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## LIVESTOCK EXTENSION PRACTICE AND COMPETENCY AMONG AGRICULTURAL EXTENSION AGENTS IN NORTH-CENTRAL NIGERIA

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### ABSTRACT

*The challenge of meeting the ever-increasing demand for animal products in Nigeria has become keen over the years. A major factor is low technology input by the bulk of animal producers. Because Extension has a crucial role to play, the purpose of this study was to investigate livestock extension (LE) activities and competencies of Agricultural Extension Agents (AEA's) in north-central Nigeria. Data were collected from 112 randomly selected AEA's with the aid of a structured questionnaire that consisted of positively presented livestock extension practice and competency items on 5-point Likert-type scales. A Livestock Extension Competency Coefficient (LECC) was computed for each respondent. The test-retest technique was used to pre-test the instrument, yielding a coefficient  $r=0.91$ . Descriptive, correlation and t-test statistics were used to analyze data. Results revealed that about 40% of respondents engaged in livestock extension activities in the last two years, while about 16% actually specialized in Animal Production while in school. Respondents generally expressed competence in some aspects of livestock production such as feeding, handling, housing, and production management systems. However, respondents claimed less competence in sire selection, breeding, diseases and pests control. Significant correlates of LECC were job experience, contact with farmers, number of trainings attended, and level of job satisfaction. Major LE constraints identified by respondents were inadequate LE programmes, funding, inadequate training, and lack of subject matter specialists. The paper concluded by proffering recommendations on how to adequately address the constraints and the low level of LE activities.*

**Key Words:** animal production, livestock-extension, competencies, constraints

## 1. INTRODUCTION

Achievement of sustainable agricultural development and national food security is dependent on a number of factors, chief among which is the presence of a virile livestock production sub-sector. Apart from being a source of income for the government, the subsector provides employment, food, farm energy, manure, fuel, fibre, hides and transport (Nuru 1986). Increasing livestock productivity is an important strategy for poverty reduction and agricultural productivity enhancement, especially in developing countries where a large share of the rural people keeps livestock as contributors to their livelihoods (FAO, 2009). Furthermore, livestock, especially ruminant production, is the most efficient user of uncultivated land and contributes evidently to crop production (Fakoya, 2007). In Nigeria, the livestock subsector is endowed with abundant resources made up of an estimated 16.2 million heads of cattle, 52.5 million goats, 33.1 million sheep, 6.6 million pigs and 166 million poultry, aside from other species of livestock (Federal Ministry of Agriculture and Rural Development, FMARD, 2010). However, recent trends indicate that the contribution of livestock to Nigeria's Gross Domestic Product (GDP) over the years has been declining –

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from about 10% in 1984 to 2.0% in 2005 (Ojiako & Olayode, 2008). Currently, livestock contributes just about 15% of the national agricultural GDP (FMARD, 2010).

A major cause of the prevailing livestock production scenario has been low technology input by the bulk of animal producers owing to inadequate extension services and poor communication (and utilization) of livestock research findings (Nuru, 1986; Adeokun & Adeyemi, 2003). For instance, more than 80% of national production of cattle, sheep, and goat is contributed by subsistence farmers who still rely on traditional production techniques (FMARD, 2010). It is obvious that in order to meet the keen challenge of supplying animal products in the right quantity and quality for an ever-increasing human population, the country's livestock production sub-sector must witness adequate adoption of modern and efficient livestock production techniques. A livestock extension service delivery system comprising of competent and well-trained personnel, among other requisites, would go a long way in enhancing the development of the livestock sub-sector.

The necessity for increased uptake of improved livestock production methods by farmers has been long recognized as a panacea for a virile livestock subsector in Nigeria. Furthermore, the significance of capacity-building is implicitly accentuated by the need for greater adoption of livestock production technologies. Because Extension has a crucial role to play in this regard; the purpose of this study was to investigate livestock extension (LE) activities and competencies of agricultural extension personnel in Kwara State, Nigeria. Specifically, the study investigated personal and job-related characteristics, nature of livestock extension activities, level and correlates of livestock extension competency, and constraints to livestock extension service delivery among agricultural extension personnel in the study area. Furthermore, two hypotheses on the association between LE competency and gender as well as agents' field of agricultural specialization were also tested.

## **2. METHODOLOGY**

Definition of competence is not homogeneous, and any attempt at competence assessment remains subjective and should take account of the context as well as the individuals they are applied to (Phelan & Sharpely, 2010). However, there are two key uses of the term competency; firstly, competency as the behaviour one demonstrates and, secondly, competency as minimum job performance standard (Mitchelmore & Rowley, 2010). This study is mainly concerned with the latter. According to Le Deist & Winterton (2005), occupational competency has two aspects namely cognitive and functional competences, both of which determine performance. Because of the 'contextual' and 'individual' parameters of competency assessment, as noted above, this study focused on the personal and job-related characteristics and 'functional competencies' of extension agents in the context of livestock extension service delivery. By asking respondents to self evaluate their own competencies, one can readily identify their actual skills (Phelan and Sharpely, 2010), and consequently their training needs.

The study was conducted among extension workers in north-central agro-ecological zone of Nigeria – comprising of six States, out of which Kwara and Kogi States were randomly selected. Like other States in Nigeria, the selected States have their respective Agricultural Development Projects, ADP, (KWADP for Kwara State; KGADP for Kogi State). Established more than three decades ago, the ADPs are charged with the responsibility of agricultural extension service delivery to millions of small scale farmers in their respective

states, apart from implementing agricultural development programmes of the state government.

Data were collected in August 2012 from 112 randomly selected agricultural extension agents, (54 from KWADP and 58 from KGADP). The two agencies currently employ a combined total of 176 agricultural extension agents. A structured questionnaire that also consisted of positively presented items on five point Likert-type scales was administered on respondents. The instrument was pre-tested on 20 AEA's who did not form part of the research sample in order to determine its reliability using the test-retest procedure. This yielded a coefficient (r) of 0.91, meaning the instrument was reliable. The questionnaire contained items on the personal and occupational characteristics of respondents as well as their perceived constraints to livestock extension service delivery in the state. Furthermore, a livestock extension competency coefficient (LECC) was computed for each respondent, using 10 items of livestock production competencies on a 5-point Likert-type scale adapted from Cummins & Roediger (1986). The items addressed ranged from livestock management system, habitat/housing handling, feeding, breeding, to pest and disease identification and control. The maximum possible LECC score is 50 points (or 100%), while the minimum is 10 points (or 20%). Descriptive, t-test and correlation statistics were used to analyze the data collected.

### **3. RESULTS AND DISCUSSION**

Results of this study are presented in five headings namely: (i) personal and job-related characteristics of respondents; (ii) their livestock extension activities, (iii) livestock extension competencies, (iv) the correlates of their livestock extension competencies, (v) constraints to livestock extension service delivery, and (vi) testing of stated hypotheses.

#### **3.1 Personal and Job-related Characteristics of Respondents**

These variables were investigated because of their possible effects on the LE activities and competencies of the respondents. As shown in Table 1, the extension personnel profile of the two agencies was revealed to be male-dominated and consisted of relatively young agents (75% was below 41 years of age). However, about 70% had between 6 and 15 years of Extension service experience. Table 1 further shows that about 65% had university degree or its equivalent (Higher National Diploma, HND) or Masters' degree. These findings suggest that the agencies have the potential to evolve strong Extension teams, other things being equal. Although, respondents attended 'general agriculture' programme while in school, they had limited specializations in various aspect of agriculture. It was revealed that those with limited specialization in Extension were dominant, followed by Crop Production, and Animal Production respectively. It was also found that about 45% expressed 'low' or 'very low' level of job satisfaction. Most of the agents depended on public means of transportation while carrying out official duties, implying that the agencies had very few vehicles of Extension service delivery.

**Table 1: Personal and Job Characteristics of Extension Personnel in North-Central Nigeria, August 2012 (N=112)**

Characteristic	Frequency	Percentage
<b>Gender</b>		
Male	82	73.2
Female	30	26.8
<b>Age (years)</b>		
21-30	30	26.8
31-40	54	48.2
41-50	20	17.9
Above 50	8	7.1
<b>Qualification</b>		
School Cert.	16	14.3
OND	24	21.4
HND	32	28.6
B. Sc	36	32.1
M. Sc	4	3.6
<b>Specialization</b>		
Crop	28	25.0
Animal	18	16.1
Extension	36	32.1
Soil	12	10.7
Economics	14	12.5
Food Science	4	3.6
<b>Years of Extension service</b>		
1-5	20	17.8
6-10	42	37.8
11-15	38	33.9
16-20	6	5.4
>20	6	5.4
<b>Means of transport</b>		
Personal car	10	8.9
Motorcycle	26	23.2
Official car	6	5.4
Public vehicle	10	62.5
<b>Job Satisfaction</b>		
Very high	12	10.7
High	20	17.8
Average	30	26.8
Low	40	35.6
Very low	10	8.9

### 3.2 Livestock Extension Activities

Table 2 summarizes the findings in respect of LE activities of the respondents. About 60% of the respondents did not participate in any form of livestock extension activities in the last two years. Furthermore, respondents' contact with livestock farmers during the same period was

somewhat low; with only about 11% participating in direct extension contact with their clientele up to 21-30 times in a year, while 21% did same 1-10 times per annum.

**Table 2: Livestock Extension Activities of Agricultural Extension workers in north-central Nigeria, August, 2012 (N=112)**

Activities	Frequency	Percentage
Number of LE contact with farmers in the last two years		
0	68	73.2
1- 20	24	26.8
21-40	8	
41-60	12	26.8
Categories of animals in which LE was carried out		
Not applicable	68	60.7
Small ruminant	30	26.8
Cattle	18	16.1
Poultry	32	28.6
Fishery	20	17.9
Estimated Number of farmers serviced (n=44)		
<50	4	9.1
51-100	10	22.7
101-150	6	13.6
151-200	6	13.6
201-250	10	22.7
251-300	8	18.2
Overall participation level in LE (n=44)		
Very high	20	45.5
High	8	18.2
Average	6	13.6
Low	10	22.7
Very low	-	-

Poultry was revealed to attract more attention than other livestock. This underscores the relatively high interest in poultry production in the country (Rahman & Yakubu, 2005; Emaikwu Chikwendu, & Sani, 2011). One of the primary indicators used in determining the intensity of extension coverage in a country is the extension agent to farmer ratio (FAO, 1995). Table 2 further reveals that about 40% of the respondents that participated in LE activities in the last two years respectively had direct extension contact with 100 – 150 farmers per annum. This figure is far better when compared with average crop farmer-agent ratio in most states of Nigeria, 1: 1200-2400 (Olayemi, 2012). It thus offers good potentials for effective extension teaching and learning.

It is further discernible from Table 2 that more than two-thirds of the respondents that participated in LE activities expressed the opinion that their participation level was ‘high’ or ‘very high’, while about 36% claimed that their overall participation was either ‘average’ or ‘low’ in the last two years. These indicate that the respondents generally had a satisfactory impression of their participation, and might perform better if given a more conducive working environment.

### 3.3 Livestock Extension Competency

The investigation of competency among respondents shed light on their skilfulness and, by implication, revealed their skill deficiencies. Feeds and feeding stood out as the leading competency item among respondents. This might not be unconnected with the crucial place of feeding in livestock production (Emaikwu Chikwendu, & Sani, 2011). It also suggests that feeding was perhaps the leading livestock extension needs of the farmers in the study area. Housing and habitat handling recorded the second highest mean score in the competency assessment profile as shown in Table 3. Extension activities in this aspect mainly targeted fish and poultry farmers, especially on construction and maintenance of their livestock habitats.

**Table 3: Livestock extension competency profile of Extension workers in North-central Nigeria, August 2012 (N=112)**

Competency	Mean	SD	Rank
Production management systems	3.55	0.771	4
Record production information	3.59	0.609	3
Selection of sires on performance data	2.95	0.722	6
Selecting female animals for breeding program	2.29	0.572	7
Feeding and Feeds commonly used for animal rations	4.35	0.766	1
Habitat/ Housing and ventilation systems for livestock	4.28	0.655	2
Vaccination and parasite control	3.51	0.536	5
Plan and operate proper manure management practices	2.25	0.522	8
Identify animals showing health problems	2.05	0.601	9
Treat and medicate animals	1.65	0.584	10

Other areas in which respondents expressed competency were production management systems and record keeping. This is particularly noteworthy because of the necessity for adoption of appropriate livestock management systems and the wide-ranging constraints faced by Nigerian farmers in keeping proper farm records (Okeke, 2012). Vaccination and parasite control was also shown to be an area where respondents generally agreed to be competent. This is traceable to the fact that there are elaborate vaccination programmes run in each of the two Extension agencies used for the study.

It is however evident that the respondents lacked adequate skill in some other important aspects of livestock production, as could be observed from Table 3. Convincingly, in order to be able to effectively deliver extension services to livestock farmers, this finding indicates that Extension workers in the study area particularly require training in breeding, sire selection, manure management and animal health (identification and treatment of animal health problems).

### 3.4 Correlates of Livestock Extension Competency

Table 4 summarizes the findings in respect of the relationship between selected agent-characteristics and livestock extension competency coefficients (LECC). Age, years of formal education, and (contrary to *a priori* expectation) qualification of respondents had no significant correlation with their LECC. It was revealed that respondents' LECC's did not

vary significantly with whether they were university graduates or not. Indeed, a close look at the data collected revealed that some secondary school certificate holders had LECC that were comparable to those of university graduates. Years of extension service experience (which might not necessarily vary with age), however presented a positively significant correlation with respondents' LECC. This underscores the positive connection between job experience and skill acquisition. Other correlates of LECC as shown in Table 4 were level of job satisfaction, number of contacts with livestock farmers and number of (specifically programmed livestock) Extension trainings attended since employed.

**Table 4: Correlates of Livestock Extension Competency among Extension Workers in North-central Nigeria, August 2012 (N=112).**

Characteristic	Correlation coefficient	p-value
Age	0.127	0.208
Years of formal education	0.244	0.196
Number of trainings attended	0.712	0.011
Years of Extension service experience	0.694	0.006
Job satisfaction level	0.703	0.010
Qualification	0.281	0.222
Number of LE contacts	0.733	0.001

Generally extension agents in the study area usually attend the fortnightly training (FNT) and the monthly review meetings; these were not countenanced as 'trainings' in this study, even though such meetings were avenues for experiential discourse that could enhance agents' extension service delivery skills. It is instructive to pursue programmes and policies focusing on increasing the level of job satisfaction, number of farmer-agent contacts, and livestock competency trainings in order to enhance livestock extension competency of agents.

### 3.5 Testing of Hypotheses

The two hypotheses that were tested are (i) there is no significant difference in the livestock extension competency of the respondents on the basis of field of limited agricultural specialization while in school, and (ii) there is no significant difference in the livestock extension competency of the respondents on the basis of gender. The hypotheses were tested strictly among respondents who had participated in livestock extension activities in the last two years. Table 5 presents the summary of the results. The first hypothesis is not valid and is consequently rejected. Respondents who had limited specialization in Animal Science/Production while studying in school generally exhibited significantly higher levels of livestock Extension competency than their counterparts who did not. This means that the limited specialization in animal production has the potential to enhance livestock extension competency. On the other hand, the second hypothesis is upheld, meaning that the respondents exhibited no significant differences in their LECC's on the basis of gender. It is therefore imperative to encourage the female gender to seek active participation in livestock extension service delivery.

**Table 5: Result of Hypotheses Testing**

Characteristic	N	Mean LECC	Degree of freedom	t-value (calculated)	t-value (critical)
Specialization					
Animal Science	18	63.5	42	3.04	2.0
Others	26	41.2			
Gender					
Male	32	50.5	42	1.3	2.0
Female	12	52.3			

### 3.6 Constraints to Livestock Extension Service Delivery

The study finally investigated the perceived constraints to livestock extension service delivery among the respondents. The findings are as summarized in Table 6. Ten major constraints were identified, out of which ‘inadequate livestock production programme’ stood out as the leading constraint to LE in the study area. Animal production programmes still continue to receive less attention than crop production, consequently affecting livestock extension service.

**Table 6: Constraints to Livestock Extension Service Delivery in North-Central Nigeria, August 2012 (N=112)**

Constraints	Mean	SD	Rank
Inadequate livestock production programmes	4.45	0.723	1
Poor funding of LE	3.75	0.709	5
Inadequate training programmes of LE Agents	3.95	0.652	4
Low Agent-Farmer ratio	4.29	0.752	2
Difficulty in accessing livestock farmers	1.55	0.716	10
Inadequate veterinary services	3.58	0.651	7
Low institutional support for LE	4.13	0.536	3
Low interest in LE among agents	2.25	0.661	9
Land conflict between crop farmers and pastoralists	2.85	0.593	8
Dearth of subject matter specialists	3.95	0.652	4
Low level of interest in Livestock production among farmers	3.64	0.651	6

The generally low agent-farmer ratio became evident as it had the second highest mean score as shown in the constraints profile in Table 6. Respondents believe, obviously, that the scenario was adversely affecting livestock extension service delivery even more. Three other constraints identified by the respondents are quite related but have their respective significance. These are ‘low institutional support for LE’, ‘inadequate training programmes for LE agents’, and ‘poor funding of LE activities’. The respondents further observed that there was low level of interest in livestock production among citizens, perhaps compared to arable crop farming. This might be due to a number of factors including financial and technical barriers. The inadequacy of veterinary services was also noted by the respondents and this explains why they lacked adequate competence in animal health issues as reported earlier on. However, Table 6 shows that access to livestock farmers, interest in livestock extension practice, and conflict between livestock breeders and crop farmers were not



considered to be constraints in the strengthening of livestock extension service in the study area.

#### 4. CONCLUSION

The study has shown that it is imperative to strengthen livestock extension service delivery in the study area. Even though, nearly 40% of the agents studied participated in livestock extension activities, their participation was quite limited and generally low. Furthermore, their competency assessment in livestock production skills revealed that they generally exhibited average scores, and lacked competence in several important livestock production practices. Because of the crucial position of livestock production in national economic development and food security, coupled with the role of extension in enhancing the production level and standards of the largely traditionally inclined livestock farmers in Nigeria, there is a compelling need to arrest the constraints to livestock extension. Research findings and products that are not effectively communicated to the ultimate users make no meaning. In view of this and based on the above findings, the following recommendations are proffered as policy implications of this study:

1. More programmes targeting the development of the livestock sector should be implemented. In Nigeria, there are several programmes (nationally and internationally funded) on crops such as rice, cassava, yams etc. The livestock subsector is in dire need of similar programmes for poultry, ruminants, and others. This would also raise the public's level of interest and skill in livestock production.
2. More Extension personnel should be employed to complement existing ones. Specifically, adequate livestock extension agents and subject matter specialists need to be provided for the operational zones of public extension service agencies.
3. Regular training and re-training programmes must be organized for livestock extension officers and agents in order to enhance their competencies, especially in identified core areas.
4. Graduates with full or limited specialization in animal production should be given preference when recruiting agents or officers for livestock extension programmes and activities.
5. Use of experienced agents and increased level of contacts with livestock farmers would enhance agents' competencies, and should be encouraged the management of extension outfits.

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