

RELATIONSHIP BETWEEN RICE FARMERS SOCIO-ECONOMIC CHARACTERISTICS AND ADOPTION OF IMPROVED RICE TECHNOLOGIES IN THE VALUE CHAIN DEVELOPMENT PROGRAMME IN ANAMBRA STATE

OBIORA, CHARLES CHUKWUMA (Ph.D)

Charlesobioral13@gmail.com

07032472530

IKENGA, ESTHER E (Ph.D)

EVIEN, CLINTON E

MUKORO, JULIANA E

Southern Delta University Ozoro, Delta State, Nigeria

&

OBIORA, GLORIA N

Imo State Universal Basic Education Board Owerri, Nigeria

ABSTRACT

This study assessed the relationship between the socio economic characteristics of beneficiary rice farmers and adoption of the improved rice production technologies. Anambra State served as the study area and the entire rice farmers in the state served as the population for the study which used 120 rice farmers selected from four agricultural zone of the State as sample size. The data for the study was obtained through the structured interview technique. The hypothesis there is no significant difference between farmers socioeconomic characteristics and the level of adoption of improved technologies was tested using the regression analysis. The result revealed that out of the nine independent variables that were fitted into the multiple regression model, only four variables: age educational level farming experience and number of extension contact had a significant relationship with the dependent variable.

Keywords: Relationship, Socio-economic Characteristics, Improved Rice Technologies, Rice Farmers, Anambra State.

Introduction

Agriculture is the mainstay of most economic of most country in the world especially the third world countries. It is associated with the production of basic food crops and domestic animals. Hallison, (1993) noted that agriculture and farming are synonymous as long as farming was not commercialized but as the process of economic development accelerated, many more other occupations allied to arming came to be a part of agriculture. Today, marketing, processing distribution of agricultural products are all accepted as a part of modern agriculture thereby making the meaning of agriculture to wider in scope Farmkline, 2000). Agriculture may also be defined as the production, Processing, marketing and distribution of crops and livestock products Hufmann, 2006). Agricultural is also defined as the art or science of production of crops and livestock on farm. Nevertheless, either some or portion of a population must be involved in Agriculture in other to ensure food supply for the population (Arcand, 2000). Simons, (2002) stated that despite the immeasurable benefits of agriculture to any society, its development is retarded by certain factors of which inadequate access to agricultural education is one of them. Rice is an important staple food in Nigeria and it is grown in all the States of the Federation and Federal Capital Territory though production and

varies from State to State and the prevalent types of rice production systems in Nigeria include rain-fed upland, rain-fed lowland, irrigated lowland, deep water floating and mangrove swamp (Chukwudebelu, Igwe and Madukasi, 2015). As a cereal grain, it is the most widely consumed staple food for a large part of the world's human population, especially in Asia (Awika, 2011) and it is one of the commodities sugarcane and maize. According to Shrestha (2012), rice is more than just a food, as it plays a key role in food security, while at the same time South-East Asian nations have become the leading rice exporting countries. In most countries, rice cultivation has become the major activity and sources of income for millions of households around the globe. According to Kadiri. Eze, Orebiyi, Lemchi, Ohajianya and Nwaiwu (2014), rice is an increasingly important crop in Nigeria and it is relatively easy to produce for sale and home consumption. In some areas, there is a long tradition of rice growing, but for many, it is considered a luxury food for special occasions only. In terms of comparative advantage, rice can be grown in flooded and non-flooded soils because it has both lowland and upland varieties that can adapt to different agro-climatic and soil conditions (Aja and Aja, 2014). According to Merem, Twumasi, Wesley, Isokpehi, Shenge, et al (2017), rice in most of the African countries constitutes a bigger portion of the diet on regular basis. Aside a handful of nations that enjoy self-sufficiency in rice cultivation, rice consumption surpasses its production and substantial amount of the crop are imported to sustain local demand at the expense of hard-earned foreign currency reserves. Rice is virtually cultivated in most of the agro-ecological Zones of the country, as it constitutes one major cereal crop produced by an average Nigerian farmer. According to Food and Agriculture Organization (FAO) (2018), Nigeria is the continent's leading consumer of rice, one of the largest producers of rice in Africa and simultaneously one of the largest rice importers in the world.

According to Global Value Chain Initiative (GVC) (2007) as cited in Ewuzie, Ifediora Anetoh (2020), value chain is an arrangement that describes the linkages of participates their value creating activities that enhance the movement of goods and services from production, processing, marketing to the end user. In agricultural parlance, the term "value chain" is used interchangeably with such terms as supply chain, market system, and agri-food chain, depending on what is being considered. Based on agri-food sector perspective, Drummond and Goodwin (2011), defined value chain as all activities and processes that occur between producers of food and ultimate consumers. According to Donovan, Franzel, Cunha, Gyau and Mithöfer (2015), donor agencies like USAID, FADAMA, and IFAD usage of value chain is in line with World Bank (2010) definition which describes value chain as full range of value adding activities required to bring a product or service through different phases of production including the procurement of raw materials and other input. The concept of value chain was introduced to improve productivity and profitability of the actors in the agricultural sector (Ewuzie, Ifediora and Anetoh, 2020). The notion of agricultural value chain underscores the system approach to value added activities where the action of one component in a system affects every other component within the system.

According to Ugwuonah (2017), the idea of the value chain is relatively new in agricultural sector, it however, resides at the core of high-impact and sustainable initiatives focused on improving productivity, competitiveness and growth of Small-Medium Enterprises (SMEs). Recently, most of the agricultural intervention programmes, initiated and implemented in agricultural sectors by both government and non-government agencies (donors) take the value chain approach. The value chain approach has shifted focus and emphasis away from

agricultural production to consumer demand, marketing and the coordination of product flow from producer to consumer (Ewuzie, et al, 2020). The value chain concept acknowledges that production must be linked to demand and the critical role of organizing the flow from farmer to consumer opportunities must be taken into consideration. A value chain links the steps a product takes from the producer to the consumer. It, therefore, includes research and development, input suppliers, production, processing, marketing and finance (Norton, 2014). An agricultural value chain starts with the provision of farm inputs which include seed, fertilizer and other agro chemicals used in the cultivation of crops (Rex, 2013). All the inputs are provided by the agro input dealers to the farmer who uses them in the production of agricultural crops and livestock. Whereas, according to Ewuzie, et al, (2020), the production component entails the actual production activities which culminates in the usage of farm inputs in a way that it is prescribed by the agricultural technologies for a particular commodity to produce the required produce. Value chains are created for the better understanding of consumer needs to respond to these requirements in better and more strategic way. The trade components entails exchange and distribution activities that are carried on at the primary product level by marketing middlemen. Processing has to do with value addition activities which is concerned with the change in form of the produce. Besides these activities that are central to a value chain, the business environment and provision of allied services also affect the value chain and as such constitute part of the value chain. The success of the value chain development programme is determine by the leave of participation and commitments of the beneficiaries by way of adopting the recommended technologies. The beneficiary farms are identified with individual various socio economic characteristics. This study seek to examine the relationship between the socio-economic characteristics farms and adoption of rice production technologies.

Research hypothesis

1. There is no significant relationship between the beneficiaries' socio-economic characteristic and their level of adoption of the recommended rice production technologies.

Population of the study

The population of the study comprised all the rice farmer beneficiary of the value chain development programme in Anambra State. Multi-stage sampling procedure involving purposive and simple random sampling technique was used to select 240 respondents that were used for the study.

Method of data collection

The data for the study was through the use of structure interview technique which items border on the socio-economic characteristics of rice famers such as: age, sex, marital status, educational value, house post size, years of family experiences, and farm size.

Method of data analysis

Multiple regression analysis was used to validate if there is significant relationship between the beneficiaries' socio-economic characteristics farmers and their level of adoption of the recommend rice production technologies.

Regression output of the relationship between the programme beneficiaries socio-economic characteristics and adoption of paddy rice production technologies

Variables	Unstandarized B	Coefficient SD	Standadized beta	Coefficient t
Constant	1.976	0.881	-	2.654
Age	-0.126	0.052	-0.281	-2.430
Gender	0.244	0.156	0.198	1.465
Marital status	0.115	0.072	0.163	1.742
Householder size	0.170	1.661	0.017	0.102
Educational qualification	0.226	0.091	0.197	2.614
Educational experience	1.627	0.337	0.294	3.941
Farm size	0.045	0.029	0.238	1.731
Major occupation	-0.003	0.020	-0.019	-0.139
Extension contact	1.732	0.533	0.518	4.035

Result and Conclusion

The table shows the result of multiple regression analysis of the relationship between the independent variables (age, gender, marital status, Household size, educational level, farm size, farming experience, major occupation, number of extension contacts) of the beneficiaries and adoption level of the recommended rice production technologies (dependent variable). The result of the analysis revealed that a strong correlation ($R=0.857$) exist between the dependent and independent variables. Hence, the null hypothesis (there is no relationship between the rice farmers socio-economic characteristics and their level of adoption of the improved paddy rice production technologies recommended by the programme) was rejected. The overall goodness of the equation as indicated by the coefficients of multiple determinations ($R^2= 0.769$) showed that the 77.00% of the variance in the dependent variable can be explained by the independent variables while the remaining 23% was due to random disturbances.

In addition, the Adjusted R^2 corroborates the claim giving the value of 0.676 (67.6%), which indicates that the independent variables explained the behavior of the dependent variable (level of adoption of the recommended rice production technologies) at 67% level of confidence. The result further shows that out of the nine independent variables that were fitted into the multiple regression model, only four (4) variables: age of the farmers (3.021), educational qualifications (2.614), farming experience (3.941) and sources of agro-inputs (2.610) were the ones found to have a statistical significant relationship with the dependent variable at 5%. The result further suggest that independent variables such as the rice farmers' sex, marital status, farm size, major

Occupation and household size were not statistically significant. The results of the analysis in Table 4.8 shows a negative relationship between age and adoption level of the recommended rice production technologies, and was found statistically significant.

The negative coefficient suggests a negative influence of the variable on the paddy rice farmers adoption decision. The finding suggests that the probability of adoption decreases for older rice farmers. Therefore, the adoption probability of improved rice production technologies is higher among the younger rice farmers than the old farmers. In other words, the likelihood of adoption decreases with an increase in age of the farmers. This agrees with the fact that older rice farmers are risk-averse and more conservative than the young ones who are more innovative and more receptive to technological innovations. The result I further suggest that the likelihood of the rice farmers' adoption decision decreases as the farmers advance in age. Hence, as the beneficiaries age increases, their level of adoption of the rice production technologies decreases, as a result of the tediousness involved in rice production activities, and as well as the resultant effects of their old age. The result is in agreement with the finding of Abubakar et al (2019) who revealed that farmers age is one of the determining factors of the adoption of improved rice production technologies at 5% level of probability. Similarly, the result agree with the finding of Onumadu Et. Al., (2014) who revealed that age was significant in the adoption of improved rice production technologies in Ayamelum Local Government Area of Anambra State, Nigeria.

The table shows that gender was positive but was not statistically significant. This shows that there was gender discrimination in relation to technology adoption. Both male and women farmers adopted the recommended rice production technologies. This shows that gender played a role in the adoption decision process, as to whether to accept nor reject the recommended rice production technologies as introduced by the programme. The finding corroborates the findings of Chukwu et al., (2016) who reported in their study that gender was positively signed but was not statistically significant. More so, the coefficient of educational qualification was significant and had a positive relationship with the rice farmers' level of adoption of the improved paddy rice production technologies at 10% probability level. This indicates that the number and level of adoption of the rice production technologies will increase, as the programme beneficiaries level of education increases. Hence, the farmer's educational level is another major determinant of decision to adopt or reject the recommended rice production technologies introduced by the programme in study area. The result is in agreement with the finding of Tsai et al.. (2021) who reported that educational level is another human capital related factor. Hence, suggesting that the rice farmers who are well-educated have approximately 11.3% higher probability of adopting the organic farming. Similarly, Vakili, Tahmasebi, Tahmasebi and Tahmasebi (2016) reported Tihaf an increase in farmers level of education will result to an increase in production promotes entrepreneurship advancement and plays a vital role in securing economic progress and income distribution.

On the other hand, the coefficient of the rice farmers' years of farming experience was positive and statistically significant at 10% probability level. This implies that the more years of farming experience acquired by the programme beneficiaries, the higher their chances of increasing the number and level of adoption of the improved rice production technologies recommended by the programme. There fore, resulting to an increase in rice production in the study area. In most cases, years of farming experience could mean practical knowledge acquired through trial and error and having established the best methods (Hansson, 2019). The result corroborates that of Chukwu et al. (2016) who reported that the respondents farming experience was positive and statistically significant at 1% level of significance, which suggests that the higher the farmers' years of farming experience, the higher the level of

adoption of the recommended technologies on improved rice production. Similarly, Adejoh, Madugu and Shaibu (2017) revealed that the likelihood to adopt rice technologies increases with an increase in the number of years spent in rice processing. The result further show that the coefficient of the number of extension contacts was positive and statistically significant. The result implies that the more the number of visits made by the extension agents or the more the beneficiaries interact with extension contacts, the higher the chances of the rice farmers to adopt the recommended rice production technologies.

The result is in agreement with the finding of Onyeneke (2017) who reported that the farmers' socio-economic factors such as age, income, cooperative membership, household size, level of education, farm size and number of contacts with extension agents influenced adoption.

The result shows a strong correlation ($R=0.857$) between the dependent and independent variables. Hence, the null hypothesis was rejected. The result revealed that out of the nine independent variables that were fitted into the multiple regression model, only four variables: age (3.021), educational level (2.614), farming experience (3.941) and number of extension contact (2.610) had a significant relationship with the dependent variable at 5%. Which means there is significant relationship between the socioeconomic characteristics of program beneficiaries and the level of adoption

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