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Constraints to Capacity Building needs of Rice Value Chain Actors in Benue and Nasarawa States, Nigeria

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ABSTRACT: The study identified consraints to capacity building needs of rice value chain actors in Benue and Nasarawa States. The population of the study comprised of all rice value chain actors in both states, with a sample size of 320 respondents. Structural questionnaire were used to collect data using multi-stage sampling techniques. The collected data were analyzed using both descriptive and inferential statistics. Findings of the study showed that the highest (52.7%) pooled for both states of respondents fall within the age bracket of 21-40 years and 41-60 years. Majority (78.9%) and (67.8%) of the respondents were married. Highest (83.3%) pooled input supplies possessed Post-Secondary School Qualification. Majority (71.1%) of the respondents had farm size of 1.1 hectares and (61.1%) had household size of less than five persons (<5 persons). Some (22.5%) pooled of rice value chain actors were engaged in the use of traditional hoe for cultivation, while (21.2%) pooled respondents were involved in the use of cutlers and machetes for land clearing. Three categories of constrains to capacity building needs of rice value chain actors, socio-political, economic, managerial and environment and climatic factors were identified. The study concluded that socio-political, economic, managerial and environment and climatic factors affected capacity building needs of rice value chain actors in the study area. It was therefore, recommended that government, non- governmental organization and private individuals should be involved in the provision of critical infrastructure, good governance, better managerial skills and enabling environment for higher productivity for the rice value chain actors in the states.

Keywords: Capacity building, constraints, needs, rice value chain actors, Benue and Nasarawa States.

INTRODUCTION

Rice, *Oryza-sativa* (Asian rice) or *Oryza glaberrima* (African Rice) is an annual crop. It is the seed of monocot species of poaceae family (Kuldeep, 2006). It is an ancient grain consumed as healthy staple food by more than half the world's population, (Onjewu, Jolaoso, Oladele and Maduegbunan, 2013). It is a strategic crop to Africa and has become the fastest-growing food source to both rich and poor households (Nwanze, Mohapatra, Kormawa, Shellemiah and Bruce-Oliver, 2006). According to Ukwungwu and Abo (2013), rice is a region-wide strategic commodity as highlighted in the resolution of the Abuja Food Summit organized by the African Development Bank in 2006. This makes it a priority crop in the implementation of the New Partnership for Africans Development (NEPAD).There is a growing realization that small holder farmers can increase

their incomes and improve living standard substantially if they process and add value to rice. Value chain concept in agriculture refers to all activities and services which bring produce or service from conception (production through the different phases of production, delivery) to the final consumers and final disposal after use (Kaplinsky and Morris, 2000). Apart from the primary producers, several other players drive the agricultural value chain and play important roles, here actors include input suppliers, processors, marketers and consumers. The producers are farmers who are very important actors and the key drivers to determine the sustainability of the entire rice value chain.

Nigeria is the largest producer of rice in West Africa sub-region and third in Africa after Egypt and Madagascar. The trend has made Nigeria to attain 2.103 and 3.46 million tons of milled rice production in 2005 and 2008 National Rice Development Strategy (NRDS, 2010). The increased production figure has been attributed to expansion in area under rice cultivation, adoption of high yielding, diseases resistant and fertilizer responsive varieties such as FARO 43 (ITA, 128), FARO 46 (ITA 150) for upland ecology, and FARO 44, FARO 51, and FARO 57 for lowland swamp rice. However, there seems to be numerous constraints to capacity building needs of the value chain actors in rice production in the study area, hence the need for this study. The study described socioeconomic characteristic of the respondents and identified constraints to capacity building needs of the respondents.

METHODOLOGY

The study was carried out in Benue and Nasarawa States located in the North Central Agro-ecological Zone of Nigeria. Benue State lies between longitudes $7^{0}47^{0}$ and 10^{0}East and latitudes $6^{0}25$ and 8^{0}North. It has a population of 4,219,244 inhabitants with a land mass of about 33,958km^{2} (FGN, 2007). The state is divided into three agricultural zones; A (Eastern zone), B (Northern zone) and C (Central zone) and has a total of twenty three local government areas. It shares boundaries with Nasarawa State in the North, Taraba State in the East, Cross River State in the South, Enugu State in the West, Kogi State in the South-West and the Republic of Cameroun in the South-East (Ani *et al.*, 2014). The state particularly is known as the "Food Basket" of Nigeria because of the diverse rich agricultural produce found in the area. Some of the crops include yams, rice, beans, cassava, maize, millet, sorghum, soybeans, tomatoes, mangoes, oranges, sesame seed, groundnut, sweet potatoes, etc. It has a favourable climatic condition and fertile land which are conducive for crop production and rearing of livestock and agro-forestry (Benue Diary, 2002). Major tribes in Benue State are Tiv, Idoma, Igede, Etulo, Agatu, Ofia and Jukun. 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^{0}C to 38^{0}C (BNARDA, 2005). Benue State has over 600,000 hectares of land available under Fadama for rice and dry season agriculture. It has abundant raw materials that support industrialization when properly harnessed (BNARDA, 2005).

Nasarawa State was curved out of Plateau State in 1996. It lies between Latitude 8^0 to 10^{0}N and longitudes 7^{0}10′ to 9^{0}20′E. Nasarawa State is bordered by the Federal Capital Territory, Abuja to the west, Plateau State to the East, Benue State to the south, Kwara State to the south-west and Kaduna State to the north-west. It has a land mass of 27, 86201 square kilometers (Km^2) which represenst about 9.40 percent of the land area of North Central Zone of Nigeria (Ochigbo and Idowu, 2002). Nasarawa.

The state has abundant water resources with estimated surface area of over 5,645 hectares (Bello, 2005). There are two river tributaries, river Benue and Mada, about sixty natural lakes and reservoirs some of which include: Azara, Agadbu, Feriruwa Rukubi flood plain, Ruwan Doma and Iggah Lake (Bello, 2005). The state is generally an agrarian economy with a population of 1,863,275 inhabitants (NPC, 2006). The state has thirteen local government areas and twenty-three ethnic groups. The local governments include, Lafia, Akwanga, Awe, Doma, Karu, Keana, Keffi, Kokona, Nasarawa-Eggon, Obi, Toto, Wamba and Nasarawa (Nasarawa State Government, 2008). Major crops produced in the state are maize, rice, cassava, yam, sesame seed, sugar cane, melon, cowpea, sorghum, millet, groundnut, sweet potatoes and soybeans. Some of the livestock produced are cattle, sheep, goats, pigs, poultry and fisheries (Nasarawa State Government, 2008).

Sample and Sampling Procedure

Multi-stage sampling technique was employed in this study. In the first stage, two zones from each of the three agricultural zones in Benue and Nasarawa states where rice is mostly produced were selected, using purposive sampling techniques. In the second stage, five (5) blocks were randomly selected from each of the functional blocks from the zones in the two (2) states respectively 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 using purposive sampling technique was compiled 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.

Table 3.1: Distribution of Benue and Nasarawa agricultural zones, extension blocks and cells

Classification	Benue State			Nasarawa State			
	Eastern Zone A	Northern Zone B	Central Zone C	Southern Zone	Western Zone	Central Zone	Total
No. of blocks	18	13	15	12	10	4	72
Cells	144	104	120	72	66	24	530

Source: Compiled from ADP Records of Benue State 2017

Table 3.2: Distribution of functional and sampled blocks and cells

Classification	BENUE STATE				NASARAWA STATE				
	East Zone A	Selected	North Zone B	Selected	South Zone	Selected	West Zone	Selected	Total Selected
Functional blocks	11	5	10	5	8	5	8	5	20 selected blocks
Functional cells	22	10	18	10	16	10	16	10	40 selected cells
		2		2		2		2	8 selected rice value chain actors or respondents

Total sample size 8 x 40cells = 320

Source: Compiled from ADP Records of Benue and Nasarawa States 2017

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Rice Value Chain Actors in Benue and Nasarawa States

Table4.1 shows that the male sex (men) are dominant participants in all the rice value chain actors beginning from producers to marketers (78.6%, 100%, 50% and 54.3% respectively) for the two states with exception of processors in Benue State which shows 56.2% of female actors as against 43.8% of their male counterparts in Nasarawa state. This exception is likely to be associated with activities inherent with rice processing like milling which is traditionally considered to be associated with the female sex in a typical African setting. The dominance of men in almost all the value chain actors in the study area is a revelation of the fact that the activities involved in most of the value chain require physical strength which is mostly domicile in men. Individually Nasarawa has larger number of producers (80.5%),

processors (60.66%) and marketers (55.6%) while Benue has 76.8%, 43.8% and 52.9%.

On age, producers fell within the age bracket of 21-40 and 41-60 years with age range of 41-60 years having the pooled percentage (52.7%) for the two states. Under the age bracket of 21-40 Nasarawa (49.4%, 68.8% and 55.6% for producers, input suppliers and marketers). While Benue had (29.5%, 50.0% and 29.4%) for all the actors' exception of processors Benue had 50.0% as against 27.3% processors for Nasarawa. Regarding the age bracket of 41-60 Benue had higher (62.1%, 50.0% and58.8% for producers, input suppliers and marketers than Nasarawa with (42.5%, 31.2% and 38.9%) except processors which Nasarawa had higher (69.7%) as against Benue (50.0%). This finding is similar to that of Ayoola et al (2011) and Kebbeh *et al.,*(2008), which found that average age of rice farmers in Kaduna and Niger States was 45 years. The result revealed that the respondents were married for both states with pooled percentages of 73.6%, 66.7%, 59.3% and 48.6% for producers, input-suppliers, processors and marketers respectively. Individually Nasarawa had 67.8% as against 78.9% Benue for producers, 68.8%, 50.0% (input suppliers) 60.6%, 59.6 (processors) and 38.9%, 58.3% (marketers). This result corroborates the findings of Onumadu and Osahon (2014) where the majority of rice farmers were married. This implied that married people were more in rice farming and this could be as a result of more responsibilities they were saddled with as married couples who had the role for providing household needs of their families.

The study revealed that all rice value chain had post-secondary school qualifications like OND, HND, NCE, B.Sc. Based on post- secondary education Nasarawa had (65.5%, 87.5%, 48.5%,and 61.1% for producers, input suppliers, processors and marketers higher (29.5%, 50.0%, 25.0% and 47.1%) than Benue state. This result is in contrast with the findings of Tsega et al (2005), Khattak and Hussain (2008) who found a high level of illiteracy among rice farmers in Kaduna and Niger states. The influx of highly educated population in the rice value chain is attributable to the high level of unemployment both in the private and public sectors of the Nigerian economy. Most of respondents in the two states (Benue and Nasarawa States). Were engaged in farming in order to improve their livelihoood. Input suppliers had the highest 71.9% for both states while on individual states input suppliers in Benue State had the highest (100%) as against Nasarawa (43.8%).This could be because most of the activities along the rice value chain require professional services and mechanized farming. However, the labour required in the value rice chain is mostly hired, 99.0% of labour required for production coming from hired sources. However family labour is also a significant source of farm labour in a typically African society like in the study area.

Producers and input suppliers in Nasarawa had (43.7% and 68.3%) household sizes of < 5 as compared to Benue (23.2% and 0.0 %), while processors and marketers in Benue had higher percentage (52.1% and 47.1% respectively) of house hold sizes that are less than five as against processors and marketers in Nasarawa (45.5%) and (44.4%).In Benue The table shows highest household sizes from five and below. This contrast with the findings of Ismaila (2015) where the average household size of 9 was recorded.

Most of the actors had up to ten and below years of experience in the rice value chain which disagrees with the findings of Ismaila (2015) that most of the rice farmers have fifteen years of experience and above. All the actors in Nasarawa exception of marketers have higher percentage of respondents with less than 10 years of farming experience (65.5%, 68.8% and 93.95 for producers, input suppliers and processors respectively) while marketers in Benue (94.1%) have higher percentage than marketers in Nasarawa (0.0%). The farm size of less than 1.1-2.0 hectares was used by majority of the rice value chain actors. All the Actors (21.8%, 25.0% and 12.1% for producers, input suppliers and processors respectively) in Nasarawa with exception of marketers which had higher percentage under the farm size of 1.1-2.0 hectares while marketers in Benue had higher percentage (5%) under this farm size as against marketers in Nasarawa who had (0.0%). This shows that majority of these actors are small holder farmers which is a clear indication of limited production and lingering poverty among them. This result agrees with Adebayo and Oladele (2011) who reported that agricultural production is highly dominated by small scale farmers.

Majority pooled (87%) of the processors earned less or only ₦100,000 per annum which agrees with the findings of Islam and Ahmed (2010) in Adamawa state that the annual revenue of rice farmers is between ₦ 75,000 to ₦ 110,000. Based on this annual income, all the actors in Nasarawa with exception of input suppliers had higher percentage than their Benue counterparts. Regarding the income of 300001 naira and above actors in Nasarawa with exception of marketers which had (5.6%) and Benue (5.9%).This means that majority of the respondents either had little farm size available for cultivation which had a significant effect on the amount of output produced or do not have the required and relevant inputs needed for high yield could even be as a result of price variation which leads to low annual income. However for the fact that some of the actors got more than ₦300, 000 per annum is a good sign of viability of the rice value chain enterprise.

Table 4.1: Distribution of Socio-Economic Characteristics of Rice Value Chain Actors in Benue and Nasarawa States

Table 1: Distribution of Socio-Economic Characteristics of Price Value Chain Actors in Benue and Nasarawa States

	Nasarawa				Benue				Pooled			
Variable	**P**	**IS**	**PR**	**M**	**P**	**IS**	**PR**	**M**	**P**	**IS**	**PR**	**M**
Sex												
M	70 (80.5%)	16 (100.0%)	20 (60.66%)	10 (55.6%)	73 (76.8%)	2 (100.0%)	21 (43.8%)	9 (52.9%)	143 (78.6%)	18 (100)	41 (50.6)	19 (54.3)
F	17 (19.5%)	0	13 (39.4%)	8 (44.4%)	22 (23.2%)	0	27 (56.2%)	8 (47.1%)	39 (21.4)	0	40 (49.4)	16 (45.7)
Age												
21-40	43 (49.4)	11 (68.8)	9 (27.3)	10 (55.6)	28 (29.5)	1 (50.0)	24 (50.0)	5 (29.4)	71 (39.0)	12 (66.7)	33 (40.7)	15 (42.9)
41-60	37 (42.5)	5 (31.2)	23 (69.7)	7 (38.9)	59 (62.1)	1 (50.0)	24 (50.0)	10 (58.8)	96 (52.7)	6 (33.3)	47 (58.0)	17 (48.6)
61 and above	7 (8.0)	0	1 (3.0)	1 (5.6)	8 (8.4)	0	0	2 (11.8)	15 (8.2)	0	1 (1.2)	3 (8.6)
Marital Status												
Single	18 (20.7)	5 (31.2)	8 (24.2)	5 (27.8)	6 (6.3)	1 (50.0)	2 (4.3)	1 (5.9)	24 (13.2)	6 (33.3)	10 (12.3)	6 (17.1)
Married	59 (67.8)	11 (68.8)	20 (60.6)	7 (38.9)	75 (78.9)	1 (50.0)	28 (59.6)	10 (58.8)	134 (73.6)	12 (66.7)	48 (59.3)	17 (48.6)
Separated	2 (2.3)	0	1 (3.0)	1 (5.6)	9 (9.5)	0	5 (10.6)	3 (17.6)	11 (6.0)	0	6 (7.4)	4 (11.4
Level of Education												
No formal	15 (17.2)	1 (6.2)	13 (39.4)	4 (22.2)	38 (40.0)	1 (50.0)	13 (27.1)	4 (23.5)	53 (29.1)	2 (11.1)	26 (32.1)	8 (22.9)
Primary	5 (5.7)	0	1 (3.0)	0	15 (15.8)	0	6 (12.5)	1 (5.9)	20 (11.0)	0	7 (8.6)	1 (2.9)
SSCE	10 (11.5)	1 (6.2)	3 (9.1)	3 (16.7)	11 (11.6)	0	17 (35.4)	4 (23.5)	21 (11.5)	1 (5.6)	20 (24.7)	7 (20.0)
Post Secondary	57 (65.5)	14 (87.5)	16 (48.5)	11 (61.1)	28 (29.5)	1 (50.0)	12 (25.0)	8 (47.1)	85 (46.7)	15 (83.3)	28 (34.6)	19 (54.3)
Post Graduate	0	0	0	0	1 (1.1)	0	0	0	1 (1.1)	0	0	0
Occupation												
Farming	41 (47.1)	7 (43.8)	6 (18.2)	2 (11.1)	81 (85.3)	2 (100)	14 (29.2)	6 (35.3)	122 (66.2)	9 (71.9)	20 (23.7)	8 (23.2)
Trading/ Business	12 (13.8)	1 (6.2)	12 (36.4)	10 (55.6)	9 (9.5)	0	30 (62.5)	9 (52.9)	21 (11.7)	1 (3.1)	42 (49.5)	19 (54.3)

Perceived Constraints Associated with Capacity Building needs of Rice Value Chain Actors

Table 6 reveals that there were three factors affecting capacity building needs of rice value chain actors in Benue and Nasarawa states. the first category of factors (factor 1) was described as socio politico economic related factors such as High Transportation Cost (HTC = .411), lack of access to market channels (LAM = . 765), High cost of labour (HCL = .413) , low level of processing practice (LLPP =.561), cost of post-harvest losses (CPHL = .304), Inadequate capacity of rice value chain actors (ICVA = .777). The second category of factors, management and policy

related factors (factor 2) such as poor maintenance of equipment (0.685), poor access to mechanization (.585) lack of storage facilities (.632), unavailability of inorganic fertilizer (.369). The third category of factors, environmental cum climatic factors (factor 3) such as natural disasters pooled (.601), poor genetic purity (.661), Environmental degradation (.670) constrained business environment (.319). This result agrees with Unamma, Onwudike, Uwuaegbute, Edeoga and Nwosu (2004) who identified educational training as an essential factor affecting desirable changes in attitude, skills and knowledge of individuals.

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Table 4. 7: Distribution of respondents on perceived constraints of capacity building needs of rice value chain actors in the study area

Actor/Constraint	Nasarawa Component			Benue Component			Pooled Component	
	1	2	3	1	2	3	1	2
Input-supplier								
Inadequate foundation seeds supply	.561	.617**	.519	.814*	.523	.189	.717*	.660
Lack of improved seeds	.756*	.332	.516	.623	.678*	.369	.767*	.580
Lack of storage facilities	.549	.613*	.519	.807*	.520	.238	.714*	.658
Poor genetic seed purity	.470	.747**	.444	.781*	.598	.140	.704*	.661
Inadequate seed multiplication training	.754*	.498	.352	.746*	.608	.226	.832*	.513
Unfavorable government seed policies	.741*	.477	.428	.574	.813**	.072	.786*	.573
No training on agro chemicals	.493	.397	.752***	.580	.745**	.307	.571	.792**
Inadequate training on fertilizer supply	.408	.550	.695***	.534	.798**	.246	.537	.825**
Marketers								
Poor quality grain	.679*	.438	.511	.461	.755*	.392	.658	.663**
Cost of paddy production	.513	.656*	.456	.461	.755*	.392	.727	.608
Pressure of choice substitute procedure	.317	.755*	.491	.434	.537	.670*	.855*	.438
Government policy determination	.495	.600*	.595	.507	.709*	.456	.770*	.598
Local competitiveness	.435	.590	.637*	.552	.560	.561*	.753*	.603
Deficit in product supply	.507	.786*	.282	.519	.426	.700*	.758*	.551
Inappropriate marketing channels	.770*	.411	.409	.655*	.507	.521	.583	.765*
Inadequate processing facilities	.838	.366	.319	.753*	.464	.386	.446	.855*
Inappropriate market record keeping	.571	.408	.688*	.801*	.418	.398	.568	.788**
Inadequate capacity in strategies & techniques	.572	.475	.622*	.779*	.451	.421	.592	.777**
Unaffordable credit facilities	.617*	.468	.596	.782*	.444	.419	.599	.773
Processors								
High cost of processing equipments	.537	.834*		.808*	.576		.577	.813
Inadequate transportation	.750*	.625		.593	.801*		.804*	.573
Lack of storage facilities	.727*	.671		.619	.779*		.762*	.632
Inadequate packaging	.835*	.529		.746*	.652		.786*	.592

Constraints to Capacity Building needs of Rice Value Chain Actors in Benue and Nasarawa States, Nigeria

No training in handling processing equipments producers	.631	.760*		.767*	.635		.677	.724**	
Scarcity of improved seeds	.693*	.556	.287	.470	.779*	.301	.487	.741**	.317
Low level of processing technology	.713*	.335	.554	.381	.711**	.544	.313	.722**	.561
Lack of access to credit	.754*	.473	.376	.520	.793**	.281	.467	.774**	.376
High cost of fertilizer & agro chemicals	.703*	.502	.437	.518	.798**	.253	.490	.753**	.379
Inadequate market information services	.722*	.472	.348	.537	.784**	.231	.512	.751**	.299
Cost of post-harvest losses	.731*	.490	.364	.581	.754**	.218	.547	.736**	.304
Constrained business environment	.769*	.422	.361	.542	.772**	.256	.500	.764**	.319
Irregular rainfall pattern	.787*	.435	.335	.488	.790**	.235	.462	.788**	.296
High paddy pricing	.726*	.385	.464	.528	.806	.224	.472	.763**	.355
Poor access to mechanization	.557	.475	.564***	.692**	.530	.409	.526	.536	.585***
Weak farmers organization	.505	.677**	.422	.743**	.540	.305	.695*	.515	.408
Poor road network	.516	.685**	.413	.783**	.525	.225	.717*	.510	.383
Low productivity	.512	.720**	.406	.765**	.562	.260	.734*	.530	.371
Unfriendly government policies	.566	.647**	.414	.794**	.517	.245	.681*	.533	.417
High inputs tariffs	.548	.601**	.532	.794**	.514	.244	.684*	.523	.449
High transportation cost	.545	.621**	.447	.741**	.565	.270	.662*	.550	.411
Natural hazards	.454	.515	.684*	.718**	.473	.451	.590	.560	.601***
Environment degradation	.434	.417	.746*	.726**	.413	.509	.557	.415	.670***
Poor maintenance & Machinery	.289	.456	.756*	.705**	.385	.550	.562	.384	.685***
Low consume preference	.362	.664**	.503	.768**	.512	.285	.737*	.436	.390
Unavailability of inorganic fertilizer	.493	.667**	.442	.764**	.554	.263	.724*	.519	.369
Inadequate supply of agro chemicals	.456	.787**	.285	.779**	.547	.228	.754*	.495	.323
Unavailability of labour	.433	.711**	.428	.765**	.569	.267	.743*	.494	.368
High cost of hired labour	.498	.676**	.440	.768**	.554	.208	.698*	.518	.413
Low soil fertility	.449	.704**	.566	.750**	.576	.208	.737*	.518	.381
Scarcity of land	-	-	-	.748**	.585	.203	.734*	.505	.376

Source: *Field Survey, 2017*

*factor 1: socio politico economic factors, ** factor 2: management and policy related factors, *** factor 3: Environmental/climatic factors

CONCLUSION AND RECOMMADATIONS

The study concluded that socio-political, economic, managerial and environment and climatic factors affected capacity building needs of rice value chain actors in the study area. It was therefore, recommended that government, non-governmental organization and private individuals should be involved in the provision of critical infrastructure, good governance, better managerial skills and enabling environment for higher productivity for the rice value chain actors in the states.

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