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ACCESSIBILITY AND UTILIZATION OF AGRO-SERVICES BY CROP PRODUCTION FARMERS IN ABUJA-FCT, NIGERIA

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ABSTRACT

Accessibility and utilization of agro-services by crop production farmers in Abuja-FCT, Nigeria was examined in this study. Multi-stage sampling technique was used to select 346 respondents for the study from three Area Councils in FCT. Validated interview schedule with reliability coefficient of 0.74 was used for data collection. Data collected were analyzed using descriptive statistics and multinomial logit regression model. The results indicated that the mean age of the respondents was 48years. Only 10.7% of them had tertiary education. Majority (84.1%) of the respondents were members of farmers' associations. Findings of the study revealed that the services of agro-inputs retailers (94.8%) tractor hiring schemes (87.0%), agricultural extension agencies (75.1%), fertilizer companies (65.0%) and agricultural finance institutions (51.4%) were accessible to the respondents. Thus, agro-services of agro-input dealers ($\bar{x}$=3.15), extension agencies ($\bar{x}$=3.07) fertilizer companies ($\bar{x}$=2.62) and agricultural finance institutions ($\bar{x}$=2.51) were well utilized. Perceived economic benefits of the services, educational level, membership of associations and income had exclusively positive significant influence on the utilization of agro-services by the respondents. High cost of services (60.1%), far distances to the sources of services (54.9%) and unavailability of facilities (45.7) were the major challenges for accessibility and utilization of agro-services in the study area. Thus, it was concluded that the agro-services operated by private service providers were more accessible and utilized by the respondents than the services provided by the government. It was recommended that agricultural extension agents should encourage the farmers to access agro-services in group through their associations, for enhanced capacity to use agro-services at reduced prices. It was also suggested that agricultural extension workers should educate the farmers more on the economic benefits of using agro-services to maximize the usage of the services and output by the farmers.

Keywords: Accessibility; Utilization; Agro-services; Crop Production

INTRODUCTION

Agro-services play an important role in many aspects of agricultural development at grass root level. In broad sense, agricultural foundations, agro-business firms, seed

companies, consulting firms, non-governmental organizations, fertilizer companies, farmers' cooperative associations, agro-based industries, agricultural extension organizations, agro-input centres among others are considered as agro-service providers. Generally, agro-services are rendered by both public and private service providers, but experience over the years has shown that the public services are not enough and doing well. For instance, Rivera (1991) reported that public sector extension was not doing well and being relevant worldwide. On the other hand, Sureshkumar (1997) stressed that information as a supportive service could be more effective with private extension services in the agricultural sectors. According to Van den Ban (1996), more research is needed on the alternative service providers and their role in agricultural development.

Similarly, Anonymous (2001) stated that private sectors had a distinct comparative advantage in product development and delivery. The researcher further stressed that the advantage fueled much of the world's economic growth and increased wealth for many countries. Pray (2002) reported that private research appeared to be increasing in the two largest economies of India and China, especially in the seed and biotechnology industries. In many developing countries like Nigeria, farmers have very limited access to agro-services which in most cases result to low or non-utilization of the services. Consequently, agricultural production techniques have remained rudimentary and productivity as well as income of Nigerian farmers is less than normal, hence farming families remain poor. It is against this background that this study examined the accessibility and utilization of agro-services by farmers, in order to provide useful information for improving access and use of agro-services among famers. The specific objectives of the study are to: describe the socio-economic characteristics of the respondents; examine the accessibility of agro-services by respondents; assess the utilization of agro-services by respondents; determine the factors influencing utilization of agro services by respondents; and ascertain the challenges for the accessibility and utilization of agro-services in the study area.

MATERIALS AND METHODS

Study Area

This study was carried out in Abuja Federal Capital Territory (FCT). The FCT falls between Latitudes $8^0 25`$ and $9^0 20`$ North and Longitude $6^0 45`$ and $7^0 39`$ East. Yearly rainfall ranges from 1,100mm to 1,600mm, with average annual temperature of 25.7^{o}C. The territory is located in Guinea Savannah Agro-ecological zone of Nigeria and some of the crops cultivated are yam, maize, sorghum, millet, cowpea, soybean, rice and groundnut. While livestock reared include goat, sheep, cattle and chicken. Major ethnic groups in FCT are Gbayi, Koro, Gede, Bassa, Gwandara and Ganagana among others (Federal Capital Development Authority, 2015).

Sampling Technique

All farmers in the FCT constituted the population for this study. Multistage sampling technique was adopted for this study. In the first stage; three out of six Area Councils were randomly selected. They are Kuje, Abaji and Bwari Area Councils. In the second stage, two extension blocks from each of the selected three Area Councils were randomly selected to make a total of six extension blocks. In the third stage, two extension cells from each of the

selected block were randomly selected to give a total of twelve cells. In the fourth stage, two villages were randomly selected from each of the selected cell to get a total of twenty-four villages. The final stage involved a random selection of 346 farmers (10%) out of 3,463 farmers from the selected village to give the sample for this study. Content and face validity of data collection instrument was ensured through experts' consultation. The validated instrument which was subjected to Cronbach's Alpha reliability test (r=0.74) was used for data collection in November, 2018.

Data Collection and Analysis

Primary data were obtained from the respondents through the use of questionnaire and interview schedule. Data were elicited on socio-economic characteristics, accessibility and utilization of agro-services as well as on challenges for accessibility and utilization of agro-services. Age, educational level and farming experience were measured in years, while family size and income were measured in number and Naira, respectively. Sex, cost of services, place of residence, membership of associations and access to motorable roads were measured as dummy variables. Perceived economic benefits of agro-services were measured using 3-points Likert type scale of high benefit = 3, low benefit =2 and no benefit =1. Average distance to sources of services was measured in kilometres. Accessibility of agro-services: seed companies, inputs retailers, fertilizer companies, agricultural finance institutions, tractor hiring schemes, weather information agency, agricultural extension organizations and irrigation services agency were ascertained by asking the respondents to indicate the type of services they had access to. While the utilization of agro-services was measured using a 4-points Likert type scale of always utilized=4, sometimes utilized =3, hardly utilized= 2 and not utilized = 1. Thereafter, the values of the scale were added up and the sum was divided by the number of the values of the scale to obtain 2.5. Thus, any agro-service with mean of 2.5 and above suggests utilization of that agro-service, while below 2.5 depicts no utilization of the service. Challenges for the accessibility and utilization of agro-services were determined by asking the respondents to indicate the constraints for accessibility and utilization of agro-services. Objectives one, two, three and five of the study were achieved using descriptive statistics while objective four was achieved using multinomial logit regression. The model is specified implicitly as:

$Y=f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12})$

The explicit form of the model is specified as:

$$\text{Logit (Y)} = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \cdots \beta_n x_n$$

Where:

Y= Utilization of agro services (No utilization of service=1, utilization of 1-3 services=2, utilization of 4-6 services =3, and utilization of 7-8 services =4)

X_1= Age (years)

X_2= Sex (female=1, male=0)

X_3=Educational level (years)

X_4= Farming experience (years)

X_5= Cost of services (costly =1, not costly=0)

X_6= Perceive economic benefits of services (3point Likert scale)

X_7= Average distance to sources of services (km)

X_8= Place of residence (town =1, village=0)

X_9= Income (naira)

X_{10}= Family size (number)

X_{11}= Membership of farmers' associations (member=1, otherwise = 0)

X_{12}=Access to motorable roads (yes=1, no=0)

α = constant

$\beta_1 + \beta_{12}$= regression coefficients of variables

RESULTS AND DISCUSSION

Socio economic Characteristics of the Respondents

Results in Table 1 indicated that the mean age of the respondents was 48years. This implies that the respondents were in their active productive years which can motivate the respondents to demand for the needed agro-services because of the innovativeness of this age range.

This result is in line with the findings of Ani (2007) who reported that majority of farmers were in their active ages. Table 1, also revealed that 36.4% and 33.5% of the respondents attained primary and secondary education respectively. However, only 6.6% and 4.1% respectively had NCE/ND and University education; suggesting that majority of the respondents had one form of formal education or the other, which could be instrumental to the accessibility and utilization of agro-services. Similarly, Table 1 showed that the mean household size of the respondents was 7 persons. Furthermore, Table 1 indicated that 76.1% of respondents had access to motorable roads. Access to roads throughout the year is expected to ease movement of service providers and facilitate access/utilization of services by farmers. In Table 1, 84.1% of the respondents indicated membership of associations; implying an enhanced capacity to access and use agro-services.

More so, Table 1 revealed that the mean farm size of the respondents was 1.9 hectares. This is an indication that most of the respondents were into small scale farming. The size of farms can influence the demand for agro-services. Furthermore, Table 1 showed that 45.7% of the respondents received one extension service in a year, while 29.5% and 4.6% of the respondents received two and three extension services respectively. This finding shows that agricultural extension contact among the farmers was low in the study area. This result affirms the finding of Umar *et al.* (2018) who stressed that majority of farmers in Niger State were not receiving regular extension services.

Table 1: Distribution of respondents according to their socio-economic characteristics

Socio-economic characteristics	Frequency	Percentage	Mean
Age (years)			
21-30	25	7.23	48.0
31-40	97	28.0	
41-50	93	26.9	
51-60	72	20.8	
>60	59	17.1	
Educational level			
Non formal education	67	19.4	
Primary education	126	36.4	
Secondary education	116	33.5	
NCE/ND	23	6.6	
University education	14	4.1	
Household size			
1-5	123	35.6	7.0
6-10	160	46.2	
11-15	51	14.7	
16-20	12	3.47	
Access to motorable roads			
Yes	263	76.1	
No	83	23.9	
Association membership			
No	55	15.9	
Yes	291	84.1	
Farm size (ha)			
≤ 1	117	33.8	1.9
1.1-2.0	120	34.7	
2.1-3.0	46	13.3	
3.1-4.0	46	13.3	
> 4	17	4.91	
Extension contacts			
None	70	20.2	
Once	158	45.7	
Twice	102	29.5	
Thrice	16	4.6	

Source: Field survey, 2018

Accessibility of Agro-services

Result in Table 2 showed that 94.8% of the respondents had frequent access to agro-inputs retailer's services for the purchase of inputs such as agro-chemicals and other related implements. The accessibility of agro-inputs dealers by majority of the respondents could be attributed to the proliferation of agro-inputs outlets in the area.

Table 2: Accessibility of agro services by respondents

Agro-services*	Frequency	Percentage
Fertilizer companies' services	225	65.0
Seed companies' services	71	20.5
Agro-inputs retailer' services	328	94.8
Weather information services	46	13.3
Agricultural finance services	178	51.4
Tractor hiring services	301	86.9
Irrigation services	8	2.3
Agricultural extension services	276	79.8

Source: Field survey, 2018; *Multiple responses

Also, Table 2 indicated that almost 87.0% of the respondents had regular access to the tractor hiring services operated mostly by private service providers in the area. More so, findings in Table 2 revealed that 79.8% of the respondents in the study area accessed agricultural extension services through the extension workers stationed in the villages. Similarly, 65.0% and 51.4% of the respondents had access to the services of fertilizer companies and agricultural finance institutions, respectively. However, the services of seed companies, weather information and irrigation agencies mostly operated by government establishments were not well accessed; suggesting that the application of these services by farmers may be minimal or uncommon. It generally implies that the agro-services operated by private service providers were more accessible than the services provided by government owned parastatals. This finding corroborates the findings of Anonymous (1999) who reported that National Seed Corporation owned by government met only eight percent of the seed needs of farmers in India.

Utilization of Agro-services

The result in Table 3 indicated that services of agro-inputs retailers ($\bar{x}$=3.15), extension agencies ($\bar{x}$=3.07), fertilizer companies ($\bar{x}$=2.62) and agricultural finance institutions ($\bar{x}$=2.51) were well utilized by most of the respondents in the study area. These findings suggested that agro-inputs dealers, extension workers, fertilizer companies and agricultural finance institutions were having impact on the farmers in the study area. Despite the accessibility of tractor hiring schemes, the service was not well utilized ($\bar{x}$=2.34) by majority of the respondents because of high cost. Also, the services of government owned seed companies ($\bar{x}$=1.90), weather information agencies such as Nigerian Metrological Agency {NIMET}($\bar{x}$=1.13) and irrigation services of River Basins ($\bar{x}$=1.06) were not well utilized by most of the respondents. The inaccessibility and minimal utilization of services of seed companies and irrigation schemes is unhealthy for adoption of improved seed varieties and dry season farming in the study area. Therefore, private companies would play an increasingly essential role in this regard. In a related study by Umar *et al*. (2018) reported a low irrigation facility in the rural farming communities.

Table 3: Utilization agro-services by respondents

Agro-services	Mean score
Fertilizer company services	2.62
Seed company services	1.90
Agro-inputs retailers services	3.15
Weather information services	1.13
Agricultural finance services	2.51
Tractor hiring services	2.34
Irrigation services	1.06
Agricultural extension services	3.07

Source: Field survey, 2018

Factors Influencing Utilization of Agro-services

The result of the Multinomial logit regression analysis of the factors that influence utilization of agro-services by the farmers in the study area is presented in Table 4. The effect coefficients were estimated with respect to no utilization of services at all as the reference group. Therefore, the inference from the estimated coefficients for each category was made with reference group. A likelihood ratio (χ^2) value of 211.67 which was significant at 0.01 level of probability was obtained. This test confirms that all the slope coefficients are significantly different from zero. In other words, the explanatory variables are collectively significant in explaining the utilization of agro-services by the respondents in the study area. The results of the estimated equations are discussed in terms of the significance and signs of the parameters.

The result revealed that perceived economic benefits of agro-services was positive and significantly associated with the classification of all the three groups relative to the reference group. The positive sign implies that the probability of falling into any of the group will increase with higher perceived economic benefits of agro-services by the respondents. Also, education was positive and significantly associated with group two and three classification relative to the reference group; indicating that the chance of belonging to those groups will increase with more education. Conversely, age was negative and significantly associated with group three and four classifications, which implied that an increase in farmer's age will reduce the probability of using agro-services. In the same vein, cost of services and distance to sources of services were negative and significantly associated with group two and three classifications relative to the reference group, while family size was also negative and significantly associated with group two but positive for group four classifications relative to the reference group.

More so, farming experience was negative and significant for group two but positive and significant for group four classifications relative to the reference group. Membership of farmers' association for group three and income for group four classification were positive and significant relative to the reference group. Thus, the likelihood of falling into those groups of higher usage of agro-services will increase with more income and participation in farmers' group activities in the study area. The result further revealed that sex was negative and significant for group four classifications. In essence, all the variables except place of residence and access to motorable roads were significant in classification into each respective group relative to the reference group.

Table 4: Multinomial logit regression of factors influencing utilization of agro-services

	NU (0 service utilize) Reference group (group 1)	LU (1-3 services utilized) (group 2)	MU (4-6 services utilized (group 3)	HU (7-8 services utilized) (group 4)
Age	-0.096129	-0.0227882	-0.0435185	-0.0753989
		(-0.76)	(-2.71 ***)	(-2.15**)
Sex	-0.19977	-0.4777848	0.1186279	-0.7961826
		(-1.33)	(0.73)	(-1.99**)
Education	0.0127882	0.423558	0.4001215	0.362247
		(3.22***)	(4.54***)	(0.17)
Farming experience	0.8735984	-0.2899919	0.1236882	0.4599183
		(-1.91*)	(1.47)	(2.94***)
Cost of services	0.9753481	-1.183119	-1.121019	0.9132481
		(-2.14**)	(-3.36***)	(1.38)
Perceived economic benefits of services	0.0511394	0.0529518	0.0509685	0.0531227
		(1.99**)	(3.41***)	(1.68*)
Distance to sources of services	-0.414969	-0.5925693	-0.5811694	-0.4263689
		(-2.31**)	(-3.62***)	(-0.87)
Place of residence	0.8936645	-0.1857855	0.1762398	0.5316392
		(-0.86)	(1.12)	(1.39)
Income	0.7511128	0.3841569	-0.6666003	1.80187
		(0.40)	(-1.27)	(2.16**)
Family size	0.0275842	-0.4084685	-0.071001	0.3098833
		(-2.26**)	(-0.92)	(1.85*)
Group membership	16.354815	0.8352276	0.8826127	16.30743
		(1.08)	(2.31**)	(0.02)
Access to motorable Roads	-0000143	-0.0001254	-0.0001397	-0.0001285
		(-0.01)	(-0.01)	(-0.01)
Constant	-19.15558	5.161823	5.004328	-18.99808
		(1.95*)	(2.79***)	(-0.03)

Source: Field survey, 2018; Log likelihood= -247.26157; LR Chi-square=211.67***; Pseudo R^2=0.2997; ***P<0.01, **p<0.05 and *p<0.10 significant level, figures in parentheses are Z-values, NU=No utilization, LU=Low utilization, MU=Moderate utilization, HU=High utilization.

Challenges for the Accessibility and Utilization of Agro-services

Table 5 revealed that high cost (60.1%) was a major challenge for the accessibility and utilization of agro-services, particularly tractor hiring schemes in the study area. This suggests that the tractor hiring schemes are not affordable to farmers in the area. For more than half (54.9) of the respondents, the inaccessibility and none or low utilization of the services of seed companies was due to far distances, while unavailability of facilities and inadequate awareness were responsible for low utilization of irrigation and weather information services with 45.7% and 38.4% response rates, respectively. This implies that farmers in the study area will not be able to use these agro-services optimally for production because of far distances to the sources of services, inadequate information and unavailability

of the services. Addressing these challenges at the policy front and through farmer initiatives could assist in improving the level of accessibility and utilization of agro-services by farmers. This result also agrees with the findings of Bhople *et al*. (2001) who reported that inadequate guidance and awareness affected the services of agro-service providers.

Table 5: Constraints for accessibility and utilization of agro-services by respondents

Constraints*	Frequency	Percentage
High cost	208	60.1
Inadequate awareness	133	38.4
Far distance	190	54.9
Unavailability of facilities	158	45.7

Source: Field survey, 2018; *Multiple responses

CONCLUSION

Based on the findings of the study, it was concluded that most of the farmers in FCT-Abuja were in their active ages, with membership of farmers' associations. The agro-services of seed companies and irrigation agency mostly operated by government were not well accessed and utilized by the respondents. Factors that solely influenced the utilization of agro-services positively were perceived economic benefits of services, educational level, association membership and income of farmers. Major challenges for the accessibility and utilization of agro-services were high cost, far distances as well as unavailability of facilities.

Agricultural extension workers should educate the farmers more on the economic benefits of using agro-services to maximize the usage of the services and output by the farmers in the study area. Following high association membership of the respondents, the agricultural extension agents should encourage the farmers to access agro-services in groups through their associations, for enhanced capacity to use agro-services at reduced prices. In view of the essential role played by the private service providers, government should encourage private service providers through appropriate policies to extend their services to areas where the public services are not accessible. Irrigation services of River Basin Development Authorities should be extended to the study area to improve dry season farming and bring services closer to the farmers.

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