of 114,271 square kilometres, which represents 12% of the country's total land mass. There are six states within this zone which are mainly Yoruba speaking with various dialects namely Oyo, Osun, Ogun, Ondo, Ekiti and Lagos. Each state has both rural and urban areas depending on their location. Southwestern Nigeria had a provisional population of 27,581,993 people

according to 2006 Census figures (Federal Republic of Nigeria Official Gazette, 2007). The zone is predominantly agrarian with rainforest and derived savannah vegetation. The climate of the zone is a double rainfall maxima characterized by bimodal high rainfall peaks, with short and long dry seasons falling between and after each peak. Average zonal annual rainfall is 1250mm. The mean annual temperature is 27°C. Agriculture is the main occupation of the people in the study area.

2.2 Population of the study

The study population comprises of all the people in rice enterprises in the study area.

2.3 Sampling procedure and sample size

A multi-stage (four-stage) sampling procedure was employed for this study. The first stage involved purposive selection of Ogun, Ekiti and Osun states among the six states in the agricultural zones of South-western Nigeria, because of prominent and high intensity rice production in the three states (Arimi, 2014 and Bamiro and Aloro, 2013).

Ogun, Osun and Ekiti States have 4, 3 and 2 Agricultural Development Programme (ADP) zones, respectively. In the second stage, using purposive sampling, zones with high predominant rice production were selected. In Ogun State, the ADP zones are Abeokuta, Ijebu-Ode, Ilaro and Ikenne, Ikenne zone was purposively selected. In Ekiti state, the ADP zones are Aramoko and Ikare, Aramoko zone was purposively selected. In Osun state, the ADP zones are Iwo, Osogbo, Ife/Ijesha, Ife/Ijesha zone was purposively selected.

Ikenne and Aramoko zone has 4 blocks, while Ijesha/Ife zone has 10 blocks. In the third stage, simple random sampling technique was used to select 20% of the blocks. The selected blocks are Obafemi in Ikenne zone; Aramokoin Aramoko zone and Oriade and Obokunin Ife/ Ijesha zone.

The cells in the sampled extension blocks are 7 and 8 for Obafemi and Aramoko in Ogun and Ekiti states respectively, while the cells in Oriade and Obokun are 6 each in Osun state. In the fourth stage, 50% of sampled extension cells were selected. The number of rice entrepreneurs in the sampled extension cells was 280 in Obafemi, Ogun state, 320 in Aramoko, Ekiti State, 275 and 146 in Oriade and Obokun respectively in Osun state, making a total of 1021 respondents., 25% of rice entrepreneurs were stratified using simple random sampling making a total of 254 respondents. Both qualitative and quantitative methods were used in collecting data for the study. Quantitative data was collected by means of administration of well-structured interview schedule. Qualitative data was gathered through Focus Group Discussions (FGDs)

2.4 Independent variables

i. Age: Respondents actual age were indicated in years.

ii. Sex: Respondents were asked to indicate their sex Male (1), Female (2)

iii. Educational attainment: Respondents were asked to indicate their level of education as follows: no formal education, primary education, secondary education and tertiary education, which were assigned (0, 1, 2, 3) respectively.

iv. Marital status: Respondents were asked to indicate whether they were single, married or divorced which were assigned single (1), married (2), divorced (3), widowed (4).

v. Household Size: Respondents were asked to indicate their household size.

vi. Income: Respondents were asked the actual amount from farming activities. This was measured as naira value of what accrued to the respondents from their sales per month.

2.5 Dependent variable: Level of involvement in rice enterprise

Involvement in rice enterprise was determined by asking respondents to indicate their involvement in specific activities along the rice enterprise - production, processing and marketing. This was measured on a three-point scale of often involved, assigned 2, rarely involved, assigned 1 and not involved, assigned 0. The number of respondents for each level of the enterprise was aggregated and the mean, calculated. The level of involvement was categorized into low and high based on below and above the mean criterion. Respondents whose score fell below the mean score were categorized as having low level of involvement in rice enterprises, while those whose scores fell on the mean and above were categorized as having high level of involvement.

The model is shown below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

where:

Y=Involvement

α = Constant (intercept)

μ = Random error term

$\beta_1, \dots, \dots, \beta_5$ = partial regression coefficient attached to the predictor

X_1 =Age of respondents

X_2 =Years of formal education.

X_3 =Household size

X_4 =Monthly income

3. Results

3.1 Selected socioeconomic characteristics of respondents

Age of respondents

Table 3.1 shows that the mean age of all the respondents was 47.79, generally indicating an aging workforce. Most of the respondents were in the 45-54

years age bracket. Specifically, 42.9% of them were in this age range while 20.5% of respondents fell in the 55-64 age range. This implies that over 63% of the respondents were 45 years or older. In contrast, 11.8% are aged from 25 to 34 while 16.5% aged from 35 to 44 years. These results show that majority of the respondents were elderly, suggesting that comparatively, the rice enterprise has attracted less involvement of young people. An elderly farming population invariably results in declining productivity and falling outputs in terms of quantity of rice produced and by extension, the quantities processed and marketed. Afolami, Obayelu, Agbonlahor and Lawal-Adebowale (2012) also found that the mean age of their study respondents in Ekiti was 46.8 years and Ogun State was 48.7 years.

3.1.2 Marital status of respondents

The distribution of respondents by marital status shows that 92.5% of them were married. The high marital ratio is probably suggestive of the high premium placed on marriage in the study area which is said to confer societal respectability and also bestow a greater degree of responsibility in handling of the rice enterprises. The implication of this finding is that marriage had not constituted a barrier to involvement in the rice enterprise. This corroborates the results of Ayoola, *et al.* (2011) that almost 98% of rice farmers in their study area in Katsina and Kaduna States of Nigeria were married. They therefore concluded that rice production by married women will likely be hampered by their multiple roles and cultural practices that debar them from farm activities.

3.1.3 Years of formal education of respondents

The distribution of respondents by years of formal education shows that the mean years of schooling is 10.21, indicating that majority of the respondents had some form of formal education. The high level of education of the respondents constitutes a positive reinforcing force for the rice enterprise as it would avail them with basic intellect and essential skills helpful for the running of their enterprises. It will also facilitate absorption of improved practices and adoption of improved technology (Kolawole, Oladele, Alarima and Wakatsuki (2011). The high educational attainment may facilitate involvement in rice marketing for instance through the use of creative or innovative branding and packaging strategies to attract patronage. Afolami, Obayelu, Agbonlahor and Lawal-Adebowale (2012) discovered that approximately 86% and 69% of rice farmers in their sample for Ekiti and Ogun states, respectively had access to formal education.

3.1.4 Household size of respondents

The mean household size of the respondents was 6.35. In particular 48.8% of the respondents had household size of 4-6 persons, while 38.2% had

household size of 7-9 persons. Large household sizes reduce involvement in the rice enterprises by increasing dependency by other household members on the operators of the rice enterprises, causing the latter to divert valuable time and financial resources meant for the farm to taking care of household obligations. But as Garba *et al.* (2011) observed, the significance of household size stemmed from the fact that it supplies farmers with family labour, especially in agrarian settings where hired labour may be in short supply and expensive during the farming season. Afolami, Obayelu, Agbonlahor and Lawal-Adebowale (2012), found that the mean household size of rice farmers was approximately seven in their sample for Ekiti and Ogun states respectively.

3.1.5 Monthly income of respondents

Table 3.1: Distribution of respondents by socioeconomic characteristics

Variables	%
Age (Years)	
Less than 25	2.8
25-34	11.8
35-44	16.5
45-54	42.9
55-64	20.5
65 and above	5.5
Mean	47.79±11.55
Marital status	
Single	4.3
Married	92.5
Divorced	0.8
Separated	0.8
Widowed	1.6
Years of formal education	
No formal education	9.1
Primary education	28.7
Secondary education	29.1
Tertiary education	33.1
Mean	10.21±4.95
Household size	
1-3 persons	6.7
4-6 persons	48.8
7-9 persons	38.2
10-18 persons	6.3
Mean household size	6.35±2.14
Monthly income (₦)	
less than 20,000	15.4
20,000-less than 40,000	22.8
40,000-less than 60,000	37.0
60,000-less than 80,000	14.6
80,000-less 100,000	3.5
above 100,000	6.7
Mean	47146.06±3307

The distribution of respondents by monthly income revealed that the mean monthly income for the respondents is N47, 146.06. Specifically, 37% of respondents earned income in the range N40, 000 to less than N60, 000; while 14.6% earned income in the range N60, 000 to less than N80, 000. The fact that the rice business provided respondents with some earnings to take care of their needs and those of their families is an impetus for their involvement in the rice enterprise. This result suggests respondents' ability to earn income through rice business which they deployed to home maintenance and community obligations (Fonjong and Athanasia, 2007).

3.2 Hypotheses testing

Chi-square and correlation analyses between selected socioeconomic characteristic of respondents (marital status) and their involvement in rice enterprises

Table 3.2.1 shows insignificant relationship between marital status and involvement in rice enterprises, indicating that involvement in the rice enterprises was not influenced by marital status of the respondents. Ayoola *et. al.* (2011) found a negative but insignificant coefficient on marital status as determinant of involvement in rice farming in the Northern Guinea Savannah of Nigeria.

Table 3.2.1: Chi-square analysis of selected socio-economic characteristics and involvement in rice enterprises

Variable	χ^2	df	p
Marital status	8.121	4	0.087

*Significant@ $p \leq 0.05$

The Pearson's Product of Moment Correlation (PPMC) analysis of relationship between respondent's socio-economic characteristics and involvement in rice enterprises reported in Table 3.2.2 shows a negative and significant correlation between age of respondents and involvement in rice enterprises for the respondents ($r = -0.221$, $p < 0.05$). This suggests that as the respondents grow older, involvement in rice enterprises declines. Years of formal education and household size are negatively correlated with involvement in rice enterprises, but not significant. Similarly, income has a positive correlation with involvement in rice enterprises, but not significant. Ayoola (2011) reported a negative but insignificant relationship between age and involvement in rice production. Takele (2010) also confirms a negative but insignificant coefficient on the influence of age on involvement in rice marketing in Fogera Woreda zone of Ethiopia. Takele (2010) found negative and insignificant coefficients for household size and education as well as positive and insignificant

coefficient for income obtained from non-farm activities and involvement in rice marketing.

Table 3.2.2: Correlation analysis between respondents' socio-economic characteristics and involvement in the rice enterprises

	N	r	p
Age	254	-0.221*	0.000
Years of formal Education.	254	-0.073	0.246
Household size	254	-0.087	0.168
Monthly income	254	0.048	0.444

*Significant@ $p \leq 0.05$

3.3 Regression Results

To ascertain socioeconomic determinants of involvement in rice enterprises, a regression analysis was performed relating involvement in rice enterprises to socioeconomic characteristics. The results reported in Table 3.3 shows R^2 of 0.413, indicating that the regression model explains 41.3% of factors determining involvement in rice enterprises. It also shows that age ($\beta = -0.30$, $p < 0.05$) and years of formal education ($\beta = -0.15$, $p < 0.05$) are significant socioeconomic factors influencing involvement in rice enterprises, suggesting that aging and higher educational attainment reduces involvement; the latter because more educated respondents naturally prefer other occupations to farming.

Table 3.3: Regression analysis of socioeconomic determinants of involvement in rice enterprises

Variable	β -value	t-value	p-value
Age	-0.30*	-3.67	0.00
Years of formal Education.	- 0.15*	-2.15	0.03
Household size	0.10	1.31	0.19
Monthly income	-0.11	-1.08	0.28
R-value =0.64 R ² =0.41 Adjusted R=0.34 Standard Error of the estimate=6.42			

*Significant@ $p \leq 0.05$

Conclusion

This study assessed socioeconomic determinants and involvement in rice enterprises in south-western Nigeria. The following conclusions can be drawn from the findings of the study:

Aging and predominantly married workforce, high educational attainment, large household size and low income characterised the rice enterprises in the selected communities.

The chi-square analysis shows insignificant relationship between marital status and involvement in

rice enterprises while the correlation analysis reported negative and significant relationship between age of respondents and involvement in the rice enterprise. However, years of formal education was negatively correlated with level of involvement but not significant.

The regression analysis shows that age and years of formal education are significant determinants of involvement in the rice enterprise.

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