



**ASSESSING THE FACTORS INFLUENCING COMPETENCIES OF AGRICULTURAL  
EXTENSION PERSONNEL IN KANO STATE, NIGERIA**

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**ABSTRACT**

The study analysed the level of competencies and factors influencing the competencies possessed by extension staff in Kano State. First, three LGAs were randomly selected from each of the three zones of the state. Then, primary data were collected from all the extension staff in the selected LGAs using a structured questionnaire and analysed using descriptive statistics and ordered logit regression model. The result showed that majority (93.4%) of the respondents were found to be male, 55.9% were between the ages of 18 – 40 years, 84.8% were married, and majority (67.2%) were found to have had 1-5 household members. The result also showed that all the respondents attended formal educational institutions. The main occupation of the most (90.6%) of the respondents is extension services, whereas 87.1% were earning income of ₦30,000 – ₦50,000 monthly. Areas in which the extension agents showed high levels of competencies include farm management ( $M = 3.16$ ), identifying major pests ( $M = 3.41$ ), weed identification and control ( $M = 3.55$ ), and fertilizer application ( $M = 3.41$ ). The result showed that age ( $\beta = 0.0824169$ ,  $P\text{-value} = 0.005$ ), education ( $\beta = 2.978308$ ,  $P\text{-value} = 0.000$ ) and distance to farm ( $\beta = -.0415872$ ,  $P\text{-value} = 0.002$ ) were significant at influencing the competencies of extension agents. Inadequate transport facilities such as vans, motorcycles and bicycles were identified by the majority (78.1%) as the major constraint. It is concluded that a good remuneration is one of the major indicators that attract competency delivery among extension agents. It is recommended that more programmes such as the Sasakawa Africa Fund for Extension Education (SAFE) that collaborate with higher institutions to provide more capacities and opportunities should be encouraged.

**Keywords:** Agriculture, competence, Extension, Factors and Regression

**INTRODUCTION**

Nigeria is the most populous nation in Africa and the seventh-most populous in the world, with a 2019 population of 201 million according to UN Data, (2019). Of the country's 911,000 square kilometres of land area, 78% is dedicated to agriculture and 36% of the labour force is engaged in agriculture (Food and Agriculture Organization of the United Nations [FAO], 2019). Nigeria's export economy is mainly based on petroleum (95%), while cocoa and rubber have the next largest shares (Central Intelligence Agency [CIA], 2019). However, domestic agriculture is currently unable to support the growing population's food needs; three to five billion dollars of food is imported per year, largely comprising staples such as wheat and rice (Federal Ministry of Agriculture and Rural Development [FMARD], 2016). Effective agricultural extension is a key component of agricultural development and thus critical to Nigerian prosperity.

Suvedi and Ghimire (2015) noted that in recent time extension personnel are judged on how they serve their clientele; whether they show empathy and communicate effectively with their clientele, their rapport with their clientele and how familiar they are with their clientele's contexts and issues. As a result, Moore (2015) opined that extension professionals should have mastery of



several non-technical or process skills, such as communication skills, critical thinking, teamwork, entrepreneurship, and leadership as well as practical capacities to enable them function effectively in their service delivery.

According to Issahaku (2014), competency is a skill, a personal characteristic or a motive demonstrated by various behaviours which contributes to outstanding performance in a job. It is the quality of being adequately or well qualified, having the ability to perform a specified job. Competency assessment is designed to evaluate individual knowledge, education, skills, experience, and proficiency to perform those assigned responsibilities (Herringer, 2002). Therefore, focusing on competencies will aid any organization to outline the responsibilities, and skills required by their employees for a particular position, because professional competencies are essential to perform jobs well. Operationalizing this concept, competencies can be referred to as an individual's knowledge, skill, abilities, and behaviour which are necessary to effectively perform a specific task and achieve desirable results.

However, agricultural extension service in Nigeria has suffered setbacks since 1995 when the World Bank withdrew its funding of the ADPs. This has resulted to inadequate training, insufficient funding at the state level, poor logistic supports, inadequate staffing, use of poorly trained personnel, and disproportionate extension agent to farm-family ratio among others. Despite the prevailing situation, it is of note that AES is a force that must be reckoned with in the process of achieving sustainable agricultural and rural development. Moreover, because of the Unified Agricultural Extension System (UAES), the extension personnel in the study area have a lot of responsibilities in attending to the needs of their numerous clientele. An extension officer who must assume such variety of roles amongst the farmers must prove his/her competence in many diverse areas in order to perform effectively. Also, there is dearth of information on the competency of extension personnel in the study area. Therefore, it is relevant to investigate the competencies of extension personnel in Kano State ADPs and how these competencies can lead to better extension service delivery. The aim of this study is to ascertain the level of competencies possessed by extension staff in the State, and factors influencing such. Specifically, the study aims at achieving the following objectives:

- i. describe the socio-economic characteristics of the respondents,
- ii. examine the level of competencies of extension personnel in the State,
- iii. determine the factors influencing the level of extension personnel competencies, and
- iv. identify the constraints retarding competencies of extension personnel.

## **Theoretical Perspectives of Competencies**

### **Competency**

The term competency was arguably popularized in the field of human resources development (HRD) by McClelland in his seminal work, titled 'Testing for competence rather than for "intelligence"', as an alternative to traditional intelligence testing in organizations. He conceptualized competence as a personal trait associated with high performance and "demonstrations of particular talents in practice and application of knowledge required to perform a job", (McClelland, 1973).

### **Competence Theory**

According to this theory, job scarcity is a driving force that pushes people to aspire to be professionals by getting appropriate educational qualifications and getting employed. However, getting a diploma by itself should not be the final goal but rather a means to grasp the necessary competence required to perform tasks. According to Grant *et al.* (1979), the fundamental cause of



the competence movement was the divergence between education and the job market, which aided educational institutions in reworking their curricula to adapt to hiring companies and societal demands. The notion inspired higher education institutions that began to establish competence-based education programs in the late 1970s, primarily in the United States. They restructure their curriculum to emphasize competence-based education.

### **Competence Theory in Agriculture Extension Profession**

Karbasioun *et al.* (2007) applied a competency-based approach to generate a competence profile for agricultural extension professionals in Iran. He claimed, generated interest in the competence-based approach in vocational education and training (VET), including agricultural extension. This concept stems from the notion that VETS should help learners to gain the skills required for their actual careers. A competency job profile, according to Karbasioun *et al.* (2007), is a set of competencies specific to extension professionals that include underlying employee characteristics that result in effective and superior job performance. According to the researcher, competency modelling research helped to discover the intrinsic and extrinsic obstacles that farm professionals experience during their professions.

### **Factors influencing the level of extension personnel competencies**

According to Lakew's (2011) study, factors influencing level of extension personnel job performance include their background in agriculture, their marital status, their commute time to work, the nature of their supervision, their relationships with coworkers, their working environment, their recognition, and the nature of the work itself. Yohannes (2009) found variables such as advancement, recognition, attractive salary, the work itself, fair organizational administration, achievement, and perception of distance from home as independent variables that affect the motivation of extension personnel. According to the study, the three most significant independent variables found to exert relatively high influence on the work motivation of extension personnel were recognition, the work itself, and organizational administration.

## **MATERIALS AND METHODS**

### **The Study Area**

Kano State is one of the 36 States of Nigeria, located in the northern region of the country (coordinates: 11°30'N 8°30'E). The State occupies a total land area of about 20, 230 Km square (National Bureau of Statistics [NBS], 2022). The state borders Katsina State to the northwest, Jigawa State to the northeast, Bauchi State to the southeast and Kaduna State to the southwest. The State has 44 Local Government Area with a total population of 9,401,288 million in 2006, with a projection of 15,462,200 million people in 2022 at a growth rate of 3.2 percent every year (NBS, 2022) and 764.3/km<sup>2</sup> population density. The population is almost equally divided between males (51%) and females (49%) and is predominantly youthful.

Kano State is also the largest industrial centre in Northern Nigeria with major industries including textile, tanning, footwear, cosmetics, plastics, enamelware, pharmaceuticals, ceramics, furniture and other industries. Others include agricultural implements, soft drinks, food and beverages, dairy products, vegetable oil, animal feeds etc.

### **Population and Sampling Procedure**

Simple random sampling technique was used to select 256 respondents from each of the three zones as shown in Table 1.

**Table 1: Population and sampling procedure**

Zone	No. of LGAs (sampling frame)	Sample LGAs (3 per zone)	No. of Extension Staff (Sample size)
Zone I	14	Kibiya	29
		Kura	42
		Karaye	27
Zone II	13	Bichi	28
		Tofa	25
		Makoda	20
Zone III	17	Takai	25
		Wudil	30
		Ajingi	30
<b>Total =</b>	<b>44</b>	<b>9</b>	<b>256</b>

### Data Analysis

Primary data were collected using a structured questionnaire and analysed using descriptive statistics such as frequency, percentage and mean as well as ordered logit regression model was used for the study. The ordered logit regression model is explicitly expressed as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + e \quad \dots(1)$$

Where: Y = Level of possession of competency area (Where: Very high = 5, High = 4, Average = 3, Low = 2 and Very low = 1)

X<sub>1</sub> = Age

X<sub>2</sub> = Sex (Binary variable: male =1 and female =2)

X<sub>3</sub> = Educational status (Non-formal =2, Primary =6, Secondary =12 and Tertiary =16)

X<sub>4</sub> = Years of experience in extension service)

X<sub>5</sub> = Distance of the village to extension agent's home

X<sub>6</sub> = Number of visits per month (Number)

β<sub>1</sub> - β<sub>10</sub> = Parameters to be estimated

e = error term

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of Extension Agent in the Study Area

Results in Table 2 show that extension activities in the study area were found to be dominated by the male gender (93.4%), while only (6.6%) of the respondents were found to be female. This indicates that the female gender is lagging in extension activities in Kano. More than half (55.9%) of the extension agents in the study area are between the ages of 18 – 40 years, while 35.1% fall between the ages of 41 – 50 years. This connotes that the extension profession is occupied by men in their productive stage. Likewise, majority of the respondents (84.8%) are married, while 11.7% of the respondents are single, some married men have more than one wife, ranging from 1 to 3. On the household size distribution among the extension agents, majority (67.2%) of the household size of the extension agent found to be 1-5, while 28.9% of the target respondents have the size of 6-10 individuals. All the respondents attended formal educational institutions. More than half (56.6%) of the target respondents had secondary school certificate, followed by 32.8% of the respondents having either OND or NCE certificate, also 5.9% got HND or B.Sc. Certificate. The research shows that all the respondents had some level of formal education which could facilitate better understanding, transfer and diffusion of innovation to the clientele. Similar findings were reported by Kelechi and Abiodun (2018) who found that the mean age of respondents was 46 years, and the majority were males, married (95.0%), had household



size of 5-6 persons (53.8%) and had 9-16 years of job experience (40%). They also reported that all the respondents had attained tertiary education with 47.5% of them at HND level. The main occupation of the majority (90.6%) of the target respondents is extension services, although some engage in some other activities as a source of income. The monthly income distribution among the extension agents sampled showed that majority (87.1%) were earning income of N30,000 – N50,000 monthly, while 7.4% earned between ₦50,001 and ₦ 60,000 monthly. This indicates that the extension agents belong to junior cadre and mid-career officers. Meanwhile, the majority (84.5%) of the target respondents were in extension activities ranging from 1 year – 10 years in service, while 12.7% had been in service for 11 to 20 years. This result is in corroboration with that of Uzoechi (2017) who reported that the average of extension agents in the study area received less than fifty thousand naira per month.

**Table 2: Socioeconomic profile of the respondents**

Socio-economic Variables	Frequency	Percentage
<b>Sex</b>		
Male	239	93.4
Female	17	6.6
<b>Age</b>		
18-30	37	14.5
31-40	106	41.4
41-50	90	35.1
51 and above	23	9.0
<b>Marital status</b>		
Married	217	84.8
Single	30	11.7
Divorced	8	3.1
Widow/widower	1	0.4
<b>Household size</b>		
1-5	172	67.2
6-10	74	28.9
11 and above	10	3.9
<b>Level of Education</b>		
Secondary	145	56.6
OND/NCE	84	32.8
HND/BSc.	15	5.9
Primary	12	4.7
<b>Main occupation</b>		
Extension services	232	90.6
Farming	17	6.6
Other public servant	4	1.6
Trading	3	1.2
<b>Monthly income</b>		
N30,000---N40,000	78	30.5
N41,000---N50,000	145	56.6
N51,000---N60,000	19	7.4
N61,000--- >	14	5.5
<b>Years in service</b>		
1yrs---5yrs	142	55.5
6yrs---10yrs	74	29.0
11yrs---15yrs	13	5.0
16yrs---20yrs	7	2.7
21yrs--- >yrs	20	7.8

Source: Field Survey, 2023





### Competency Levels of Extension Agents

Table 3 shows that extension agents possess various levels of competencies in the general agricultural areas. These include good agronomic practices (GAPs) with a mean score  $M = 3.06$  which shows the level of proficiency in managing different crops. Other competencies in which the extension agents showed high levels of competencies include Farm management ( $M = 3.16$ ), identifying major pests ( $M = 3.41$ ), weed identification control ( $M = 3.55$ ), and fertilizer application ( $M = 3.41$ ), which are technical (hard) core competencies in which there are availability of training and capacity building in projects. On the low side, there are competencies such as soil testing ( $M = 2.18$ ), and animal husbandry ( $M = 2.25$ ), which are more complex with less re-training opportunities at lower career levels. This implies that farmers in the study area are being handled by competent extension workers. This finding is in line with Aregaw *et al.* (2023) who found that agricultural extension agents performed above average in the communication and program implementation with total mean scores of 3.51 and 3.24 respectively.

**Table 3: Competency levels of extension agents**

Items of Competency	Very High (5)	High (4)	Average (3)	Low (2)	Very low (1)	Weighted Score	Mean Score
Good agronomic practices	3	40	182	31	0	783	3.06
Farm Management	1	63	167	25	0	808	3.16
Design of Agricultural Project	1	4	57	182	12	568	2.22
Identifying Major Pests	2	102	150	2	0	872	3.41
Weed identification & control	2	137	117	0	0	909	3.55
Fertilizer Application	2	105	145	3	1	872	3.41
Soil Testing	1	10	45	179	21	559	2.18
Animal Husbandry	2	11	57	164	22	575	2.25
Planning Demonstration	1	112	118	25	0	857	3.35
Writing Skills	1	102	152	1	0	871	3.40
Diffusion of Innovation	0	88	145	23	0	833	3.25
Teaching Skills	0	89	167	0	0	857	3.35
Conducting Group Session	0	85	144	27	0	826	3.23
Use of Audio-visual	0	81	164	11	0	838	3.27
Decision Making	0	105	148	3	0	870	3.39
Agricultural Marketing	0	106	147	3	0	871	3.40

Source: Field survey, 2023

### Factors Influencing the Level of Extension Personnel Competencies

From the results presented in Table 4, Pseudo  $R^2$  was 0.2772 implying that 27.72% of the variation in their competency level was jointly explained by the independent variables included in the model (Aregaw *et al.*, 2023). Chi-square was significant at 1% which ascertains the fitness of the model. Three out of six variables were significant. Age was positive and significant at 1% level, which indicated that age has a positive relationship with the level of extension workers' competency. This corroborates that with age comes wisdom and older extension agents are defter in the competencies that have to do with farming and rural livelihoods (Umar *et al.*, 2018). Education was also positive at 1% level of significance, implying that the higher the educational level of the extension worker, the more expertise and skills acquired that would make him/her more competent in the delivery of extension services. Wallace and Nilsson (1997) highlighted the influence of agricultural education and training in increasing the performance of support services. Based on the analysis, of the independent variables had a significant influence on the competence level of the respondents. Meanwhile, distance to farm was negative and significant at 1% level.



This connotes that extension workers that stay further away from farms are less competent in-service delivery. Working environment and amenities nearby had a favourable and significant impact on extension agents' performance at a level of significance <1% (Lakew, 2011).

**Table 4: Factors affecting competencies among extension agencies**

Variables	Coefficient.	Std Error.	z	P> z	[95% Conf. Interval]	
Age	.0824169	.0292288	2.82	0.005	.0251294	.1397043
Sex	.6697479	.5375791	1.25	0.213	-.3838877	1.723384
Education	2.978308	.2946396	10.11	0.000	-3.555791	2.400825
Years of Service	.0193276	.0314898	0.61	0.539	-.0423913	.0810465
Distance	-.0415872	.0132063	-3.15	0.002	-.0674711	-.0157034
Monthly Visit	.032716	.1120399	0.29	0.770	-.186878	.2523101
Pseudo R <sup>2</sup> =	0.2772					
Log likelihood =	-275.7341					
Prob > chi2 =	0.0000					

Source: Field survey, 2023 **Note:** \*\*\*, \*\* and \* means significance at 1%, 5% and 10% level respectively.

### Constraints Retarding Competencies of Extension Personnel

Table 5 shows the distribution of major constraints to competences among extension personnel in the study area. Each respondent was asked to identify the most pressing constraint to his/her level of competence. Inadequate transport facilities such as vans, motorcycles and bicycles were identified by the majority (78.1%). Such vehicles are required to reach rural farms timely and conveniently without which service delivery might be inefficient. This was followed by the shortage of capacity building opportunities (10.5%). Continuous training and re-training is needed to enhance the competence of agents for effective extension service delivery especially with regards to innovative technologies and practices. The implication is that it can hinder the activities of the extension worker. Uzoech (2017) reported that bad road network (Mean=4.36), shortage of time (Mean=4.12) and inadequacy of funding (Mean=4.05) were identified as the most important barriers for acquiring competencies. Increase in personal costs related to acquire competency (Mean=3.23), and shortage of credible information (Mean=3.38) were the least barriers

**Table 5: Distribution of major constraints among the extension personnel**

Distance	Frequency	Percentage
Inadequate transport facilities	200	78.1
Insufficient capacity building	27	10.5
Shortage of communication gadgets	11	4.3
Poor remuneration	10	3.9
Others	5	2.0
Lack of awareness of activities	3	1.2
<b>Total</b>	<b>256</b>	<b>100</b>

Source: Field Survey, 2023

### CONCLUSION AND RECOMMENDATIONS

The study found that age, level of education, and proximity to clientele had significant influence on the level of competence of the extension personnel. It also found that the biggest obstacle faced by the extension personnel is the lack of logistics, which 78.1% of the target respondents attested to, indicating that the extension personnel are not well equipped to deliver their services appropriately. A good salary is one of the major indicators that attract competency



delivery, but the earnings were very low, that sometimes extension personnel could not meet the target of monthly visit. This study found out that extension service was male dominated. It is therefore recommended that the government should employ more female extension agents as the number of women farmers are increasing, the study also discovered that more than half of the extension agents had secondary certificates or less, there is need for more programs, such as the Sasakawa Africa Fund for Extension Education (SAFE) that collaborate with higher institutions to provide more opportunities for the extension agents to upgrade their educational qualifications so as to cover the high number of extension agents with low educational qualifications. In the study area, extension agents were found to require training. It is advised that training needs analysis should be carried out for both newly recruited and in-service personnel.

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