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ASSESSMENT OF SKILLS GAP OF EXTENSION PERSONNEL IN KANO STATE, NIGERIA

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ABSTRACT

The study assessed the skills gap of extension personnel in Kano State, Nigeria. Three Local Government Areas were purposively selected from each of the three administrative zones making a total of nine Local Government Areas. A total of 117 extension agents were selected for the study and data were collected using interviews and well-structured questionnaires. Frequency, percentages, mean, and Skills Gap Analysis were used to analyse the data. The study revealed that extension service in the study area was male-dominated (88.9%) and more than two-thirds were HND and diploma holders. Skill Gap Analysis revealed that areas of training required by the extension personnel include; linkage to credit formulation (3.56), use of ICT in agriculture (2.90), and demonstration of improved technology (2.83). The highest-ranking constraints of the extension personnel were interference of politicians in technical aspects (3.41) and having too many jobs with different specializations expected (3.12). Therefore, frequent professional and technical training, employment of more extension personnel especially women, disengagement of politicians from technical aspects, and collaboration with research institutes and universities would improve the capacity of the extension personnel and efficiency of extension service delivery in the study area. The study therefore concludes that extension personnel in Kano State required specialised training in addition to conventional training received.

Keywords: Extension Personnel**,** Skills, Gap, Analysis.

INTRODUCTION

Agricultural extension is an indispensable way to reach farmers with the required knowledge and advice they need to upgrade their livelihoods. Agricultural extension services enable and lubricate the transfer of information, knowledge, and modern practices to farmers which they require to improve their yield and also the quality of their livelihoods. It is therefore necessary to provide farmers with adequate knowledge and information in the right ways and right time (Moon *et al.,* 2016; Sanga *et al*., 2013). In 1974, the Agricultural Development Authority (ADA) system was institutionalized in Nigeria with funding assistance from the World Bank, the Federal Government, and State Governments (Omoregbee and Ajayi, 2009). The Kano ADP termed Kano Agricultural and Rural Development Agency (KNARDA) has been in areas of improving agricultural services and human development. The agricultural extension agent is the one who examines the problems of the farmers and rural people and bring them back a suitable solution to such problem (Safdar, 2005).

For a successful and effective extension agent's job, there is a need for the extension agent to be well-trained and competent in their job, and this calls for continuous in-service training. An extension agent needs to be competent in their technical subject matter areas and also in areas like; teaching, communication administration and management, program planning and execution, and monitoring and evaluation (Okeowo, 2015). For relevant, efficient, and effective in-service training, identification of needs is necessary. A training program that is not based on actual needs is like a doctor prescribing medicine for a patient without diagnosis. The training will therefore not produce the intended outcome (Lego *et al.,* 2018). Therefore, this research intends to assess the level of professional competence and skill gap of extension agents of extension agents in Kano State.

There's been a great advancement in agricultural technology in recent years but the gap between the farmers and these technological advancements yet remains wide. Agricultural Development Authorities (ADAs) are the main organizations charged with the responsibilities of agricultural extension delivery, but it is clear that Agricultural extension in Nigeria has been drastically reducing in its effectiveness over the years. This has been a major factor that has been causing the decline in agricultural productivity (Igbokwe and Enwere, 2001). Therefore, the main objective of this study was to assess the task skill gap of the extension agents in the study area. Other objectives

were to; describe the socioeconomic characteristics of extension agents in the study area and describe the constraints affecting the extension agents in the study area.

Kano State is located in the north-western part of Nigeria. It has a total land area of 20,131 km^2 and lies between latitudes 11030' and 12037' North and longitudes 8030' and 9020' east. It is situated in the Sudan savannah agroecological zone of Nigeria. It shares boundaries with Bauchi State to the South, Kaduna State to the Southwest, Katsina State to the West and North West, and the East and Northeast Jigawa State (KNSG, 2008). The population of Kano State stood at 11,058,300 and the projected population as of 2021 stood at 14,707,539 using the anticipated annual growth rate of 3.3 % and also ranks first out of the 36 States of the Federation (NPC, 2011). Kano State is located on the "high plains of Hausa land" with the occurrence of rock outcrops predominantly in the Southern part of the State. The highest elevation is Riruwai in Doguwa Local Government Area, with a peak reaching up to 1,230 metres above sea level (Olofin, 1987; Rilwanu, 2011).

The Agricultural Development Authority (ADA) system in Nigeria was institutionalized in 1974 with funding assistance from the World Bank and federal and State Governments (Okeowo, 2015). The Kano State Agricultural Development Project (ADP) is named Kano Agricultural and Rural Development Authority (KNARDA).

Sampling Techniques: Multistage sampling was used for this study. The first stage was the purposive selection of three Local Government Areas from each of the three agricultural zones of Kano State based on the intensity of agricultural activities which gave a total of nine Local Government Areas. The second stage was the random selection of extension personnel from each Local Government Area. The lists of extension personnel in these Local Government Areas were used as a sampling frame for the selection of the extension personnel to be considered. Random sampling using random numbers was generated from Microsoft Excel and used for selecting required personnel.

The sample size was determined by a mathematical formula (Miller and Brewer, 2003);

$$n = \frac{N}{1+N(\alpha)^2} \text{ ---------- (1)}$$

Where;

n = required sample size

N = sample frame

α = margin of error (standard value of 0.07).

A simple proportion formula was then used to calculate the number of extension agents that will be interviewed in each local government using;

$y = \frac{x}{X} * N$ ---------- (2)

Where;

y = ward sample size, x = ward sample frame, X = total sample frame, and N = total sample size.

Table 1: Sampling Frame and Sample Size of the Extension Personnel

Agricultural Zones	Selected Local Government Areas	Sample Frame	Sample Size
Zone I	Gwarzo	25	13
	Kura	47	24
	Doguwa	24	12
Zone II	Dambatta	26	14
	Makoda	23	12
	Bagwai	21	11
Zone III	Gaya	20	10
	Warawa	27	14
	Takai	13	7
Total		226	117

Source: Kano State Agricultural and Rural Development Authority (KNARDA), 2019

Primary data were collected using a structured questionnaire which was designed in respect of the objectives of the study. The questionnaire was administered to extension agents in the study area. The questionnaire was structured to include; demographic characteristics, the skill gap of extension personnel, and also the constraints faced by the extension personnel in the study area. The data

collected were analysed using descriptive statistics and skills gap analysis. Descriptive statistics included the mean, frequency, percentages, and graphical representation. This tool was used to analyse the demographic characteristics and the constraints of the extension personnel in the study area.

This tool was used in assessing the task performance of extension personnel in the study area. Skill gap analysis is a tool used in determining the training requirements of an employee. The analysis helps in revealing the variances between the existing and the required skill levels, as well as identifying the best strategies to close the gap or reduce the variation. Twenty-six of such tasks were identified for this study and the extension personnel were asked to rate the required and actual level of such tasks.

To address the skill gap analysis, the Mean Weight Discrepancy Score (MWDS) instrument using the Borich needs assessment model was developed. The MWDS was then used to assess the skill gap of the extension personnel within 26 tasks of extension personnel identified from other research. The discrepancy score was first calculated by subtracting the actual level from the required level. The individual discrepancy score was then multiplied by the average required level to get the mean weight discrepancy score and the tasks were then ranked according to the MWDS.

As shown in Table 2, the majority (88.9 %) of the extension personnel were males while the females were the remaining 11.1 %. This shows that extension services in Kano State were male-dominated. Although there was a low number of female extension officers, the result further indicates that women were participating in extension delivery and this could be due to the continuous increase in women farmers. This is in line with the findings of Okeowo (2015) in "Analysis of Competency and Training Needs among Agricultural Extension Personnel in Lagos State" who reported that 74 % of the extension agents were male. There is a need for more female participation in the extension work.

Results from Table 2 show that 36.8 % and 35 % of the extension personnel had HND and National Diploma, respectively as their highest qualification. This contradicts the results of Omoregbee and Ajayi (2009) who reported that 55.3 % of the extension personnel had OND in a study carried out in Edo State. This indicates that there is an improvement in the level of education of the extension personnel. It is presumed that the higher the level of education of some extension personnel, the better ways to explore in dissemination of agricultural innovation to farmers.

Table 2: Socio-economic Characteristics of Agricultural Extension Personnel

Variables	Frequency	Percentage (%)	n = 117
Sex			
Male	104	88.9	
Female	13	11.1	
Educational level			
SSCE	7	6	
Diploma	41	35	
NCE	17	14.5	
HND	43	36.8	
Degree	9	7.7	
Interest in training			
Not interested	8	6.8	
Interested	109	93.2	

Source: Field Survey, 2022

As seen in Table 2, the majority (93.2%) of the extension personnel were interested in various trainings. This expresses the willingness of this personnel to be engaged in the training for capacity building and therefore improving their working abilities. It was also revealed that 6.8% of the extension personnel were not interested in any kind of training, this could be a result of extension personnel that were in managerial positions and had few more years to retire from service.

It can be deduced from Table 3 that more than one-third (35.9%) of the extension personnel were between the ages of 33 – 41 years with a mean age of 36 years. This shows that the extension personnel were at their productive age and the training acquired can be put to use for a long period in service. This is also in line with Omoregbee and Ajayi (2009) who reported that more than half of the extension officers in Edo State were in the age groups of between 40 - 49 years.

Table 3 illustrates that more than half (53%) of the extension personnel had 1-7 years of working experience. The study also revealed that the mean years of experience of extension personnel was 11 years, the low years of working experience can be a factor that makes the extension personnel

demand more training to improve their job performance. This is in line with the findings of Lalhmachhuana and Devarani (2017) and of Omoregbee and Ajayi (2009) who reported that 61.1% and 72.3% of the extension personnel had 3-6 and 6-7 years of working experience, respectively. The study also revealed that the mean years of experience of extension personnel was 11 years, which according to Ejembi *et al.* (2006) determines the length of service and level of commitment to work. Years of working experience will in turn demand more training to improve their job performance.

Table 3 showed that more than half of extension personnel (54.7 %) attended 1-5 training within their years of service. The mean number of trainings attended by the extension personnel was 7. This implies that the capacity of extension personnel was built through training and improved their level of competencies.

Table 4 revealed that the discrepancy values based on the mean perceptions were positive values for all 26 tasks ranging from 0.91 to 3.56. The table also shows the ranks of the tasks of the extension personnel based on the calculated MWDS. The average MWDS (2.13) was adopted for the establishment of the training needs of these personnel and out of the twenty-six tasks of the extension personnel subjected to the analysis, they required training in fourteen tasks. Although required training in more than half of the tasks, still indicated wide skill gaps.

The major tasks in which they required training as shown in Table 4 were; Linkage to credit formulation (MWDS = 3.56), campaign on HIV/AIDS (MWDS = 2.94), use of ICT in agriculture (MWDS = 2.90), demonstration of improved technologies (MWDS = 2.83), Irrigation farming (2.83), agrochemical skill training (MWDS = 2.71), nutrition and food utilization demonstration (MWDS = 2.61) and communication skills (MWDS = 2.50). Extension personnel's high training needs in credit formulation could be due to the lack of loans collected by the farmers to improve their agricultural production and livelihood in general which could be attributed to interest

Table 3: Socioeconomic Characteristics of Extension Personnel in Kano State (Continuation).

Variables	Frequency	Percentage	Min	Max	Mean	SD	n = 117
Age							
24 – 32	21	17.9	24	65	36	8.4	
33 – 41	42	35.9					
42 – 49	31	26.5					
50 – 57	14	12					
58 – 65	8	6.8					
Years of Professional Experience							
01 – 07	62	53	1	33	11	9.6	
08 – 14	22	18.8					
15 – 21	12	10.3					
22 – 28	6	5.1					
29 – 35	15	12.8					
Trainings Attended							
01 – 05	64	54.7	1	36	7	6.6	
06 – 10	26	22.2					
11 – 15	15	12.9					
16 – 20	6	5.1					
21 – 25	6	5.1					

Source: Field Survey, 2022

rates and much paperwork attached to loan collections. The use of ICTs in agricultural extension is becoming necessary in other to bridge the gaps in knowledge-sharing techniques. Moon *et al.* (2016) found that ICTs play an important role in every stage of the development process; social, economic, and political, creating opportunities for wide job markets -locally and globally- thereby rapidly changing living styles and livelihoods. It exalts the development process by increasing access to information to hardly reach individuals within the population. Training extension personnel in ICT could therefore help in improving the acceptance of technologies by the farmers

and improve their farming practices and livelihoods. Inadequate training in ICTs was also reported by Tafida (2017) as one of the highest areas of training needs by extension personnel.

Demonstration of technology is an easier way of teaching the farmers how to use new technology; inadequate training of extension personnel in that aspect could lead to poor adoption of technologies. Communication skill is the ability of the extension personnel to communicate verbally and in writing to farmers and also with their colleagues and superior agents to pass down knowledge and understand the problems of the farmers. A lack of such skills could lead to a communication gap between farmers and extension personnel and even between extension personnel and their superiors. It is a critical need yet expressed as a skill gap.

Table 4 above further reveals that farm visits (MWDS = 2.31), livestock production and disease control (MWDS = 2.24), and also formation of women's group (MWDS = 2.16) were areas of need for training. Other areas of training needs were rendering technical advice to farmers (MWDS = 2.16), record keeping (MWDS = 2.16), and crop production technology (MWDS = 2.13). Farm visits and record keeping are elements that could help the EAs in observing both the visible and recorded progress of the farmers (Ighoro *et al*.,2017).

The high need for training in livestock production and disease control was in line with the findings of Tafida (2017), most extension agents emphasize crop production-related aspects and thereby lacking in other aspects of the extension services like livestock production and delivery. The EAs need to be well trained and competent such as most farmers rear several animals within their localities. Lack of training in crop production technology, irrigation farming ICT in agriculture, recording and reporting, communication skills, and nutrition and food utilization were all reported by Okeowo (2015) among the high areas of need for training of extension agents.

Based on the means deduced in Table 5, the highest-ranked weaknesses and threats faced by extension agents in the study area were W4 (mean = 3.12), W2 (mean = 3.04), and W9 (mean = 3.02); T5 (3.41), T6 (mean = 3.32) and T4 (mean = 3.29) which ranked 1st, 2nd and 3rd respectively.

Table 4: Skills Gap Analysis of Extension Personnel

Tasks	Required level mean	Actual level mean	Discrepancy value	MWDS	Rank	n = 117
Linkage to credit formulation	3.55	2.58	0.97	3.56*	1	
Campaign on HIV/AIDS	3.42	2.62	0.80	2.94*	2	
ICT in Agriculture	3.6	2.81	0.79	2.9*	3	
Demonstration of technologies	3.98	3.21	0.77	2.83*	4	
Irrigation farming	3.79	3.02	0.77	2.83*	5	
Agro-chemical skill training	3.79	3.05	0.74	2.71*	6	
Nutrition and food utilization	3.62	2.91	0.71	2.61*	7	
Communication skills	3.78	3.10	0.68	2.5*	8	
Farm Visit	4.08	3.45	0.63	2.31*	9	
Livestock production and Disease control	3.63	3.02	0.61	2.24*	10	
Formation of women's groups	3.57	2.98	0.59	2.16*	11	
Rendering technical advice.	3.81	3.22	0.59	2.16*	12	
Record Keeping	3.65	3.06	0.59	2.16*	13	
Crop production technology	4.03	3.45	0.58	2.13*	14	
Storage and post-harvest	3.68	3.13	0.55	2.02	15	
Value addition on agricultural commodities	3.61	3.07	0.54	1.98	16	
Marketing of commodities	3.51	2.99	0.52	1.91	17	
Formation of cooperative groups	3.88	3.37	0.51	1.87	18	
Operation and maintenance of agricultural machines	3.44	2.96	0.48	1.76	19	
Recording and Reporting	3.57	3.09	0.48	1.76	20	
Planning demonstration	3.7	3.25	0.45	1.65	21	
Selection of contact farmers	3.73	3.31	0.42	1.54	22	
Evaluation trials	3.53	3.15	0.38	1.39	23	
Rodents and pest control	3.45	3.10	0.35	1.28	24	
Formation of farmers' groups	3.75	3.42	0.33	1.21	25	
Market Survey	3.28	3.03	0.25	0.91	26	
	Mean 3.67		Average MWDS	2.13		

Source: Field Survey, 2022

Table 5: Constraints of Extension Agents in Kano State

Weaknesses	Mean	n = 117
Ineffective management (W1)	2.62	
Poor implementation of policy formulation (W2)	3.04	
Top-down approach nature of organization (W3)	2.98	
Too many jobs with different specializations expected (W4)	3.12	
Scarce resources (W5)	2.86	
Lack of finance (W6)	2.83	
Poor farmer development (W7)	2.87	
Poor communication with farmers (W8)	2.87	
Poor communication within the service (W9)	3.02	
Threats		
Lack of technology and information for agents (T1)	2.65	
The development of unproductive farmers who cannot be commercial farmers (T2)	2.67	
Competition between other departments and Non-Government Organization in the same area (T3)	2.74	
Political will to effect change (T4)	3.29	
Interference of politicians into technical aspects (T5)	3.41	
Too many superior agents (T6)	3.32	

Source: Field Survey, 2022

It is important to note that the highest-ranking threat to extension personnel was the Interference of politicians in technical matters (T5). Almost every government comes up with different policies and plans on how to achieve those policies, which will last until another government comes into power which will certainly pay less or no attention to the previous government's policies, making new ones and forgetting how complex extension organisation could be, therefore is needs careful treatment and some things should not be tampered with.

"Too many jobs with different specializations expected" (W4) was the highest-ranking weakness of extension personnel in this study, this describes the diversity of agricultural extension services and extension personnel often complain about it.

The findings of this study are in line with the findings of Tafida (2017) who reported a lack of sponsorship for extension personnel training as one of their weaknesses and inadequate funding from the government which holds back the execution of projects.

The findings of the study revealed that the socio-economic factors of the extension personnel in the study area were mostly male and relatively young. The study expressed the weaknesses of the extension agents as the high expectations on them despite having too many jobs with different specializations and threats such as the interference of politicians in technical aspects.

This study concludes that there are wide gaps in the acquired skills of extension personnel in the study area and the need for the extension personnel to be trained in various skills to bridge the gaps.

1. The study found that extension service was male-dominated. It is therefore recommended that the government should employ more female extension personnel as the number of women farmers is increasing.
2. The study discovered that more than half of the extension personnel had diploma certificates. There is a need for more programmes like SAFE to collaborate with higher institutions to provide more opportunities for extension personnel to upgrade their educational qualifications.
3. Extension personnel in the study area were also found to have wide skill gaps within some of the most important tasks they were expected to perform. There is a need for government to collaborate with stakeholders to give training regarding areas with high skill gaps.
4. The study found that extension personnel were subjected to carry out several and diverse work simultaneously which affects their task performance. It is therefore recommended that each extension agent should be subjected to a few manageable tasks at a given period.
5. The study also revealed that politicians' involvement in technical subject matters is a big threat to the extension work. It is recommended that politicians should not be involved in such technical issues.
6. Finally, the study recommends that frequent skill gap analysis be put in place to have the main areas of need for training pointed out for the stakeholders to assist in giving training.

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