RICE FARMERS' PERCEPTION TOWARDS EFFECTIVENESS OF EXTENSION SERVICE IN NIGER OFFICE, MALI

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ABSTRACT

The study examines farmers' perception of the effectiveness of extension services among rice producers in the Niger Office, Mali. A multistage random sampling procedure was used to select 189 rice farmers used for the study. Interview schedule was used to elicit information on respondents' socio-economic characteristics, farm enterprise characteristics, access to extension services, benefit derived and constraints to rice production. Data were analysed using descriptive and inferential statistics (Chi-square and Pearson Product Moment Correlation) at $\alpha_{0.05}$. *Results shows that Farmers' age was 44.3±13 years, household size was 13±2 persons and majority were male (99.5%), married (94.2%), Muslim (97.4%) and 81.0% cultivated 2.53±1.91 hectares. Access to extension service indicated use of group contact (49.0%), technical advice (51.0%), provision of advice on marketing situations (51.0%) and Radio/Television extension programmes (79.0%) services were sometime accessed. However, respondents' benefit derived from extension services was low (58.7%). The result reveals a significant relationship between farmers' secondary occupation (*χ^2*= 4.100), source of input (*χ^2*= 22.008), access to credit (*χ^2*=5.574) and perceived effectiveness of extension services. A significant relationship also exists between farmers' farm size (r=0.211), total income in years (r=0.853), methods used for extension services (r=0.204) and perceived effectiveness of extension services. However, there was a negative significant relationship (r=-0.535) between constraints faced by rice farmers and their perceived effectiveness of extension services. Effectiveness of extension services was low among rice farmers in the study area, and thus the need to scale up farmers' access to extension services, by enhancing access to land and credit, and ameliorating infrastructural facilities.*

Keywords: perceived effectiveness, extension services, rice farmers, Niger office

INTRODUCTION

Rice is a cereal crop widely consumed and cultivated for more than 100,000 years longer than any other crops (Food and Agricultural Organization, 2000). Rice is a strategic and priority commodity for food security in Africa. Consumption of the staple is growing faster than that of any other major staple on the continent as a result of high population growth, rapid urbanisation and changes in eating habits (Seck et al, 2013). Roy-Macauley (2019) noted that "rice is the most important source of dietary energy in West Africa and the third most important for Africa as a whole". West Africa has the largest rice growing area in the continent, but her production is far below the population's demand, which is responsible for the continuous rice importation in the region. Mali's economy is essentially dependent on agriculture. Agriculture is the mainstay of

about 75% of the active population, accounting for 40% of Gross Domestic Product (GDP) of Mali, Monitoring and Analysing Food and Agricultural Policies (MAFAP, 2013). In Mali, rice is not only a food security crop but also a cash crop. It is a major focus of agricultural activity for people in rural areas of Mali. It contributes around 5% of the country's GDP (Ministry of Agriculture, 2009).

Considerably, Mali has potential to boost rice production. The country has about 2,200,000 ha of which 418,313 ha (19%) are cultivated. Rice paddy production increase from 156,500 tonnes in 1969 to 3.17 million tonnes in 2018, growing at an average annual rate of 9.82% (République du Mali, 2018) The distribution of the gross domestic product (GDP) across economic sectors in Mali from 2009 to 2019 shows that in 2019, agriculture contributed about 37.32% to the GDP (Distribution of gross domestic product (GDP), 2019). However, rice alone contributes 5.0% to the country's GDP about the same period (Diarra, 2019).

The rural sector produces the bulk of the nation's food output; it becomes necessary to improve the standard of living of the rural people. To achieve this goal, the extension arm of the government of Mali was saddled with the responsibility of transferring improved agricultural technology to farmers, assists them in securing micro loans and getting access to market, and also to enable them increase farm productivity and create wealth for improved living standards. As a result, the agricultural extension personnel need, among other skills, to improve their communication and advisory skills, so as to make technology transfer more effective (Direction Nationale de l'Appui au Monde Rural (DNAMR), 2004). This is because the role of extension service is pivotal in raising farmers' income and increase rice production (AFD, 2008). Hence, the Ministry of Agriculture expressed the need for a training programme in agricultural extension at different levels and showed a readiness to support this type of training and job guarantees for graduates at the end of training (Akeredolu, 2005). Sasakawa African Fund for Extension Education Approach (SAFE) approach was adopted in Mali to develop the capacity of extension workers. Before the SAFE approach to extension education, extension work was learnt through practice with no prior training in extension methods. The SAFE approach serves to create awareness about the role of human resource development for mid-career staff working in agricultural and rural development in sub-Saharan Africa, assist stakeholders to carry out strategic training needs assessment, and to develop responsive training programmes that meet the unique needs of mid-career staff working in agricultural and rural development (DNAMR, 2004).

The Office of Niger accounts for about 45% of total rice production in the country. The area, which is suitable for irrigation, is estimated to be of almost 2,200,000 ha, of which only 20% is actually being used (Coulibaly and Havard, 2015). The total output of rice production between 1989 to 2012 is put at 2,136,000 tones (Office of Niger, 2008; 2011; 2012). Viewing the potentiality of the Office of Niger, this production can increase with the support of extension services. The private sector along with international organisations like FAO, USAID that are working in collaboration with local extension services are helping the Extension Agricultural Services (EAS) improve the manner in which extension materials are presented to rice farmers. For examples, extension brochures, posters,

roadside signs, billboards, radio and television are used as strategies to promote extension services and products (Mali's Agricultural Extension and Advisory Services (MAEAS), 2010).

These efforts notwithstanding, rice farmers in the Office of Niger are still encountering problems in their production. Most times, the yield obtained by rice farmers can only satisfy home consumption. The extent to which extension services have been effective in addressing rice farmers' problems in Office of Niger is not fully known. Hence, the need to look at the perception of rice farmers towards effectiveness of the agricultural extension services in order to position it for improved services.

The study was guided by the following specific objectives; describe the selected personal and socio-economic characteristics; determine the respondents' access to extension services; determine the benefits derived by the respondents from extension services; identify the production constraints faced by the respondents and evaluate the perceived effectiveness of extension services by the respondents in the study area.

METHODOLOGY

Study area and sample selection

The Office of Niger (OoN) is the oldest and most extensive irrigated perimeter in West Africa (Betico, 2012). It is a semi-autonomous government agency that administers a large irrigation scheme in the Ségou Region of Mali. Since 1975, rice has become the main agricultural product at the OoN where about 320,000 tons are cultivated each year which represents 40 percent of total rice production in Mali. The Office is divided into six zones namely: Niono, Molodo, N'Debougou, M'Bewani, Macina and Kouroumari. Each of these zones is constituted by production "casiers" (Betico, 2012).

A four stage sampling procedure was used to select respondents this study. Randomly, 50% of the six zones (Molodo, N'Debougou and M'Bewani) were selected. Each of the selected zones has four Casiers. Proportionately, 30% of the 12 Casiers in the selected zones were selected. Selected Casiers has four villages each, to give 12 villages. Thereafter, 50% of the villages were randomly selected (Molodo Bambara and Missira in Molodo zone, Niabougou and Sangarela in N'Debougou zone, Siribalacoura and Fiebougou in M'Bewani zone). Lastly, 20% of 947 registered rice farmers were randomly selected to give 189 respondents. Data was collected using a structured interview schedule. The data were analyzed with the aid of descriptive and inferential statistics.

Measurement of variables

(1) Accessibility of rice farmers to extension services: Respondents were presented with a list of 13 items mirroring accessibility of extension services and asked to assign scores on a 3-point scale of always, sometimes and never with scores of 2, 1 and 0 respectively. The maximum and minimum score were 26 and 0 respectively. Based on the mean, respondents were categorized as either having high level of accessibility to extension services for those with scores equal to and above the mean or low level of accessibility to extension services for those with scores below the mean.

(2) Benefits derived by rice farmers from extension services: The respondents were presented with a list of 16 benefits derivable from extension services and asked to assign scores on a 3-point scale of

to a large extent, to a less extent and not at all with scores of 2, 1 and 0, respectively. The maximum and minimum score were 32 and 0 respectively. Respondents' scores were added up while the mean score was computed and used to categorize respondents as either enjoying high level of benefit for those with scores equal to and above the mean or low level of benefit for those with scores below the mean.

(3) Constraints encountered by farmers in rice production: The farmers were presented with 19 constraints and asked to assign scores using a 3 point scale of serious constraints, mild constraint and not a constraint with scores of 2, 1 and 0 respectively. The maximum obtainable score were 38, while minimum score was 0. Respondents' scores were added up and the mean score was computed. Based on the mean, respondents were categorized as highly constrained for those with scores equal to and above the mean or low constrained for those with scores below the mean.

(4) Rice farmers' perceived effectiveness of extension services in Niger Office: Respondents were handed a list of 21 positive and negative statements for gauging rice farmers' perceived effectiveness of extension services in the Office of Niger. They were then asked to assign scores using a 5-point Likert-type scale of SA, A, U, D and SD with scores of 5, 4, 3, 2 and 1 respectively for positive perception statements and the reverse for negative perception statements. The maximum and minimum scores were 105 and 21 respectively. Respondents' scores on perception was added up while the mean score was computed and used to benchmark respondents as either having favourable perception of extension services for those with scores equal to and above the mean, or unfavourable perception of extension services for those with scores below the mean.

RESULTS

Distribution of respondents based on personal characteristics

The respondents' personal characteristics on Table 1 show that most farmers (59.3%) fell within the age group of 20 – 47 years with a mean age of 44.34±13.0 years. Majority (99.5%) were male, married (94.2%) and had family sizes of 13.0±11 persons. Majority of the farmers (81.0%) had a farm size of 2.53±1.91 hectares and sourced inputs from open market. Farmers' enterprise characteristics on Table 1 further revealed that bulk (81.0%) of the respondents cultivated farm sizes of 2.53±1.91, while the remainder nurtured a farm size of more than 4 hectares. More than half (55.6%) of the respondents relied on family labour to run their farm operations, 28.0% employed communal workers, while 16.4% hired and paid workers.

The mean of farming experience was 14.38 years. A sizable proportion (58.7%) had 2 to 13 years farming experience, 23.8% had 14 to 25 years' experience, while 2.1% had farming experience of 50 years or more. Aside rice, other crops cultivated included garlic (60.8%), onion (52.9%) and groundnut (1.1%). Most respondents (74.1%) relied on personal saving as source of income, possibly due to lack of adequate assets to present as collateral security for loans from formal institutions. Sizable proportion (61.4%) produced rice during the rainy season. Only 0.5% produced the product in the dry season, while 38.1% produced rice in both seasons. Most of the respondents (63.0%) produced 350 to 3560 kg of rice during the rainy season, while

0.5% produced 19616 kg or more. The mean production in the rainy season was 3109±3186 kg. On earnings from rice business, 64.0% of the respondents made between 67,500 and 1,029,962F CFA, while 0.5% of them earned between 2,954,889 and 6,804,740F CFA as income during the rainy season.

Most farmers (75.7%) recorded low income 821,970F±637622 CFA from rice production during the dry season. More than half (59.8%) of the respondents produced 350 to 4,786kg of rice in 2016; while 1.1% of them produced 13,143kg or more. Similarly, 58.2% of the respondents earned 67,500 to 1,274,462F CFA from rice cultivation in 2016, while 1.1% earned 6,102,315 to 7,309,277 F CFA.

TABLE 1. DISTRIBUTION OF RESPONDENTS BASED ON PERSONAL AND SOCIO-ECONOMIC CHARACTERISTICS N=189

Variables	Frequency	Percentage	Mean	Std Dev.
Age				
20-33	43	22.8	44.34	13.00
34-47	69	36.5		
48-61	58	30.7		
62 and above	18	10.0		
Sex				
Male	188	99.5		
Female	1	0.5		
Marital status				
Single	10	5.3		
Married	178	94.2		
Divorced	1	0.5		
Religion				
Islam	184	97.4		
Christian	1	0.5		
Tradition	4	2.1		
Family size				
2-14	139	73.5	13.0	11.75
15-27	36	19.0		
28-40	9	4.8		
41-53	5	2.6		
Farm size				
≤ 3	153	81.0	2.53	1.91
4-7	28	14.8		
8-11	5	2.6		
12-15	3	1.6		
Farming experience				
2-13	111	58.7	14.38	10.99
14-25	45	23.8		
26-37	19	10.1		
38-49	10	5.3		
50-61	4	2.1		
Source of input				
Open market	152	80.4		
Research institute	28	14.8		
Government	6	3.2		
NGO	3	1.6		
Source of credit				
Personal savings	138	73.1		
Family/friends	10	5.3		
Bank	18	9.5		

Cooperative society	23	12.1		
Rainy season Production/ kg				
Not applicable	33	17.5	280.62	175.48
350-3560	119	63.0		
3561-6771	22	11.6		
6772-9982	8	4.2		
9983-13193	3	1.6		
13194-16404	1	0.5		
16405-19615	2	1.1		
19616-22826	1	0.5		
Rainy season price/kg, CFA				
Not applicable	15	7.9	997185.06	962462.27
125-156	3	1.6		
157-188	1	0.5		
189-220	5	2.6		
221-252	70	37.0		
253-284	45	23.8		
285-316	48	25.4		
317-348	1	0.5		
349-380	1	0.5		
Dry season quantity, kg				
Not applicable	143	75.7	262.33	25.91
450-2693	25	13.2		
2694-5037	16	8.5		
5038-7381	2	1.1		
7382-9725	1	0.5		
9726-12069	2	1.1		
Dry season price/kg, CFA				
Not applicable	129	68.3	821970.00	637622.12
150-176	1	0.5		
177-203	1	0.5		
204-230	1	0.5		
231-257	28	14.8		
258-284	21	11.1		
285-311	7	3.7		
312-338	1	0.5		

Source: Field survey (2017)

Distribution of respondents by access to extension services

Table 2 shows the distribution of the respondents according to the frequency of access to extension services. Result indicated that linkage to market (1.17±0.84), method demonstration (1.17±0.84) and provision of input (0.60±0.92) ranked prominent among the extension services always accessed. However, Radio/Television extension services (0.59±0.82), provision of advice on marketing situations (0.39±0.78), creating awareness through electronic media (0.36±0.76), provision of technical advice (0.35±0.76), use of group contact to pass technical information (0.33±0.73), use of interpersonal contacts to pass technical information (0.32±0.73) were sometime accessed.

TABLE 2. DISTRIBUTION OF RESPONDENTS BY ACCESS TO EXTENSION SERVICES

S/N	Extension services	Always		Sometimes		Never				
		Freq	%	Freq	%	Freq	%	Mean	SD	Rank
1	Linkage to market	57	30.2	100	52.9	32	16.9	1.17	0.84	1st
2	Method Demonstration	2	1.1	18	9.5	169	89.4	1.17	0.84	1st
3	Provision of inputs (fertilizer, seed etc.)	29	15.3	48	25.4	112	59.3	0.6	0.92	3rd
4	Radio/Television extension programmes	12	6.3	79	41.8	98	51.9	0.59	0.82	4th
5	Provision of advice on marketing situations	7	3.7	51	27	131	69.3	0.39	0.78	5th
6	Creating awareness through electronic media	4	2.1	52	27.5	133	70.4	0.36	0.76	6th
7	Provision of technical advice	4	2.1	51	27	134	70.9	0.35	0.76	7th
8	Use of group contact to pass technical information	2	1.1	49	25.9	138	73	0.33	0.73	8th
9	Use of interpersonal contacts to pass technical information	2	1.1	49	25.9	138	73	0.32	0.73	9th
10	Advice on use of input	6	3.2	24	12.7	159	84.1	0.23	0.74	10th
11	Supply of agrochemical	5	2.6	16	8.5	168	88.9	0.18	0.71	11th
12	Linkage to credit sources	2	1.1	19	10.1	168	88.9	0.16	0.68	12th
13	Provision of equipment hiring service	0	0	16	8.5	173	91.5	0.13	0.64	13th

Source: Field survey (2017)

Benefit derived from the use of extension services

Table 3 indicated the ranking of the benefits derived from the use of extension services in a descending order. The Table showed that improved family welfare ($\bar{X}$=0.74) was ranked first, followed by improved level of socialization ($\bar{X}$=0.47) and improved level of education ($\bar{X}$=0.46) in that order. Easy management of farm equipment was ranked least ($\bar{X}$= 0.16). Table 4 revealed that more than half (58.7%) of the respondents derived low benefit from extension services in the study area.

TABLE 3. BENEFIT DERIVED FROM THE USE OF EXTENSION SERVICES N=189

S/N	Benefits derived	large extent		less extent		Not at all		$\bar{X}$	Rank
		Freq	%	Freq	%	Freq	%		
1.	Improved family welfare	34	18	73	38.6	82	43.4	0.746	1st
2.	Improved their level of socialization	11	5.8	68	36	110	58.2	0.4787	2nd
3.	Improved the level of education of their area	9	4.8	70	37	110	58.2	0.4656	3rd
4.	Improved Skills in rice farming practices	12	6.3	59	31.2	118	62.4	0.4392	4th
5.	Increased the farm income	8	4.2	59	31.2	122	64.6	0.3968	5th
6.	Easy market accessibility	10	5.3	55	29.1	124	65.6	0.3968	5th
7.	Increase area of cultivation	12	6.3	49	25.9	128	67.7	0.3862	8th
8.	Increased level of farm production	9	4.8	52	27.5	128	67.7	0.3704	9th
9.	Improved the accessibility of farm inputs	6	3.2	57	30.2	126	66.7	0.3651	10th
10	Enable the low emigration in their area	9	4.8	51	27	129	68.3	0.3651	10th
11	Enable the acquisition of cash money	4	2.1	54	28.6	130	68.8	0.3298	12th
12	Easy acquisition of farm land	10	5.3	36	19	143	75.7	0.2963	13th
13	Enable adoption of more farm technology	4	2.1	45	23.8	140	74.1	0.2804	14th
14	Able to own cereal grinding machine	5	2.6	40	21.2	144	76.2	0.2646	15th
15	Easy management of farm equipment (Tractor)	6	3.2	20	10.6	163	86.2	0.1693	16th

Source: Field survey (2017)

Distribution of respondents by level of benefits derived from extension services

Results in Table 4 showed that more than half (58.7%) of rice farmers derived low level of benefits from extension services while 41.3% of rice farmers derived high level benefit from extension services in the study area.

TABLE 4. DISTRIBUTION OF RESPONDENTS BY LEVEL OF BENEFITS DERIVED FROM EXTENSION SERVICES

Benefit	Freq	%	Mean	Std Dev.
Low (0.00 - 5.74)	111	58.7	5.74	5.78
High (5.75 - 27.00)	78	41.3		

Source: Field survey (2017)

Distribution of respondents by constraints on faced the constraints

Table 5 indicated that inadequate incentives for rice production ($\bar{X}$= 1.6) and health related issues such as malaria ($\bar{X}$=1.50) ranked as the most serious constraints facing the rice farmers in the study area. These were followed by Inadequate technological knowledge and training (($\bar{X}$=1.49).

TABLE 5. DISTRIBUTION OF RESPONDENTS BY CONSTRAINTS ON FACED THE CONSTRAINTS

No	Constraints	Mean	Rank
1.	Inadequate incentives for rice production	1.6	1st
2.	Health problem such as malaria, etc.	1.51	2nd
3.	Inadequate technological knowledge and training	1.49	3rd
4.	Lack of transport facilities (lorry etc.)	1.38	4th
5.	Poor infrastructure such as road, school, hospital, storage facilities, stream of irrigation etc.	1.37	5th
6.	Soil erosion problem	1.35	6th
7.	Poor maintenance of already developed swamp	1.34	7th
8.	High cost of farm labour	1.33	8th
9.	High cost of farm input	1.32	9th
10.	Inadequate size of farm land	1.28	10th
11.	Excessive problem of weed/pest and diseases infection in the farm	1.24	11th
12.	Poor soil fertility	1.19	12th
13.	Inability to access credit facilities	1.14	13th
14.	Inadequacy of extension support	1.13	14th
15.	Inadequate output from research on rice	1.06	15th
16.	Inadequacy of information on private sector participation	1.05	16th
17.	Inadequate supply of production inputs such as seed, fertilizers, agrochemicals etc.	0.98	17th
18.	Inadequate access of market information on rice production	0.97	18th
19.	Problem desertification/ drought	0.94	19th

Source: Field survey (2017)

Distribution of respondents on the perceived effectiveness of extension services

The perceived effectiveness of extension services reported in Table 6 revealed that respondents strongly agreed to the fact that extension service has not helped the access of input (3.79±1.66), extension service has helped to decrease the weed incidence (3.78±1.65), valuable time is usually lost in attempt to get appropriate seed for production (3.77±1.69), valuable time is usually lost in trying to get appropriate fertilizer for production (3.76±1.70) and extension service has not helped for the market facilities (3.72±1.66). Ultimately, in their opinion extension services had not contributed to farm yield and training and visit has not enhanced farm practices. Furthermore, Table 7 shows that about half (50.8%) of the respondents had unfavourable perception towards effectiveness of extension services in the study area.

TABLE 6. DISTRIBUTION OF RESPONDENTS ON THE PERCEIVED EFFECTIVENESS OF EXTENSION SERVICES N=189

S/N	Farmers' Perception	SA %	A %	U %	D %	SD %	Mean	SD	Rank
1.	Extension service has not helped to the access of input	56.6	15.3	0	6.3	21.7	3.79	1.66	1st
2.	Extension service has helped to decrease the weed incidence	55.6	16.9	0	5.3	22.2	3.78	1.65	2nd
3.	Valuable time is usually lost in attempt to get appropriate seed for production	57.7	13.8	0	5.3	23.3	3.77	1.69	3rd
4.	Valuable time is usually lost in trying to get appropriate fertilizer for production	57.1	14.3	0	4.8	23.8	3.76	1.7	4th
5.	Extension service has not helped for the market facilities	53.4	16.9	0	7.4	22.2	3.72	1.66	5th
6.	Extension service has not helped to decrease the incidence of rice pest and diseases	53.4	15.3	0	7.9	23.3	3.68	1.69	6th
7.	Extension service has not led to the rice harvest	48.1	12.7	0	9	22.8	3.66	1.68	7th
8.	Lot of time is saved when good processing units are adopted in rice production	52.9	14.3	0	5.3	27.5	3.6	1.75	8th
9.	The use of tractor and other farm machinery does not translate to increased production	43.9	6.3	0	18	31.2	3.41	4.18	9th
10.	Extension service has not led to the management of rice post-harvest	48.1	12.7	0	8.5	30.7	3.39	1.8	10th
11.	Extension service has not helped to the use of fertilizer	48.1	11.6	0	10.6	29.6	3.38	1.79	11th
12.	Valuable time is lost in an attempt to get appropriate agrochemicals for production	43.9	15.9	0	4.8	35.4	3.28	1.82	12th
13.	The ratio of extension agent/farmer is satisfactory to help loss reduction and elimination	29.6	16.9	0.5	7.4	45.5	2.78	1.79	13th
14.	Farmer's skill, knowledge and background are enough assets to eradicate of loss in value addition.	30.2	2.1	0	41.3	26.5	2.68	1.61	14th
15.	Extension service has helped to the procedure of rice planting	18	8.5	0	37	36.5	2.34	1.49	15th
16.	Extension service has led to increase the farm yield	14.3	5.3	0	53.4	27	2.26	1.31	16th
17.	Extension service has helped for the access of credit	13.2	7.4	0	37	42.3	2.12	1.38	17th
18.	Extension service has helped to the good use of seed	11.6	7.4	0	38.6	42.3	2.07	1.33	18th
19.	Training and visit have improved the farmer knowledge in their farm practice	11.6	1.6	0.5	48.1	38.1	2.01	1.23	19th
20.	Extension service has created awareness through electronic media	9.5	2.1	0	40.7	47.6	1.85	1.18	20th

Source: Field survey (2017)

TABLE 7. DISTRIBUTION OF RESPONDENTS BY PERCEIVED EFFECTIVENESS OF EXTENSION SERVICES

Perceived effectiveness	Frequency	%	Mean	Std Dev.
Unfavourable (25.00 - 49.46)	96	50.8	49.47	11.42
Favourable (49.47 - 101.00)	93	49.2		

Source: Field survey (2017)

Chi-square and correlation analyses between respondents' personal characteristics and perceived effectiveness of extension services

Tables 8a and 8b show that source of input (χ^2 = 22.008) and access to credit (χ^2 = 5.574) had significant association with respondents' perceived effectiveness of extension services, while farm size (r = 0.211). Similarly, Table 9 indicated that constraints faced by rice farmers were significantly (r = -0.535) correlated with perceived effectiveness of extension services.

TABLE 8A. CHI-SQUARE ANALYSES OF RESPONDENTS' PERSONAL CHARACTERISTICS AND PERCEIVED EFFECTIVENESS OF EXTENSION SERVICES

Variables	χ^2	df	p-value	Remarks
Sex	0.974	1	0.324	Not significant
Marital status	0.975	2	0.614	Not significant
Source of input	22.008	1	0.000	Significant
Access to credit	5.574	1	0.018	Significant

Source: Field survey (2017)

TABLE 8B. CORRELATION ANALYSES BETWEEN RESPONDENTS' PERSONAL CHARACTERISTICS AND PERCEIVED EFFECTIVENESS OF EXTENSION SERVICES

Variables	r-value	p-value	Remarks
Age	0.031	0.674	Not significant
Farm size	0.211	0.004	Significant

Source: Field survey (2017)

TABLE 9. CORRELATION ANALYSES BETWEEN BENEFITS, CONSTRAINTS AND PERCEIVED EFFECTIVENESS OF EXTENSION SERVICES

Variables	r-value	p –value	Remarks
Benefits	-0.140	0.055	Not significant
Constraints	-0.535	0.000	Significant

Source: Field survey (2017)

DISCUSSION

Respondents' personal characteristics indicated predominance of young adults, male and married with large family size. Expectedly, they should possess the energy needed to perform agricultural activities that is often associated with drudgery in most farm enterprise. This aligns with report of Adekanye (2009) who stated that young adults are mainly involved in

agricultural activities. This is also consistent with Ebitigha (2008) who observed that males dominate income generating. Ajayi (2005) asserted that majority of rural inhabitants are married. The large household size suggests farmers had enough family labour for rice enterprise, while scale of farm operation indicated subsistence level of production and sourcing inputs from open markets, which raises the probability of not purchasing quality inputs. This is in line with the International Fund for Agricultural Development (IFAD) (2012), which reported that small holder farmers produced about 90% of food crops in developing countries. Family labour is a crucial factor in the profitability and competitiveness of small-scale in agricultural enterprise (Posadas-Domínguez *et al.,* 2013).

Considerably, there is variability in rice price in the study area in the rainy season, perhaps reflecting inadequate rice marketing infrastructure. Nonetheless, rice production generated substantial income for rice farmers in the study area. Comparatively, rice production in the dry season was low as most farmers used their land to cultivate others crops like garlic and onions. Clearly, rice prices were higher in the dry season relative to the rainy season reflecting the lesser production of the commodity in the dry season.

Access to extension services indicated that few rice farmers had regular access to market linkage and input supply. These conditions are quite abysmal, as marketing hinges on overall success of agricultural enterprise. Similarly, though agro inputs are crucial to agricultural production (Ogunlade *et al*., 2012), farmers access to them was poor (IFDC, 2008). The respondents sometimes accessed extension services from radio/television extension broadcast. In relation to radio, Umar *et al.* (2015) stated that most extension organisations use it to get across information to farmers. On his part, Yahaya (2008) found radio to be an excellent medium for mobilisation, which has the capacity of drawing the attention of its diverse audience to new ideas coupled with techniques and latest information requiring urgent public attention. Other important extension services such as technical advice and linkage to credit sources were never accessed. This is consistent with IFDC (2008), which stated that farmers' access to technical advice and credit was poor or none existent.

Benefit derived from extension services was low. This might be consequent on the fact that most of the respondents had low access to extension service as indicated in a previous finding. Beyond this, extension service institutions are considered too weak for farmers in most rural communities to benefit from the services provided (NAERLS and NPFS, 2011).

Constraints faced by rice farmers were inadequate incentives for rice production and health related issues such as malaria. This, according to the farmers, was as a result of the place being an irrigated land that favours the breeding of mosquitoes, worsened by the poor state of infrastructure such as health facilities in the area. This finding is supported by Olafsen (2013), who noted that a thriving and competitive agribusiness sector relies on good infrastructure. Agricultural technology is essential at increasing the lots of farmers (Ozor *et al.,* 2012), while training is required for proper use of agricultural technology.

Perceived effectiveness of extension services was unfavourable. This may be due to extension service institutions being too weak (NAERLS and NPFS, 2011). The implication of this unfavourable perception is that it would weaken the confidence of farmers towards extension services. Additionally, this can discourage farmers from adopting innovations introduced by extension service institutions. According to Egbe and Eze (2014), an effective extension delivery influences farmers' adoption of innovations because poor extension delivery would lead to poor adoption. Source of input, access to credit were significantly associated with respondents' perception of extension effectiveness. However, farm size and constraints faced by rice farmers were significantly related to respondents' perceived effectiveness of extension services. This indicates that these variables influence rice farmers' perception of the effectiveness of extension services in the study area. The implication of this is that since agro inputs are crucial to agricultural production (Ogunlade *et al.*, 2012), the rice farmers would need fund, which they could obtain from available credit sources to purchase agro-inputs. Also, when rice farmers have the available fund, aside being able to procure agro-inputs, they are more likely to increase their farm size which would also translate to an increase in rice yield.

This result implies that the more constraints faced by the respondents during the course of rice production, the higher the tendency for them to perceive the effectiveness of extension services. It also implies that the availability of effective extension services can help to assuage the various constraints rice farmers face in the study area. Hence, the degree of the constraints faced by farmers can limit the quantity of rice produced and their income from production.

CONCLUSION AND RECOMMENDATIONS

Perceived effectiveness of extension services among rice farmers was unfavourable in the study area. This was predicated on poor access, methods and benefits derived from extension services. However, radio and television were the most accessible and frequently used by the farmers. Nonetheless, inadequate incentives for rice production and health related issues such as malaria were the most severe constraints encountered by farmers in the study area. In light of the foregoing, deliberate policy directed at enhancing extension services that will increase farmers' access to inputs, reduce valuable time lost in attempt to get appropriate seeds and fertiliser, facilitate access to market and marketing facilities would go a long way to ultimately increase rice production in the study area.

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