Effects of Extension Agents' Performance on the Utilization of Climate Change Adaptation Measures by small-scale Farmers' in Oke-Ogun Area of Oyo State Nigeria

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Abstract

The study examined the effect of Extension agents' performance on small scale farmers' utilization of climate change adaptation measures in Oke- Ogun area of Oyo State. A Multi- Stage Random Sampling procedure was employed to select forty extension agents and one hundred farmers from the study area. A structured questionnaire was used to collect data from respondents. The data collected were analyzed using frequency counts and percentages. Pearson Product moment correlation and Multiple Regression Analyses were used to present the study hypotheses.

Results revealed that sex ($r=0.000$, $p<0.05$), level of education ($r=0.022$, $p<0.05$) and family size ($r=0.020$, $p<0.05$) were significantly related to extension agents' job performances. Result of Correlation Analysis revealed that sex ($r=0.000$), level of education($r=0.022$) and family size ($r=0.020$) were significantly related with extensions' job performances. Multiple Regression analysis indicated that farmers' utilization of some climate change adaptation measures were also significantly associated with some performance indices such as: diagnosis and proffering solution to farmer's problems (0.018, $p<0.05$), possession of the knowledge of the subject matter (0.021, $p<0.05$), keeping of records (0.066, $p<0.05$) and arable crop processing demonstration (0.021, $p<0.05$).

Key Words: *Extension Agents' Performance, utilization, climate change adaptation measure, Farmers.*

INTRODUCTION

Agriculture has been identified as a strategic sector that would address the multiple challenges in achieving a broad based objective of economic growth, wealth creation and employment generation, reducing poverty and attainment of National Food Security as well as putting Nigeria among the 20 World leading economy by the year 2020. One of the objectives of the Millennium Development Goals is to reduce hunger and poverty. The National Food Security Programme of the present administration aim at achieving this objective. Water (2006) highlighted that the subsistence peasant farmers are people who grow what they eat, build their own houses and live without regularly making purchases in the market place. It was the dominant mode of production in the world until recently when market-based capitalism becomes widespread. Despite extension agents' roles of feeding the ever-increasing population, they are less accessible to extension programmers in order to meet up with their current production needs.

In Nigeria, the Agricultural Development Project (ADP) was designed to give energetic life to rural agriculture (EZE, et al; 2006). According to Akinbode (1982), rather than engaging in direct production, the ADP was designed to simulate and modulate small scale farmers. One of the objectives was to communicate current information and modern farm management technique to farmers. Adebayo (1997) posited that the delivery of appropriate agricultural information is the most crucial among the various functions of agricultural extension. Therefore, the actual assessment of ADP performances is in the farmers' willingness of utilization of these information and techniques. It is the duty of agricultural extension agents to disseminate agricultural information required for improved production to the farmers. Alao (1988) ascent that there is a widening gap between the current farm practices, among Nigerian farmers on one hand and available research results and agricultural extension programmes on the other hand which is mostly bordered on the effectiveness and job performance of field extension workers. Job performance of field extension workers in ADPs is a great concern to agricultural administrator, policy makers and development practitioner. Appraising the job performance of these extension workers will provide policy makers, programme administrators and development practitioners at all levels with relevant information needed for improvement and future planning. Farmers appraisal is an assessment of employing performance in some systematic and planned (Cole, 1993). Furthermore, coupled with the needs for updated knowledge on modern production and processing techniques of arable

crops, most farmer in rural areas have experienced climate variability and have always had to cope with a degree of uncertainty in relation to the local condition have shown that many of the effects that are attributed to climate change are the result of deforestation and low productivity. While the climate is a global phenomenon, those in rural area in the tropic face greater risks. (Lisa, 2008). The vulnerability of rural dwellers depends on Intrinsic factors such as the local topography and geology. But many other factors are evolved and combination of which determine a farms family's' capacity to cope with stress and drastic changes. The Inter-governmental Panel on Climate Change (IPCC) reports that societies can respond to climate change by adapting to its effects and reducing greenhouse gas emissions (mitigation), thereby decreasing the rate and magnitude of change (IPCC, 2001). The capacity to adapt and mitigate depends on socio-economic and environmental conditions, and the availability of information and technology. Less information is available about the costs and effectiveness of adaptation measures than about mitigation measures (IPCC, 2007). Agricultural extension is responsible for providing public information and educational programmes that could assist farmers in mitigating the effects of climate change (MOE FRN, 2003). Therefore there is a need to regularly analyze the technical competence and job performance of extension agents who mediate between agricultural extension institutions and target farmers on different agricultural issues. Yondeowei and Kwarteng (2006) define performance need as the difference between the required level of individual competence and his present level of competence. Radhakvishna and Thomson (1996) state that extension agents particularly require experiential learning that provides them with opportunities to relate to rural people in an interactive process that combines scientific technical knowledge with local indigenous knowledge in client-centered problem solving activities. However, Allo (2001) points out that one of the main factors calling for the development of effective training programmes for agricultural professionals in developing countries is the inadequacy of their job performance as a result of trainings.

The aim of this paper is to examine the effects of extension Agents' performance on the utilization of climate change adaptation measures. Describe the socioeconomic characteristics of the respondents, determining extension agents' level of job performance and evaluate the level of utilization of climate change adaptation measures in the study areas. Outcome of this study will be made available to Agricultural Development Programme in Oyo State, Ministry of Agriculture, Non-governmental Organizational and other related bodies concerned with the rural development works. The results and recommendations emanated, will as well serve as a useful guide to the agricultural programme planners of all the above mentioned organizations.

2.0 Methodology

The study examined effects of extension agents' performances on the utilization of climate change adaptation measures among small scale farmers in Oke-Ogun area of Oyo State, Nigeria. Structured questionnaire was utilized to collect data from one hundred and forty respondents. A multi-stage random sampling procedure was employed in the selection of respondents (extension agents and farmers) for the study. The first stage involved the selection of five extension blocks (Local Government Areas) which include Atisbo, Orelope, Irepo, Saki-west and Iwajowa. Furthermore, eight extension agents were selected from each block. The third stage involved the selection of five cells from each block and four farmers from the list of contact farmers in the selected cells.

Hence, 40 EAs (extension agents) and one hundred contact farmers were interviewed for the study.

To assess the job performance of the field extension workers, each of the sampled EAs was assessed by his/her immediate supervisor on five point likert-type scale. The five point on the scale graded as follow: 5= very high, 4=high, 3=average, 2=low and 1=very low. Performance indices or variable were derived from the respective performance requirement of these groups of respondents, Extension Agents, as reported by Benor and Baxter (1984), Ezeano (1996), Amalu (1988), OKarimia and Nwogu (2000) and Okpongete (2000).

Data collected were subjected to both descriptive and inferential statistics which include frequency count, percentages, mean scores, Pearson Product Momment Correlation and Multiple Regression Analyses

3.0 Results and Discussions

3.1 Personal and Socioeconomic characteristics

The results in this section presents information on socioeconomic characteristics of the respondents. As revealed on table 1, 5% of the extension agents were male while the remaining 65% were female. The result implies that female dominates the population of the EAs in the study area. The result is a further implication that female farmers were very many in Oke-Ogun area, of Oyo State. Further on table 1, 55% were within the range of 40-49 and 40%, in 30-39 years of age. Only 50% fell within 50-59 years. Majority is of EA are in their middle age and is expected to put up a high performance in the discharge of their duties. Results on agents' level of education revealed that, 77.5% had first degrees, 15% hold master degrees while 7.5% were HND certificate holders. Also on the table, 52% of the EAs had a working experience of between 16-20 years, 32.5% had been have working for about 11-15 years while 12.5% and 2.5% have been on the job between 5 and 10 years and 21 and 25 years respectively. The results implies that majority (52%) who put up to fifteen years should be performing very well in the area. Also of note based on the table is the size of extension agents' family. As shown on the table majority (95.0%) had between 2 and 5 family members while only 5% had between 6-9 members in their family household.

Table 1: Personal and Socioeconomic characteristics of the extension agents.

S/N	SOCIO ECONOMICS CHARACTERISTICS	FREQUENCY	PERCENTAGE
1.	**Sex**		
	Male	14	35.0
	Female	26	65.0
	Total	40	100.0
2.	**Age**		
	< 30	00	0.00
	30 - 39	16	40
	40 - 49	22	55
		02	5.0
		40	100.0
3.	**Educational level**		7.5
	HND	03	77.5
	First degree	31	15.0
	Master degree	06	100.0
4.	**Years of working experience**	05	12.5
	5 -10	13	32.5
	11-15	21	52.5
	16 – 20	01	02.5
	21 – 25		100.0
5.	**Family size**		
	2 – 5	38	95.0
	6 – 9	02	05.0
			100.0

Source: Field survey, 2015

3.2 Extension agents' job performance

Information on the job performance level of the extension agents were presented on Table 2. According to the table, the means of the performance indices revealed that the agents were rated highest in their possession of subject matter knowledge ($\overline{X}$ =4.35). This is followed by establishment of skill plot ($\overline{X}$ =4.40), regular and timely visit to arable farmers problems ($\overline{X}$ =4.31) and positive contribution during FNT, MT and BM meetings ($\overline{X}$ =4.15). Other performance indices with significant values were keeping of record ($\overline{X}$ =3.82), adequate attendance at FNT, MT and BM meetings ($\overline{X}$ =3.82), operation of the arable crop processing demonstration ($\overline{X}$ =3.80), diagnosis and proffering of the solution to field problems ($\overline{X}$ =3.62) and organization of field day for the farmers ($\overline{X}$ =3.60). It could be inferred from these findings that job performances of the extension agents were higher based on the mean values in a very good number of job performing indices. The good performance might be associated with high level of education and year of experiences among the extension agents.

3.2 Extension agents' job performance

Table 2: Analysis of Extension agents' Job Performance Indices

S/N	JOB PERFORMANCE INDICES	$\overline{X}$	SD
1.	Organization of field days for farmers	3.60	1.37
2.	Adequate attendance at FHT, MT and BM meetings	3.82	0.78
3.	Positive contributions during FNT, MT and BM meetings	4.15	0.48
4.	Diagnosis and proffering of solution to field problem	3.62	0.70
5.	Possession of subject matter knowledge	4.35	0.89
6.	Keeping of information records	3.82	0.95
7.	Formation of functional contact groups	3.20	0.91
8.	Establishment of skill plot for skill acquisition	4.40	0.67
9.	Operation of arable crop processing demonstration	3.80	0.99
10.	Regular and timely visit to arable farmers	4.31	0.82

Source: Field Survey, 2015

$\overline{X}$ = mean, SD = standard deviation

3.3 Farmers' level of utilization of climate change adaptation measures

Table 3 reveals information on farmers' level of utilization of climate change adaptation measures, the most popular and prominent measure adopted by the farmers was the use of mulching ($\overline{X}$ =0.91). Mulching is quite a predominate practice usually in used for yam production, other measures adopted were planting of trees and cover crops ($\overline{X}$ =0.60) and adoption of zero tillage with the mean of 0.45.The low adoption of irrigation facilities ($\overline{X}$ =0.20) and whether forecast ($\overline{X}$ =0.12) might be due to high financial requirement and inaccessibility to a timely weather forecast respectively.

Table 3: Farmers' level of Utilization of Climate Change Adaptation Measures

S/N	VARIABLES CLIMATE CHANGE ADAPTATION MEASURES	$\overline{X}$	SD
1.	Application irrigation facilities	0.02	0.40
2.	Adoption of vermicomposting technique	0.35	0.47
3.	Increased use of animal manure	0.23	0.43
4.	Practice of organic agriculture	0.60	0.49
5.	Appropriate changes of planting dates	0.49	0.50
6.	Mulching	0.91	0.27
7.	Planting of trees and cover crops	0.83	0.37
8.	Planting of improved crops varieties	0.03	0.48
9.	Practice of zero tillage	0.45	0.50
10.	Adoption of weather forecast	0.21	0.38

Source: Field survey 2015, $\overline{X}$ = mean, SD = standard deviation

Testing of Null Hypotheses

Relationship between selected socioeconomic characteristics of extension agents and their level of performance were sought. The socioeconomic traits involved in the study were gender, age educational level, year of working experience and family size. Age (r= 0.148 p<0.361) was negative but significantly related to the level of performance of extension agent. This implies that the higher the age, the lower the performance of the extension agent in the discharge of his/her duties. Also in the study was family size (r=0.366 p < 0.020) which was also significantly associated with the job performances of the extension agents. This infers that, the higher the number of family members of the agent, the better their performance.

Table four:
Results of Correlation Analysis of Agricultural Personnel's Socioeconomic Characteristics and Job Performance Indices

VARIABLES	R-VALUE	P-VALUE	DECISION
Sex	0.770xx	0.000	S
Age	-0148	0.361	NS
Education	0.361x	0.0222	S
Family size	0.366x	0.020	S

Data analysis 2015, P<0.05%

Table 5: Results of Regression Analysis showing the Effect Selected of Personnel Job Performance and on Utilization of Climate Change Adaptation Measure.

Model Explanatory variable	Unstandardized sized coefficients	Standard coefficient	T	Sig

		B	Standard error	Beta		
s/n	**Constant**		**.395**		**-1.520**	**0.132**
1.	Organization of field day	0.148	0.205	.074	0.723	.472
2.	Adequate attendance at FNT meeting	-0.048	0.233	-0.20	-.0207	837
3.	Contribution during FNT meeting	0.210	0.199	.101	1.057	.294
4.	Diagnosis and proffering solutions to farmers production	-0.479	0.199	-.232	-2.407	.018
5.	Possession of subject matter knowledge	0.477	0.203	.239	2.347	.021
6.	Keeping of information records	0.728	0.256	.293	2.841	.006
7.	Formation of functional contact group	-0.062	0.211	-.029	-0.292	.771
8.	Establishment of skill plot for skills acquisition	0.231	0.208	.111	1.108	.271
9.	Operation arable crop processing demonstration	-0.455	0.201	-227	2.269	.026
10.	Regular and timely visit to arable farmers problem	0.033	0.199	.016	0.167	.868

R2 = 0.468, F- value = 2.471, P $\leq$ 0.05%

Source: Data analysis 2015.

As further indicated on the table 4, result of Regression analysis showing the change relationship between the selected job performances indices and level of utilization of climate change adaptation measures among the arable crop farmers were presented. R2of 0.46 implies that the independent variable of the study accounted for only 46% as its power of explanation for the effect of selected indices of agents' job performances on the level of utilization of climate change adaption measures in the study area. Specifically, regression analysis revealed that relationship between farmers utilization of climate change adaptation measure was negative and significantly related with diagnosis and proffering solution to farmers problems ($t= -0.13$, $p<0.05$) but positive and significant with possession of subject matter knowledge ($t=0.021$, $p<0.05$) and operation of arable crop processing demonstration. The relationship was not significant with organization of field day ($r=0.47$, $p<0.05$), attendance at FNT meetings ($r=0.837$, $p<0.05$), contribution during FNT meetings ($r=0.295$, $p<0.05$) and others.

Summary, Conclusion and Recommendation

The need for efficient job performance among the agents and field officers in agricultural institutions and ADPS is a great concern to academic policy makers and rural development practitioners. The study investigated the effects of extension agents 'performance on farmers' utilization of climate change adaptation measures in rural areas of Oke-Ogun, Oyo State. The study of the result revealed that extension agents were effective in their job performance activities such as operation of arable crop processing demonstration, formation of functional contact group, possession of subjects-matter and diagnosis and proffering of solution to field problems. Farmers made a good utilization of some climate change adaptation measures such as mulching, planting of cover crops and appropriate changes of planting dates. Results of tested hypotheses showed that sex, education and family size were significantly associated with extension agents. Results further revealed that farmers' utilization of climate change adaptation measures were related to organization of field day, possession of subject-matter knowledge, formation of contact groups and regular timely visit to arable farmers' problems by the extension agents. It is therefore, recommended that continuous performance evaluation should always put in place in order to detect the necessary areas of job performance needs of the extension agents. Field officers should organize field day for farmers. Extension Agents are also recommended to attend more trainings apart from the regular FNT and MTRM. This will improve their competencies in innovation delivery among the target audience (farmers)

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