Competency needs of extension agents in disseminating weather forecast information in Kwara state, Nigeria

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Abstract

Agricultural extension agents play crucial roles in the dissemination of innovation and enhancement of the productivity of the farmers in Nigeria. The research examined the competency needs of extension agents in Kwara State, Nigeria. About 117 extension agents were selected for the study. Statistical tools such as frequency count, percentage and mean score were used to analyse the data. The result revealed about 54.7 % of the respondents were male, the average age of the respondents was 44.9 years and the mean income of the respondents was 49461.38 Naira. The training sessions ($\overline{mean}$=2.36) was most important source of information on weather forecast. The rainfall variability (MWDS= 0.458) was the highest ranked area of competency needs of extension agents. The inadequate facilities to disseminate weather forecast information (mean=2.38) was the most severe factor limiting dissemination of weather forecast information. The study recommended the provision of timely and accurate information on weather forecasts to the extension agents so that the farmers would make use of it at the right time.

Keywords: Competency Needs, Extension Agents, Weather Forecast, Information

Introduction

Agriculture plays an important role in process of economic development of any country. The Agricultural sector provides food for human consumption and raw materials for the industries and also serves as a source of foreign exchange earnings for Nigeria. The Nigerian Agricultural sector in Nigeria is characterized by the low level of irrigation, low technology and productivity, land tenure problems, high production cost, limited financing, poor distribution of inputs and high labour intensity [1,2].

Climate change is emerging challenge limiting food security and sustainable development [3]. The continuous change in climatic conditions and unsustainable use of natural resources has adversely affected livelihoods of people all over the universe. The change in climatic conditions has led to changes in rainfall patterns, excessive

flooding and landslides [4]. Climate change has resulted in overall decrease in small ruminant production and increased the risk of famine [5]. Climate change refers to alteration in the incidence of extremes of climate over a long period of time [4]. It includes long-standing events such as variations in temperature and precipitation patterns [6].

Agricultural extension is a method of communication and education that seeks to share the latest knowledge and technology with farmers, with the purpose of imparting novel information and technology that can enhance agricultural productivity, profitability, and sustainability. So, extension agents are expected to well informed so as to meet the needs of the farmers. Extension agents are expected to provide information on weather forecasts to the farmers. Agricultural extension is a platform that provides services that enhance the productivity, income and livelihoods of farmers and other rural people through educational and communication methods.

Competency needs is the skill, knowledge and attitude an individual requires to overcome problem as well as to avoid creating problem situation [6]. Competency needs also refers to additional specific information, knowledge and skills required to perform certain operation or activities.

The extension services could contribute more in enhancing of the farmers productivity and livelihoods through the provision of timely and accurate information on weather forecasts. Developing the necessary skills and knowledge to accurately convey the most important elements of a forecast will enable extension agents to provide reliable and comprehensive advices to the farmers.

Weather forecasts are important aspect of agriculture as they can assist in predicting and preparing for changes in the climate that may affect the growth, yield, and quality of crops. Weather forecasts are projected to have significant impacts on conditions affecting agriculture, including temperature, carbon dioxide, gracias runoff, precipitation and the interaction of these elements. It affects agriculture seriously through change in availability of water which leads to frequent floods and drought resulting invariability in crop yields in different ecological zones [4]. Adverse effect of could be the likely of rise in the distribution and intensity of existing pests, diseases, and weeds, due to higher temperatures and humidity [6].

The farmers' ability to adapt to climate change would be determined by the quality of information they got on weather forecasts through the extension agents. Study on the competency needs of the extension agents on weather forecasts are necessary so as to know the right capacity building intervention to be provided to the them and so as to enhance the extension services deliveries on weather forecasting in the study area. Also, this study is important as there is dearth of information on the competency needs of extension agents on information on weather forecast in study area. Therefore, there is the need to determine the competency needs of extension agents in disseminating weather forecast information in Kwara State, Nigeria.

The specific objectives were first ascertaining the socioeconomic characteristics of the extension agents in the study area. The second object was identifying the extension agents' sources of information on weather forecast. The third object was examining the

extension agents' competency needs on weather forecasts information. The last object was investigating the constraints limiting the dissemination of weather forecast information use of climate smart aquaculture practices used by the respondents.

Materials and Methods

The study was carried out in Kwara State, Nigeria. The state is one of the 36 states of the Federal Republic of Nigeria that was created in 1967. The state has a land area of 32,500 square Kilometers (that is 5,250,000 hectares) with a population of about 2.3million people. The State has 16 local government areas (LGAs). Kwara State Agricultural Development Programme divided the state into four administrative zones in consonance with the agro-ecological and farming systems. The zones in alphabetical arrangement and constituent local government areas (LGAs) include: Zone A (Baruteen and Kaiama LGAs); Zone B, (Edu and Patigi LGAs); Zone C (Asa, Moro, Ilorin West, East and South LGAs) and Zone D, (Ifelodun, Offa, Oke- Ero, Oyun, Irepodun, Ekiti, and Isin LGAs). The total respondents of the study consisted of about one hundred and seventeen extension agents which were randomly selected across the four agricultural zones in the state. To determine sources of information on weather forecast, a 3-likert type scale was used where frequently used=3, sometimes used =2 and Not used=1. To determine the area of competency needs on weather forecast information was determined with the use of Borich Model Analysis through the calculation of Mean weighted discrepancy score by making use of the Level of Importance of the skills and Level of competence of the skills. To measure the constraints in disseminating weather forecast, a 3-likert type scale was used, where very severe=3, Severe=2 and not Severe=1.The statistical tools used to analysed the data were frequency count, percentages and mean.

Result and Discussion

The result in Table showed about 54.7% were male. The result revealed that the average age of the extension agents was 44.9 year. This implies that the extension agents are relatively young and are still within the active age bracket. The result showed that about 82.1 % of the respondents were married and 71.8% had Bachelor degree. The average years of experience was 10.9 years. The mean income of the respondents was 49461.38 Naira. This implies that the average extension agent's income is more than the 30,000 Naira Minimum wage in Nigeria. The result also revealed that about 65.0% of the extension agents had participated in training on weather forecasting. This showed that extension agents have training gaps on weather forecast information dissemination in the state.

Table (1): Socioeconomic Characteristics of the respondents

Variables	Frequency (n=117)	Percentage (100%)	Mean	Standard Deviation
Sex				
Male	64	54.7		
Female	53	45.3		
Age (years)			44.9 years	41.36
≤ 40	31	26.5		
41 – 50	70	59.8		
51 and above	16	13.7		
Marital Status				
Single	8	6.8		
Married	96	82.1		
Divorced	3	2.6		
Widow	5	4.3		
Widower	5	4.3		
Level of Education				
OND	17	14.5		
HND/Bachelor Degree	84	71.8		
M.Sc.	16	13.7		
Years of service as extension agent			10.9 years	4.04
≤ 10	59	50.4		
11 – 20	57	48.7		
21 – 30	1	0.9		
Average annual income in Naira			49461.38 Naira	158904.53
≤ 300,000	21	17.9		
300,001 – 600,000	66	56.4		
600,001 and above	30	25.6		
Participation in weather forecasting training				
Yes	41	65.0		
No	76	35.0		

The result in Table 2 showed that training sessions ($\overline{mean}$=2.36) was most important source of information on weather forecast. Agricultural research institutes (mean=2.25) was ranked second. The extension publication and bulletin (mean=2.21) were the third ranked important source of information on weather forecast among the extension

agents in the study area. this implies that training sessions, agricultural research insti-
tutes and extension publication and bulletin were the most important sources of infor-
mation on weather information.

Table (2): Extension agents' Sources of Information on Weather Forecast

Information sources	Fre-quently used	Some-times used	Not used	Mean (SD)	Ranking
Agricultural research insti-tutes	31(26.5)	84(71.8)	2(1.7)	2.25(.472)	2nd
Extension publication and bulletins	31(26.5)	79(67.5)	7(6.0)	2.21(.534)	3rd
Training sessions	46(39.3)	67(57.3)	4(3.4)	2.36(.549)	1st
Immediate supervisor	14(12.0)	102(87.2)	1(0.9)	2.11(.342)	7th
Internet	13(11.1)	102(87.2)	2(1.7)	2.09(.347)	9th
Journals	16(13.7)	98(83.8)	3(2.6)	2.11(.389)	6th
Other extension agent	18(15.4)	92(78.6)	7(6.0)	2.09(.455)	8th
Radio	9(7.7)	95(81.2)	13(11.1)	1.97(.434)	11th
Seminars/conferences/work-shop	18(15.4)	81(69.2)	18(15.4)	2.00(.557)	10th
Television	32(27.4)	70(59.8)	15(12.8)	2.15(.620)	4th
Meteorological station	25(21.4)	80(68.4)	12(10.3)	2.11(.554)	5th

   The result in Table 3 revealed that rainfall variability (MWDS= 0.458) was the high-
est ranked area of competency needs of extension agents. Adaption technologies
(MWDS= 0.383) was the second area of competency needs and temperature change
was the third ranked area of competency needs. This result revealed rainfall variability,
adaptation technologies and temperature change were the main identified areas of skill
gaps. This implies that the extension agents needs competency training in the identified
areas.

Table (3): Boric Model Analysis of Extension Agents' Competencies on weather
forecast information

Areas of Competency	Level of Im-portance Mean (SD)	Level of Competence Mean (SD)	MWDS	Rank
Rainfall variability	2.18(.690)	1.97(.771)	0.458	1
Adaptation technolo-gies	2.25(.706)	2.08(.779)	0.383	2
Temperature changes	2.17(.698)	1.99(.713)	0.391	3
Windstorm	2.04(.803)	1.89(.728)	0.306	4
Early warning signals	2.08(.709)	1.97(.681)	0.229	5
Floods	2.15(.698)	2.08(.575)	0.151	6
Drought	2.09(.643)	2.04(.681)	0.107	7

Note: MWDS= Mean weighted discrepancy score.

The result in Table 4 showed that inadequate facilities to disseminate weather forecast information (mean=2.38) was the most severe factor limiting dissemination of weather forecast information. Inadequate organizational support in acquiring knowledge on the use of weather forecast information (mean=2.22) was the second most severe factor and poor access to knowledge and information on new technology about weather forecasting (mean=2.20) was ranked third. This implies that extension agents do not have adequate access to facilities to disseminate weather forecast information to the farmers.

Table (4): Constraints in disseminating weather forecast information

Constraints	Very severe	Severe	Not severe	Mean (SD)	Ranking
Inadequate facilities to disseminate weather forecast information	60(51.3)	42(35.9)	15(12.8)	2.38(0.71)	1st
Poor access to information on new technology about weather forecasting.	33(28.2)	74(63.2)	10(8.5)	2.20(0.58)	3rd
Inadequate information on weather forecast	10(8.5)	90(76.9)	17(14.5)	1.94(0.48)	8th
Inadequate training on equipment for monitoring weather variation	23(19.7)	74(63.2)	20(17.1)	2.03(0.61)	4th
Poor working environment	33(28.2)	52(44.4)	32(27.4)	2.01(0.75)	6th
Weak/poor linkages between extension and metrology institution	14(12.0)	93(79.5)	10(8.5)	2.03(0.45)	5th
Inadequate mobility of staff	24(20.5)	36(30.8)	57(48.7)	1.72(0.79)	12th
Inadequate technical know-how	31(26.5)	44(37.6)	42(35.9)	1.91(0.79)	10th
Lack of weather forecast subject matter specialist.	30(25.6)	43(36.8)	44(37.6)	1.88(0.79)	11th
Insufficient time	25(21.4)	33(28.2)	59(50.4)	1.71(0.79)	13th
Lack of training resources	26(22.2)	91(77.8)	0	1.93(.653)	9th
Inadequate organizational support in acquiring knowledge of weather forecast information	26(22.2)	91(77.8)	0	2.22(0.42)	2nd
Lack of training incentives such as funding for acquiring competencies on	30(25.6)	58(49.6)	29(24.8)	2.01(0.71)	6th

weather forecast infor-mation					

According to the findings of the study. Its concluded that the extension agents in the study area were still young and agile, majority were married and majority of them had participated in training on weather forecasting. Training sessions is the most important sources of information on weather forecast. The rainfall variability was the highest ranked area of competency needs of extension agents. Inadequacy of facilities to disseminate weather forecast information was the most severe factor limiting dissemination of weather forecast information.

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