

## The influence of selected socio-economic variables on poultry farmers' choice of commercial and self-compounded feeds in Lagos area of Nigeria

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### Abstract

*The study aimed at examining the influence of some socio-economic variables on poultry farmers choice of feed types between self-compounded feeds and commercial feeds. Their choice was not affected by age, gender and experience in poultry business but was affected ( $P < 0.05$ ) by cost. The cost of commercial feeds was consistently higher than those compounded by the farmers themselves and difference was statistically significant ( $P < 0.05$ ). It was then concluded that cost consideration was the major factor determining the choice of feed types by the farmers. It was also suggested that the survival of the poultry industry and its profitability depend on cost reduction which can be accomplished through self-compounding of feeds by the farmers. Suggestions were offered to this end.*

**Keywords:** *Commercial feed, self compounded feed, feed cost, socio-economic factor, poultry farmer*

### Introduction

In the poultry industry, feed often constitutes the single most important determinant of the success of operations as the cost of feeds accounts for over 70% of the total cost of production (Ogunfowora, 1984; Oluyemi, 1984). The quality and quantity of feed provided to the birds impinge greatly on cost of operations, weight gain, number and size of eggs laid and overall profitability. Many researchers have attributed the downward trend in poultry production in Nigeria to increasing cost of feeds (among others). For example, while the price of a 25kg bag of feed rose by

about 1900% in the 10 year period between 1987 and 1997 (representing an average of 193.6% per annum) that of egg, a principal product of the poultry industry, increased by about 1000% for the same period, representing an average of 104 per cent per annum. This discrepancy in the rate of increase in prices of feeds and eggs have resulted in dwindling profits to the producers, and have also caused many farmers to fold up (Aromolaran, 1999; 1998).

According to some authors (Joseph *et al.*, 1999, Salami 2000), there has been a steady increase in the number of poultry farmers showing

preference for self-compounded feeds at the expense of commercial feeds. This has been attributed to such factors as high cost and poor quality of commercially compounded feeds, spurious weight of bagged feeds (Ogunfowora, 1984). Joseph *et al.*, 1999, Salami; 2000) all of which lead to significant increase in production cost.

Yet poultry farmers like most other agricultural producers, operate in a purely competitive market and are therefore price-takers (i.e. price of their products are more or less similar across the market, provided there is no product differentiation or market segmentation). Thus, the revenue functions for similar farms remain fairly equal. As such, efforts at increased profitability must necessarily arise from controlled production cost. Thus, high cost and poor quality of commercial feeds will lead to reduced profitability (and survivability) in the poultry industry unless alternatives emerge. Such alternatives of course, include the perceived gradual shift in preference towards self-compounded feeds (Salami, 2000; Salami and Adebayo 2000).

A survey of local literature in Nigeria (such as Nigerian Journal of Animal Production, Tropical Animal Science, Applied Tropical Agriculture etc) indicate that studies aimed at understanding the preference of the poultry farmers between commercial and self-compounded feeds and factors responsible for this had focussed more on issues of cost and quality (Ogunwolere and Onwuka, 1997; Joseph, *et al.*, 1999, Salami, 2000). Little or no investigation seems to have been done on the influence of farmers' characteristics and socio-economic variables like age, gender and years of experience of the poultry farmers on their preference for commercial feeds or self-compounded feeds.

It is a generally known fact that people's socio-economic characteristics often influence their taste, attitude and behaviour. The physically demanding nature of self-compounding of feeds, improved technical and managerial expertise expected from training in and long term practice of feed formulation and poultry rearing, suggest there may be a probable relationship between these variables and poultry farmers' (especially small scale farmers) preference for self-compounded feeds or commercial ones.

It is against this background that this paper was designed to investigate the influence, if any, of age, gender and experience (i.e. number of years in the business) on the poultry farmers' choice of feed types. Attempt was also made to determine empirically, the significance of cost as a variable in the choice of feed types between self-compounded and commercially prepared feeds.

## Methodology

### *Population and sampling*

This study was carried out among randomly selected poultry farmers in five randomly selected local governments in the Lagos Area of South Western Nigeria. The sample size was sixty distributed as follows: Epe L.G.A - 15, Sango L.G.A.-17, Agege L.G.A-15, Badagry L.G.A.-11 and Ijaiye L.G.A.-2. The respondents consisted of 33 males (55%) and 27 females (45%). Twenty-one of them were over 35 years old (35%) while 39 were less than 35 years old. Mean age of the farmers was 34 years. The respondents were largely well educated with 80 per cent having post secondary school education. They were also mainly small-scale producers (average number of birds on the farms was 20.423 for all farms and it was 6,819 without the largest four farms). The major poultry species raised were the chicken (67 per cent) while others (Turkey, Duck) were also raised on some of the farms

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(23 per cent). 45 per cent of the respondents had above 15 years experience in the business while 41.7 per cent between five and fifteen years experience.

### *Research instrument*

The data required were obtained by means of a questionnaire. The questionnaire was partly made up of open-ended questions and partly of questions structured in a "Yes" or "No" mode. Information was collected on demographic variables like age, gender, years of experience etc and on quality, price/cost and types of birds and feeds they deal in. To determine the cost of the commercial feeds, the respondents were asked to supply the various types of poultry, feeds (i.e. Chick, starter, Growers mash, Broiler starter, Broiler finisher and layers mash) purchased for use on their farms for the month of April, 1999 from four reputable feed millers in Nigeria. An average feed cost was then calculated for each category of poultry feed.

For self-compounded feeds, the farmers were asked to supply the cost of ingredients for feeds formulated for use on their farms in the month of January, 1999 and the quantity of such feeds consumed. They were specifically asked to place a value on any ingredient not purchased including a charge for mixing and bagging based on the prevailing rate in the area. The cost of a 25kg unit was then determined for each farm based on the information supplied. All values were therefore as extracted from the records provided by the farmers and all derivations were based on the average weekly consumption rate supplied by the farmers.

### *Research hypothesis*

The data obtained were analyzed on the basis of the following null hypotheses:

- (i) Poultry farmers' choice of feed types (commercial versus self-compounded)

is independent of the age of the farmers.

- (ii) Poultry farmers' choice of feed types (as in (1) above) is independent of the gender of the farmers.
- (iii) Poultry farmers' choice of feed types (as in (1) above) is independent of the farmers' experience in the poultry business.
- (iv) There is no significant difference in the average cost of self-compounded feeds and commercially prepared feeds.

### *Data analysis*

Hypotheses 1, 2 and 3 were analyzed using the chi-square. For the purpose of the analysis, all farmers less than 35 years old were categorized as being young while those that were 35 years and above were regarded as old. This gave a four-fold contingency table. Likewise, a four-fold contingency table was derived for gender (i.e. self-compounded/commercial versus male/female).

All farmers with over 15 years experience in the business were regarded as being highly experienced, those with between 5 and 15 years moderately experienced and those with less than five years experience as being relatively inexperienced. Thus, a 2x3 contingency table was derived on the basis of this categorization. All categorizations were based on a cursory survey of the data obtained and were quite arbitrary.

All the three contingency tables were as adjusted for discontinuity through Yates correction factor for continuity because of cells with relatively few cases (less than ten in the case of 2x2 table and less than five for the 2x3 table). Hypothesis four was analyzed through the t-test difference of two means.

**Table 1** Contingency Table for poultry farmers' age and choice of feed

FEED TYPE	A	GE	TOTAL
	OLD	YOUNG	
Self-Compounded	11	30	41
Commercial	10	09	19
Total	21	39	60

Degree of Freedom =  $(2-1)(2-1) = 1$   
 Calculated  $X^2$  = 2.75  
 Critical  $X^2$  (0.05,1) = 3.84.  
 Decision: Fail to reject null hypothesis  
 Conclusion: Poultry farmers' choice of feed type (commercial feed or self-compounded feed) is independent of their age.

**Table 2** Contingency Table for poultry farmers' gender and choice of feed

FEED TYPE	GEN	DER	TOTAL
	MALE	FEMALE	
Self-Compounded	23	18	41
Commercial	10	09	19
Total	33	27	60

Degree of Freedom =  $(2-1)(2-1) = 1$   
 Calculated  $x^2$  = 0.001  
 Critical  $x^2$  (0.05,1) = 3.84  
 Decision: Fail to reject null hypothesis  
 Conclusion: Poultry farmers' choice of feed type (commercial feed or self-compounded feed) is independent of their gender.

**Table 3** Contingency table of poultry farmers' years of experience and choice of feed

FEED TYPE	EXPERIENCE			TOTAL
	HIGHLY EXPERIENCED	MODERATELY EXPERIENCED	RELATIVELY INEXPERIENCE D	
SELF-COMPOUNDED	21 (18.45)	16 (17.08)	4 (5.47)	41
COMMERCIAL	6 (8.55)	9 (7.92)	4 (2.53)	19
TOTAL	27	25	08	60

Note: Figures in brackets represent the expected values.  
 Degree of Freedom =  $(2-1)(3-1) = 2$   
 Calculated  $x^2$  =  $1 \times 2$   
 Critical  $x^2$  = 5.99  
 Decision: Fail to reject null hypothesis  
 Conclusion: Poultry farmers choice of feed type is independent of years experience.

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### Result and recommendations

Hypotheses I, II and III were all accepted at 5% significant level (see Tables 1, 2 and 3 respectively). This implies that the demographic variables of age, gender and years of experience did not influence the decision to use self-compounded feeds or commercially prepared feeds.

The finding concerning age may be an indication that the poultry farmers did not find the task of self-compounding arduous, or it may be that there are some other factors that have more compelling influence on the decision on choice of feed thereby rendering age irrelevant. The finding that gender had no influence on choice of feed types also corroborates the finding concerning age. If self-compounding of feed were to be arduous, female farmers will generally be expected to be less predisposed to it than their male counterparts. Alternatively, it could be that the poultry farmers have found some other way of avoiding the more difficult aspects of feed formulation. This calls for further investigation.

The third finding indicates that poultry farmers' choice of feed is independent of their years of experience in the business. This is rather surprising considering the fact that generally, as people become more experienced in a vocation, they develop greater expertise in the intricacies of such a business.

Hypothesis IV was rejected at 5% significant level (Table 4), indicating that there was significant difference between the cost of self-compounded poultry feeds and commercially prepared feeds.

On the basis of Hypothesis I, II and IV, it was evident that farmers' choice of feed types was independent of the demographic variables of age, gender and years of experience while cost (an economic variable) was the primary force influencing the poultry farmers' decision on whether to use commercial feed or prepare their feeds themselves. This may not be very surprising considering the fact that feed cost alone often accounts for over 70% of total cost in poultry production (Ogunfowora, 1984, Oluyemi, 1984) and hence is the single most significant determinant of the economic success of the enterprise. A reduced production cost in a purely competitive and therefore price-taking industry provides a competitive edge to concerned farmers in form of above-industry average profit.

Table 5 shows the breakdown of the mean cost of self-compounded and commercial feeds across the various groups of feeds used in the poultry industry. Self-compounded feeds were consistently cheaper than the commercially compounded ones. This confirms that significant cost reduction occurs in poultry production if farmers self-compounded their own feeds.

**Table 4** *T-Table on the test of significant difference between the cost of self-compounded feeds and commercial feeds*

FEED TYPE	X	N	S.E	d.f	t.cal	Crit.t	Decision
Self-compounded	479.33	41	1.94	58	5.42	1.67	Reject
Commercial	571.34	19					No

#### Key

X	=	Mean	N	=	Sample Size
S.E.	=	Standard Error	d.f.	=	degree of freedom ( $N_1 + N_2 - 2$ )
t.cal	=	Calculated Value of t	Crit. T	=	Critical or Table t-value
Ho	=	Null hypothesis			

In this study, no attempt was made to determine the constituent of each compounded feed type as the focus is to arrive on an industry average. Just like percentage composition of commercially prepared feeds differ according to manufacturers, it is expected that some variations will also exist in the proportion of each constituent present in the self-compounded feeds. However, it is expected that variations arising from differences in components will be eliminated during averaging to reflect the true average cost of feed in the industry. This factor may however have accounted for the wide margin of error reflected in the average cost values of the feeds (Table 5).

The findings of this study are similar to the previous ones, indicating that cost is a major factor in the poultry business. (Ogunfowora 1984, Oluyemi, 1984, Aromolaran, 1999, Joseph *et al.*, 1999). This work also confirms the earlier observation of Salami and Adebayo (2000) that (among other factors, like quality

and ease of availability), cost has a major influence on the attitude of the poultry farmers to different feed sources.

Although, the earlier and present works lead to similar inference, the focus and the procedure of analysis differ considerably. While the first study measures attitude of poultry farmers regarding choice of feed and the influence of some specific factors (quality, quality control, ease of availability and cost) on this attitude, the other (present study) assesses the influence of a different category of variables namely farmers' characteristics (age, gender years of experience) as well as feed cost on their decision of which feed type to use. While the first adopted the use of the mean and standard deviation in analyzing farmers' responses to rated questions (i.e. nominal data), the other adopted the use of the chi-square and t-test in analyzing both nominal and interval data respectively.

**Table 5** Comparative statistics of cost of self-compounded and commercial feeds for different classes of poultry feeds <sup>a</sup>(N/25kg bag of feed)

Class of Feed	Self-Compounded (N <sub>1</sub> = 41)	Commercial <sup>c</sup> (N <sub>2</sub> = 19)
Chick Starter	475.75 ± 68.07	610.53 ± 22.48
Growers Mash	431.93 ± 97.32	499.41 ± 48.63
Broiler Starter	520.24 ± 99.36	550.77 ± 91.85
Broiler Finisher	495.08 ± 102.96	533.67 ± 71.35
Layers Mash	501.95 ± 99.25	589.62 ± 21.55
All classes of feeds	479.53 ± 64.60	571.34 ± 47.02

Source: Field Survey, 1999

<sup>a</sup> Mean ± Standard Error Margin

<sup>b</sup> Cost of self - compounding feed did not include depreciation charges for fixed items used in compounding feeds.

<sup>c</sup> Cost for Commercial feeds did not take cognizance of transportation charges in bringing the feeds to the farmers.

N<sub>1</sub> No of respondents using self-compounding feed.

N<sub>2</sub> No of respondents using commercial feed.

### Conclusions and recommendations

Based on the findings of this study, it is pertinent to reiterate that the demographic variables of age, gender and years of experience had no influence on poultry farmers' decisions on which type of feed to use (i.e. self-compounded or commercial). It was also concluded that cost consideration was the major factor responsible for the reported trend in poultry farmers' preference for self-compounded feeds.

It is therefore suggested that:

- (1) The local grain industry should be encouraged by government with the aim of ensuring massive grain production at highly reduced cost since it makes up more than 50% of the compounded poultry feeds. Alternatively, cheap but equally effective alternatives to grains should be used in poultry feed formulations to reduce feed cost.
- (2) Local commercial feed producers should devise means of controlling the price and quality of their products to make it more competitive.
- (3) Commercial feed millers should set up a "Feed Guarantee Scheme" to compensate clients with proven cases against the quality and/or capable of bringing back poultry farmers for continued patronage of commercial feeds.

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