Assessment of Poultry Workers Management Competencies in Kwara State, Nigeria

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Abstract

This study assessed the perceived management competencies of poultry workers in Kwara state, Nigeria. The respondents were selected using a multi-stage sampling technique. The final stage involved a proportionate sampling of 70% of the sample population, and   156 respondents were selected. Results showed that the average age of the respondents was 26 and the majority (51.30percent) held a Senior School Certificate. The majority (98.1 percent) of respondents received training after being hired, with monthly training being the most common (49.4 percent). The average number of birds raised per worker was 5401. Despite this, the Borich's need assessment tool revealed that the workers required training in bird debeaking (MWDS = 0.00981), disease prevention (MWDS = 0.00967), flock record keeping (MWDS = 0.00919), identifying ecto-parasites (MWDS = 0.00839), identifying signs of disease (MWDS = 0.00788), and day-old chick care (MWDS = 0.00737). It concludes that workers have competencies in some practices but not in others, and this study recommends that poultry management trainings cover the identified practices for effective management.

Keywords: Skills, Poultry, Birds, Diseases, Training needs, Socioeconomic characteristics

Introduction

In most African countries, increased agricultural productivity will be critical in establishing a sustainable agriculture that will increase food availability (Pawlak and Koodziejczak, 2020). Despite the fact that technical, economic, and production efficiencies of Nigerian poultry producers could be improved, poultry production remains a profitable enterprise for Nigerian farmers (Adeyonu *et al.,* 2021). Interestingly, the poultry industry in Nigeria has seen significant expansion and development in recent years, and it has been the agricultural subsector with the greatest commercialization in Nigeria (Heise *et al.,* 2015; Kayode *et al.,* 2018). This is because poultry production is known to be acceptable to all Nigerian tribes, and its economic viability is demonstrated by its provision of nutrition from animal sources in the form of meat and eggs, as well as its ability to sustain farmers' livelihoods by providing farmers with a source of income

(Nwandu *et al.,* 2016). Poultry production has a high potential for meeting the world's growing population's protein needs (Alders *et al.,* 2018; Farrel, 2013), which can be explained by the many advantages poultry have over other livestock (Heise *et al.,* 2015), one of which is efficient feed conversion to beneficial protein for human growth and development (Onuk *et al.,* 2017).

Despite the risks involved, the private sector's interest in poultry production is growing significantly. Nigerian poultry farmers are known to face a variety of risks that jeopardize their success and expected profits (Abimbola *et al.,* 2013). Among these risks, technological risk, production risk, and human risk take centre stage (Obike *et al.,* 2017). According to Abimbola *et al.,* (2013), disease outbreak is a major risk in the poultry industry. This is due to the fact that incompetence and carelessness on the part of poultry workers can result in significant losses for the operators, as many

poultry farmers have been identified as having low risk oriented skills (Egbe, 2015). Providing effective management practices that keep poultry birds safe and farmers profitable is a major concern for the industry's future growth because, poultry health and immunity, which determines the emergence of diseases and their re-emergence, are the pressing factors affecting poultry producers (Hafez and Attia, 2020). Competence in certain management practices is therefore required to improve the production efficiency of poultry managers and workers on poultry farms (Baliyan and Marumo, 2016).

The profitability, productivity, and growth of any manufacturing enterprise determine its performance (Brito and Sauan, 2016). However, in the context of this study, effective management practices by poultry workers in poultry production refer to their ability to apply the best management practices at the right time to ensure performance efficiency (Valamis, 2021). This is because the quantity and efficiency of production are determined by the quality of management practices used (Sadikoglu and Olcay, 2014). The poultry workers, who do nearly 90% of the poultry work, bear the brunt of these management practices. According to Okareh *et al.* (2021) and Hamid *et al.* (2018), poultry workers are involved in a variety of tasks on the poultry farm, including feeding the chicken, protecting the chicks from diseases, disposing of dead birds, culling as a result of diseases, cleaning the poultry house, litter knowledge and management, and the use of supplementary feeding for birds of various ages.

Furthermore, Nigeria has been identified as having a high protein deficiency (Okojie, 2020). Most Nigerian staple foods of plant origin are low in protein quality, particularly lysine, an amino acid building block (de Vries-Ten Have, 2020). According to FAO (2018), poultry production in Nigeria cuts across all tribes and ethnic groups, amounting to a yearly production of about 454 billion tons of meat and up to 3.8 million eggs. In Kwara State, poultry production is practiced by many farmers (Yusuf *et al.* 2016). This is due to the weather conditions of Kwara State which favour the enterprise. There is therefore a dearth of information on the competencies of poultry workers in Kwara State, though, cutting

of production costs, high cost of feed, and poor equipments have been identified as barriers to profit maximization by poultry farmers in the State (Yusuf *et al.* 2016).

However, with the observed inefficiency that is plaguing the poultry industry in Nigeria, resulting in low productivity, there is a need for an assessment of the management skills of poultry workers, who perform the majority of the management activities in poultry production. As a result, assessing these poultry workers' competencies in poultry management practices in order to determine where they are more competent and where they have fewer competencies becomes critical (Allahyari *et al.,* 2011). This would expose their skill gaps and areas where training is required for productivity. This study therefore identified the poultry workers perceived management competencies, and examined the socioeconomic determinants of poultry workers' competencies in poultry management practices in Kwara State.

Methods

The project was carried out in Kwara State, Nigeria. Sample population included all poultry workers in Kwara State. It adopted a multi-stage sampling technique, and the first stage involved the selection of two local governments from each of Kwara State's four ADP zones. The second stage involved selecting three poultry farms from each of the selected local governments, and the final stage involved a proportionate sampling of 70% of the selected farms. A total of 156 people were chosen. The project supervisor and a group of lecturers from the Agricultural Extension and Rural Development at the University of Ilorin validated the instrument, and a reliability coefficient of 0.831 was obtained using a test-retest method, indicating a reliable instrument. Analyzing the respondents' socioeconomic characteristics was achieved with the use of descriptive statistics, while 4-point Likert-type scales were used to determine the respondents' importance and competencies in identified poultry management practices. The resulting data was used to calculate the Mean Weighted Discrepancy Scores (MWDS) with Borich's need assessment model. According to Borich (1980), the need assessment model is based on

respondents' self-evaluation of their ability to carry out the assigned responsibility. It does, however, include the significance of a specific practice to one's area of production as well as one's ability to carry out the practice. Three parameters, however, are critical.

(1) Discrepancy Score, which is the difference between the importance of a specific activity and the ability to perform the activity.

$$DS = I-C$$

(2) The Weighted Discrepancy Scores, which are calculated by multiplying the discrepancy score by the task's importance.

$$WDS = I (I-C)$$

(3) The calculation of MWDS was done through the division of the respondents' total number by the summation of all weighted discrepancy scores for each activity.

$$[\sum I (I-C)]/n$$

The MWDS was used to calculate the respondents' competencies. The hypothesis was tested using the OLS (Ordinary Least Square) regression on the estimates of determinants of competency needs of poultry workers. The outcome of OLS regression for the linear model equation is stated below

Y = Competencies of the poultry workers = 2.968+(-×1)+(0.135×2)+(0.021×3)+(.0244×4)+(-×5)+(0.400×6)+(0.155×7)+(0.003×8)+(-0.012×9)

Where:

X1 = Age
X2 = Gender
X3 = Marital status
X4 = Level of education
X5 = Household size
X6 = Work experience
X7 = Capacity of the farm
X8 = Number of birds raised
X9 = Monthly income

Results and Discussion
Socio-economic Characteristics of Respondents
Age of respondents
According to Table 1, the average age of poultry workers was found to be 26, with the

majority (73.6 percent) falling between the ages of 21 and 30. This demonstrates that many of the workers were in their active stage, despite being a little younger than the average age of farmers in Nigeria, which was set at 33 by IFAD, as identified by Arslan (2019). This implies that the workers, when properly guided, can give their all to ensure optimum production.

Table 1: Age of respondents

Variables (Age in years)	Percentage
10-20	14.1
21-30	73.6
31-40	10.8
41 and above	1.3
Total	**100.0**
Mean	**26**
n	**156**

Source: Field survey

Educational level of respondents
Their highest level of education was a secondary education (51.3 percent). Education has been shown to improve agricultural production output by allowing for better management of larger farm sizes and the application of various farming techniques (Ninh, 2021). Even though secondary education was the highest level of education for the vast majority of the respondents, the possibility of being tutored is evident.
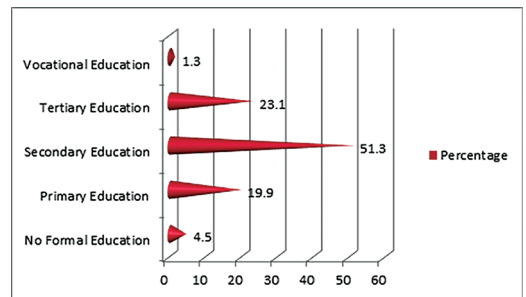
Figure 1: Educational level of respondents (n=156)
Source: Field survey

Work experience of respondents
Their average work experience was 3.37 years, with the majority falling between one

and three years. Farming experience has been identified as useful in the early stages of innovation adoption, particularly when the innovations are being tested for their anticipated benefits (Ainembabazi and Mugisha, 2014). With such limited farming experience, however, adopting new effective management practices, while remaining consistent with the practices on which their experiences have been built, may be relatively simple.

Table 2: Respondents' work experience

Work Experience (years)	Percentage
1-3	70.5
4-6	24.4
7-9	2.5
10 and above	2.6
Total	**100.0**
n	**156**

Source: Field survey

Capacity of the farms of respondents
From Table 3, the majority (43.5%) of the poultry workers selected for this study worked in poultry farms that stocked more than 20,000 birds. This is particularly due to the heavy presence of big farms in the Zone C and D of the Agricultural Development Project (ADP) zones of Kwara State. In these farms, more than 200,000 birds were reared. This was followed by farms that stocked about 4000 birds (38%). This category of farms were located in the Zone A and B of the state ADP zones. Between these two categories, there were farms that stocked between 4001 and 16000 birds. These farms were scattered across all the ADP zones of Kwara State, and they accounted for the considerable egg production in the State (Akanbi *et al.* 2020). In farms where birds are stocked in large quantities, more concern is given to poultry health and well being, because a single mistake can lead to mass bird mortality. As a general requirement however, poultry production requires efficient management and competencies because the majority of poultry farms in Kwara State are for commercial purpose (Yusuf *et al.* 2016).

Table 3: Capacity of the farms of respondents

Farm capacity (Number of birds)	Percentage
1-4000	24.5
4001-8000	11.5
8001-12000	11.5
12001-16000	8.9
16001-20000	0.0
20001- and above	43.5
Total	**100.0**
n	**156**

Source: Field survey

Number of birds raised by respondents
From Table 4, the majority (48.1%) of the respondents raised about 2000 birds each. This was owing to the small capacity of the majority of the farms in Kwara State. This category was followed by those who raised between 2001 to 4000 birds each (31.9%). This category can however be said to be medium capacity farms, while some workers, in the ascending order of the frequency, raised more than 8000 birds each. This specifically refers to workers in big farms where more than 200, 000 birds were raised. Big farms are known for their extreme carefulness in raising the birds to avoid mortalities. The average number of birds raised by each worker was 5401, indicating that the majority of the farms sampled operate at a medium level. This makes a case for possible expansion to large-scale production if workers are given the necessary training required of an effective management practices.

Table 4: Number of birds raised by respondents

Number of birds	Percentage
1-2000	48.1
2001-4000	32.1
4001-6000	4.5
6001-8000	1.3
8001 and above	14.1
Total	**100**
n	**156**

Source: Field survey

Competencies of poultry workers on poultry management

The Mean Weighted Discrepancy Scores (MWDS) for each management practice across all respondents are shown in Table 5. However, the rule is that the greater the Mean Weighted Discrepancy Score, the lower the competence, and vice versa. Debeaking has the highest score and is ranked first in the table. This was because the majority of the workers were not trained in debeaking, as the standard practice was to hire an outside debeaker when the birds require debeaking as revealed during the field survey. This is followed by disease prevention. Inability to prevent diseases is a common cause of poultry collapse. That is why Adeyonu *et al.* (2016) claimed that a single outbreak of disease can wipe out an entire farm, as seen in the case of the Avian Influenza virus in Nigeria in 2006. Disease outbreaks have wiped out and destroyed many poultry farms as a result of the carelessness of poultry workers. Keeping flock records, identifying ectoparasites, and identifying disease signs were ranked third, fourth, and fifth, respectively. Ineffectiveness will undoubtedly result from the poultry workers' inability to keep accurate records. Lack of competence in record keeping on poultry farms may be the result of poultry owners employing less educated, lower-wage workers in order to reduce production costs. However, Minna-Eyovwunu *et al.* (2019) discovered that time constraints are a barrier

Table 5: Rating the Competencies of respondents based on Borich's Model (n=156)

Competencies areas for poultry management skills	Mean Weighted Discrepancy score [∑I (I-C)/n]	Rating of Mean Weight Discrepancy score
Debeaking the birds	0.00981	1
Prevention of diseases	0.00967	2
Record keeping of flocks, sex	0.00910	3
Identifying ecto-parasite in birds	0.00839	4
Identifying signs of diseases	0.00788	5
Care of day-old chick	0.00737	6
Density control	0.00730	7
Treatment of diseases	0.00673	8
Preparing the pen before stocking	0.00506	9
Care of chicks against diseases pest	0.00467	10
Deworming the birds	0.00404	11
Feeding birds of different age	0.00404	11
Regulating temperature, air, heat and humidity	0.00385	13
Administering drug to sick birds	0.00365	14
Watering system management	0.00301	15
Litter management	0.00288	16
Managing feeding system	0.00205	17
Control of sanitary conditions	0.00173	18
Culling of the birds	0.00160	19
Ability to formulate feed	-0.00128	20
Waste management	-0.00179	21
Sharing encountered problem	-0.00224	22
Completing activities in the best time	-3.2051	23

Source: Field survey

to successful record keeping because poultry workers are constantly on the go on the farm. Success in any farm enterprise is heavily reliant on record keeping, and literature has shown that it is impossible to succeed without it (James *et al.* 1991). Identifying ectoparasites and identifying disease symptoms were also areas where poultry workers needed to improve their skills. According to Hafez and Attia (2020), the control or elimination of zoonotic and food-borne pathogens has been critical to the enhancement of progress of the poultry industry. Because a disease outbreak can wipe out an entire flock; making disease prevention knowledge more important. Furthermore, the stocking density in a poultry management system makes identifying signs of disease a critical practice, and its inability implies a serious threat. In descending order, the ability to formulate feed, waste management, sharing encountered problems, and completing activities at the best time all had negative signs.

This implies that respondents' competence in those practices is greater than the importance of those practices to them, implying an anomaly. The respondents need to be informed of these practices so that they will not be taken for granted. Respondents demonstrated a high level of competence in management practices such as bird culling, sanitary control, managing feeding systems, litter management, and watering system management, ranking 19th, 18th, 17th, 16th, and 15th, respectively

Determinants of competency needs of poultry workers

Table 6 revealed that the poultry workers' level of education (p=0.002), poultry work experience (p=0.000), and farm capacity (p=0.044) have a significant relationship with the poultry workers' management competencies, indicating that they are good predictors of their competencies in poultry work. The value of education in improving a farmer's competence cannot be overstated. Baliyan (2017) discovered this on broiler producing farmers in Botswana. This is because education benefits farming households by improving their skills and ways of doing things (Ninh, 2021). Workers' experience also has a significant relationship with poultry workers' competencies. This means that the longer the workers work on the poultry farm, the more skilled they become, as also confirmed by Oduwaiye *et al.* (2017). Furthermore, the capacity of the poultry farms influenced the workers' competencies. This is because large farms are extremely concerned about their birds because carelessness can result in irreversible loss. This, however, will result in more competency training for their employees, which may leave them on the pillar of expertise. The R^2 value of 26.1 percent indicates that the included variables did not account for 73.9 percent of the variations in the competency needs of poultry workers, which could be due to exogenous factors such as those included in their constraints faced by the poultry workers.

Table 6: Determinants of competency needs of poultry workers

Explanatory variables	Standardized Coefficient	Standard error	t-value	P-value
Constant	2.968	0.177	16.760	0.000*
Age	-0.162	0.005	-1.450	0.149
Gender	0.135	0.049	1.575	0.117
Marital status	0.021	0.059	0.189	0.850
Level of education	0.244	0.040	3.086	0.002*
Household size	-0.225	0.014	-1.880	0.062
Experience	0.400	0.009	3.991	0.000*
Capacity of farm	0.155	0.000	2.028	0.044**
Number of birds raised	0.003	0.000	0.028	0.978
Monthly Income	-0.012	0.000	-0.134	0.893

Note: * Significant at 1% and **significant at 5%

Conclusion

From the findings of this study, poultry workers in Kwara State possessed a variety of poultry management skills. The following were the most important management skills among poultry workers in Kwara State: managing the feeding system; preparing the pen before stocking; caring for day-old chicks; watering system management practices; and disease prevention. Poultry workers were mostly competent in feeding system management, watering system management, sanitary condition control, preparing the pen before stocking, and caring for day-old chicks. They however, require training in bird debeaking, disease prevention, flock record keeping, identifying ectoparasites, identifying disease signs, and caring for day-old chicks.

Acknowledgements

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