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ASSESSMENT OF RICE VALUE CHAIN DEVELOPMENT IN BENUE STATE, NIGERIA

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Abstract

The study assessed the capacity building needs of rice value chain actors in Benue State. The population of the study comprised of all rice value chain actors in the state. Specific objectives were to examine value chain activities in selected areas in Benue state and assess the capacity building needs of value chain actors in relation to extension delivery service system. Structured questionnaires were used to collect data from 320 respondents using multi-stage sampling techniques. The data collected were analysed using descriptive statistics. The results indicated that the local seeds were replaced by improved varieties. All the rice value chain actors: required capacity building. Three categories of factors affecting capacity building needs of rice value chain actors, socio-political, economic, and managerial and environment and climatic factors were identified. The level of use of improved practices was high in the State for producers, processors and marketers. This indicated a significant use of improved practices by rice processors in Benue State. Base on the findings of the study concludes that capacity building should be provided for all the actors within the state in order to achieve self-reliance through strengthening of human and institutional capabilities in rice economic. In view of these findings, it was recommended therefore government, non-governmental organization should be involved in the provision of critical infrastructural facilities like electricity, transportation and water to enhance rice value chain activities and reduce rice importation.

Keywords: Rice, Value Chain, Development, Capacity Building

Introduction

Concern for food security is increasing globally, national and at state levels including universities of agriculture in Nigeria. Food security exist when all people, at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and health life (FAO, 1996).

Small agriculture holdings constitute a vast majority of farms in many developing countries such as Nigeria (Ukwungwu & Abo, 2013). Due to income growth, urbanization, climate change and tastes and preferences, the demand for value added commodities like ready to cook items such as rice, maize and other agricultural commodities are growing fast. It is a well-known fact

that small holders have more easily available labour than capital, and value addition require more labour. This couple with the rising demand for value added agricultural commodities like rice, maize, cassava etc., offers an opportunity for small holder farmers to intensify production, input supply, processing and marketing of these commodities in order to showcase agriculture not only for food consumption but as a business. However, there is a growing realization that small holder farmer can increase their income and improve living standard substantially if they process and add value to commodities such as rice. Value chain concept in agriculture refers to all activities and services which brings produce or services from conception through the different phases of production, to the final

consumers and final disposal after use (Kaplinsky & Morris, 2000).

Rice has become a strategic crop in sub Saharan Africa and fastest growing food source to both rice and poor households (Nwanze, Mohapatra, Kormawa, Shelllemiah, & Bruce-Oliver, 2006)

It has been observed that whatever post-harvest food processing technology that is put in place is largely based on traditional food processing and preservation methods. Sun drying is a major traditional food processing and preservation method adopted even by the road side. Such food processing systems are prone to hazards it exposes on post-harvest food handling which include heavy contamination, unhygienic environment and dependent weather conditions. This system though very cheap, is ineffective, inefficient and cannot guarantee food security (Ukwungwu & Abo, 2013).

However, there is also the idea that the capacity building needs of extension services to provide market related service delivery is limited. We should also not forget that given the crucial role of extension as the main institutional arm of government in driving the agricultural modernization process, it is relevant that the extension service has competency to advice farmers adequately along the entire agricultural value chain development.

Statement of the Problem

Low hand productivity is a major constraint to the development of agricultural sector in Nigeria.

Also, rice value chain in Nigeria indicates little or no access to farm inputs, production system, low level of mechanization and weak infrastructural development particularly resulting to market information, high transport cost and poor preservation and storage systems for agricultural commodities. More so, low land production of crops has been attributed mostly to expanded land cultivation rather than increase yield. Crop yield is a function of the quality of planting materials as well as application on farm inputs such as fertilizers, agro chemicals and other best farm practices. Furthermore, poverty and food insecurity, rapid

population growth, environmental degradation, food quality, food safety and insecurity are problems seriously militating against agricultural technology development and food security situation in Nigeria in general and Benue state in particular.

Objectives

This study aimed at promoting agriculture through value addition for enhanced food security in Benue state. The specific objectives are to:

- i. Examine value chain activities in selected areas in Benue state
- ii. Assess the capacity building needs of value chain actors in relation to extension delivery service system.

Justification

The study focused mainly on the assessment of capacity building needs of rice value chain actors (Producers, processors, input suppliers and marketers. There has been paucity of researches that address such situation in other states in Nigeria like Ondo, Kwara, Niger etc. But in Benue state little or no research has been carried out to fill the research gap with the view to assess the capacity building needs of rice value chain actors. Rice production, processing, input supply, marketing and consumption have been an assumption and not empirical research. It is based on this premise that this study seeks to assess the capacity building need of rice value chain actors in Benue state.

This article is structured as follow; the first aspect is introduction, followed by literature review, conceptual definitions, empirical literature review, theoretical framework, methodology, area of the study, population and sampling method, method of data analysis, presentation and analysis of results and then conclusion and recommendations

Literature Review

Value Chain and Market System Development

The framework for value chain market system development is recognized as a potential means for achieving a sustainable impact. Building of value chain development methodology, an inclusive market system development approach focusing on building the

capacity and resilience of local systems, leveraging the incentives and resources of the private sector, and ensuring the beneficial inclusion of the poor farmers and stimulating change and innovations. Though, best farm practices inclusive market system development is to catalyze a process that results in a market system that is competitive, inclusive and resilient (Kula *et al.* 2006).

Capacity Building and Rice Value Chain Actors

Training farmers for development is one of the numerous activities that need to be carried out to sustain production of food and to enhance self-sufficiency in food production in the developing world. Training is mostly directed at improving the ability of individuals to make their vocation more effectively and efficiently and that it involves acquiring information and developing abilities or attitudes, which will result in greater competence in the performance of a work. Nwilene (2014) opined that most of the experienced rice scientists in Nigeria are aging. Closely related to this is another observation that Nigerian agricultural graduates are not in the ministry of agriculture, research institutions or on the farm. Mutimba (2011) reported that rice farmers were not engaged in processing and value addition since they are ignorant or lack the knowledge of the benefits in being active in the value chain of the commodity.

Capacity building in rice value chain will enable the farmers meet new quality and safety requirements as well as learning how to manage their production techniques (Bammann, 2007).

Ekanem and Inyang (2013) studied the outcomes of the agricultural intervention of the SPDC (Sustainable Project Development Committee) in Niger Delta Region of Nigeria, based on the effectiveness and functionality of the capacity building process. The result, among other things revealed that 64.6% of the respondents received training on various aspects of management of agricultural projects such as feed production, machine operation and maintenance, farm maintenance and general project management.

Gordon and Chawick (2007) assessed the impact of capacity building and training on economic and social development. They identified four path ways through which capacity building improves development namely: First, individual human capacity raises the productivity and hence the earning capacity of the reflected in higher life time income. Second, the efficiency of the organization increases due to improved levels and/or reduced cost of services or outputs delivered by the organization to customers. Third, innovation in the organization resulting from changes in culture and mindset leading to changes in the services or outputs delivered to customers by the organization. Fourth, the effectiveness of the organization increases, improving targeting to areas of need, and attracting more resources. This is reflected in the contribution the organization makes to the enabling environment for the adoption of the organization's outputs and enhances the value addition of the organization.

Participation of Value Chain Actors in Rice Value Chain Activities

Studies on World Programme of Census Agriculture (WPCA, 2000) indicate that small agricultural holdings constitute a vast majority of farms in many developing countries such as Nigeria, Asia and Pacific region has the smallest size of land holding in the World. Against an average overall size of 5.5 hectares for 114 FAO member countries, the average size of holding in Asia is only about 1 hectare. Owing to fragmentation and sub divisions, operational size is expected to decrease in further future. This implies that due small holder size, farmers should enhance their income from the small holding both through the increased rice productivity and increased value addition to meet their growing cash needs.

With increased efficiency in value chain activities, Reddy (2013) agreed that farmers will benefit from better prices, higher and quality yield and assured markets services and input supplies. It is also important to see that small holder are to participate and move up the value chains, given the high return being expected from the growing demand for agricultural and nonagricultural product.

In recent times, there has been growing demand for agricultural produce like poultry feed, cattle feed, breweries and other uses. More recently some big retail chains are selling ready-to cook products like dry flour, bread flour, confection, any products and bakery products from crops like rice, millet, sorghum and maize through retail networks (Reddy, 2013). From the participation of farmers in value chain activities, it is hoped that they will benefit from huge demand for value added products through transformation from subsistence farming to market oriented farming.

Value Chain Coalition Model

The framework of value chain coalition model looked at the concept of agricultural value chain in a full range of activities and participants' involvement in moving agricultural products such as rice from input suppliers to farmers' field and ultimately to the consumers. Each stakeholder in the chain has a link in the next in order to form a viable chain. By understanding the complete production to consumption process, it is pertinent to determine how the marketing and value addition activities take place (ICRISAT 2013). The value chain coalition model recognizes that value is often created by the simultaneous interaction of several stakeholders as production and customer are all viewed as working together to add value to the product.

Methodology

Area of the Study

The study was carried out in Benue State located in the North Central Agro-ecological Zone of Nigeria. Benue State lies between longitudes $7^{\circ}47^0$ and 10° East and latitudes $6^{\circ}25$ and 8° North. Benue State has a population of 4,219,244 inhabitants with a land mass of about 33,958km² (FGN, 2007). The state is divided into three geo-political zones: A, B and C. The zones are A (Eastern zone), B (Northern zone) and C (Central zone) and has a total of twenty-three local government areas. Benue State has a favourable climatic condition and fertile land which are conducive for crop production and rearing of livestock and agro-forestry (Benue Diary, 2002). Benue State has two distinct weather conditions; rainy season and dry season. Rainy season normally

starts between late March and early April and spans through October and November, while Dry season starts around November through March. The annual average rain fall in Benue State is between 1750mm-1280mm. The average annual temperature varies from 30°C to 38°C (BNARDA, 2005).

Population and Sample Method

The population for this study was made up of all value chain actors in Benue. Multi-stage sampling technique was employed in this study. In the first stage, two zones from each of the three agricultural zones in Benue state where rice is mostly produced were selected, using purposive sampling techniques. This was done in order to get adequate information representative of the state. In the second stage, five (5) blocks were randomly selected from each of the functional blocks from the zones in the state making a total number of twenty (20) blocks for the study. In the third stage, two (2) cells were selected from each of the twenty (20) blocks by simple randomized sampling technique to arrive at a total of forty (40) cells. Fourthly, a list of rice value chain actors in each of the selected cells stratified into rice producers, input suppliers, processors and marketers in the study areas using purposive sampling technique was compiled with the assistance of Agricultural Development Project (ADP) staff to produce a sampling frame for the study.

Furthermore, eight (8) rice value chain actors made up of two (2) each of producers, input suppliers, processors and marketers from the functional cells were selected to get a total sample size of three hundred and twenty (320) respondents for the study.

Method of Data Analysis

Structured questionnaires were used to collect data from the respondents. The data collected were analysed using descriptive statistics.

Presentation and Analysis of Results

Local Practices of Rice Value Chain Actors in Benue State

Table 1 present result on local practices employed by respondents in the rice value chain for Benue state. Local practices like planting of local seeds, use of traditional hoe, and use of cutlass, bird scare crow and manual weeding were local practices basically associated with producers in the chain. Planting of local seeds shows a mean of 13.6% for the state. This had a very low percentage indicating a significant shift from local seeds to the use of improved rice seeds.

Planting of local seeds and use of cutlass, Benue has 23.5%, and dominates in the use of all the local practices. The use of traditional hoe for cultivation is on the lower ebb as only 23.5% of respondents engaged in the use of this implement suggesting a significant involvement in the use of local practices. The use of traditional implements in processes like land clearing, tillage and harrowing are gradually being replaced with advancement in technology as the use of herbicides and tractors are becoming more prevalent among producers. This finding agrees with Ukwungwu and Abo (2012) who reported that rice production in Nigeria is dominated by small holder farmers who practice subsistence farming with traditional and obsolete equipments, using traditional low yielding varieties with low market value.

The use of cutlass which most times come in during land clearing is greatly reduced with increased use of chemical (herbicides). Birds scalar which were used majorly against birds which feed on rice while on the farm is traditional practice in use (very long time). This

practice also diminished in usage as improved varieties are now available which are mostly early maturing and as such are harvested before the period of verification of these birds since most of the birds that feed on rice are migratory in nature. As earlier stated, there is an increase in the use of agro-chemicals among farmers and this has helped reduced some traditional practices like manual weeding (with 19.8% in the study area).

The use of winnowing baskets and wooden bars are local practices associated with rice processing, Table 1 shows 23.5% and 24.1% of respondents made use of winnowing baskets and wooden bars respectively. This implies that the respondents mostly were local farmers and still use these materials for rice processing. The use of modern and sophisticated machines available has replaced greatly the existence of these local practices; examples of machines include millers and de-stoners. Table 1 shows the use of storage rhombus which is marketing activity. Table 1 show that only 17.3% of the total respondents still practice it. This is because marketers now store in ware houses because of increased quantities. Packaging which is also a marketing activity has greatly reduced the use of rhombus. Packaging gives identity and brand; it also increases competitiveness of rice brand and encourages the local adoption of standard weight and measures. This finding is consistent with Usman (2012) who opined that packaged material is essential since it promotes the product. It gives more information to the consumers in decision making.

Table 1: Local Practices of Rice Value Chain Actors in Benue State n = 254

Local practices	Frequency	Percentage
Planting of local seeds	22	(13.6%)
Traditional hoe	38	(23.5)
Use of cutlass	28	(23.5)
Bird scarler	29	(17.9)
Manual weeding	32	(19.8)
Winnowing baskets	38	(23.5)
Wooden bar	39	(24.1)
Storage rhombus	28	(17.3)

Source: Field Survey, 2021.

Capacity Building Needs of Rice Value Chain Actors in Benue State

Table 1 presents results on capacity building needs of the rice value chain actors in the study area (Benue State). In this analysis, 3 is considered the cut off mean and any variable with mean above 3 is said to need capacity building. Benue State, producers require capacity building in all rice value chain production. Input suppliers in Benue State needed capacity building in agrochemicals, tractors and fertilizers which contrast the findings of Meron (2016) that appropriate stakeholders provide capacity building to farmers. Processors in the state needed capacity building on warehouse, packaging, transportation and infrastructure except equipment.

Marketers in Benue state needed capacity building on market information on rice value chain, storage facility and market volume transportation. This is in contrast

with the findings of Meron (2016) that farmers are able to get market price information from different value chain actors. Furthermore, the actors in Benue state needed capacity building on all the variables of capacity building with exception of improved seeds supply, tractors, transportation and processing equipment.

The implication of this finding was probably that capacity building is a process of achieving self-reliance through strengthening human and institutional capabilities in the economy. In the submission of Aroge (2000) he agrees that skills are more people oriented and job oriented which implies basic and necessary requirements for performance. The main aim of building capacities for rice value chain actors was probably to impact on them the (rice production, input supplying processing and marketing) technologies that may not have been fully realized because not all the capacity building needs were fully attended

Table 2: Distribution of respondents on Capacity Building Needs of rice value chain actors in Benue State n = 254

Variables	Benue	Variables	Benue
Producers		Processors	
Production technologies	4.66	Equipment	2.76
Post-Harvest handling	4.48*	Warehouse	3.89*
Transportation	3.36*	Packaging	4.09*
Linkages	4.1s8	Transportation	3.97*
Irrigation facilities	4.14	Infrastructure	4.16*
Capital	4.38	Marketers	
Quality assurance	4.32*	Information	4.04*
Record keeping	4.22*	Storage facility	3.95*
Participatory target	4.30*	Volume transportation	3.84*
Input Suppliers			
Improved seeds supply	2.45		
Agro chemicals	3.67*		
Tractors	3.58*		
Fertilizer	3.27*		
Transportation	2.58		

x= 3.0

Source: Field Survey, 2021

Conclusion

The study evaluated the capacity building needs of rice value chain actors in Benue state. Critical facilities such as source and supply of foundation seeds were required by the state. Irrigation was the least available facility for all the actors in the state due to the fact most actors practice rain fed Agriculture with little dependence on irrigation services. Local practices like planting of local seeds showed low percentage due to significant shift from local seeds to the use of improved rice seeds. The study showed that actors had high awareness of improved practices, Capacity building needs were required by all the actors for various activities so as to achieve self-reliance through strengthening of human and institutional capacities in the economy. The constraints to capacity building needs of rice value chain actors in the study area were grouped into three factors, namely; factor one (Socio Politico Economic factors), factor two (Management and policy related factors) factor three (Environmental/Climatic factors).

Recommendations

i. Capacity building needs of the rice value chain actors should be aimed at encouragement of rice value chain actors to improve on their capacity needs through training, encouragement and participation in rice value

chain programmes Government and non-government organizations such as International funds for agricultural development (IFAD) should fund practical skills acquisition, techniques in order to adopt improved best practices in rice economy.

ii. There is need for adequate market information, storage facility, quality grain, affordable credit facilities, good record keeping, appropriate marketing channels and government policy determination network to protect local farmers from rice companies and enhanced local patronage.

iii. There should be improved and appropriate technologies to impart on the rice value chain actors and inputs made available so that greater quantity of rice could be produced.

iv. Government and private partnership should be involved in the provision of critical infrastructural facilities such as electricity, transportation and water to enhance rice value chain development and reduce rice importation

v. Improved technologies such as tractors, distoners, planters, harvesters should be made available through rice farmer's cooperatives and community based organizations for quality rice production to meet local demand and save foreign expenditure on rice importation.

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