



Some Management and Economic Aspects of Broiler Production in Khartoum State

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Abstract: During the last decade broiler industry experienced rapid growth in Sudan particularly in Khartoum State. The objective of this paper was to study some economic and management aspects beside the problems encountered in broiler production in the state. A sample of 30 production units and 50 dealers in broiler marketing were investigated using structured questionnaires. Descriptive statistics namely percentage together with partial budgeting technique were used in the analysis. The study revealed that most broiler production in Khartoum metropolis was produced by the large companies and that of Khartoum North was produced by the small and medium sized units. Most of broiler units (90%) operate under the open production units. The remaining units were of closed system environment, these produce 95.4% of the total broiler production. Most of the open production units were rented (67%). About 85% of the open production units depend on purchased feed and one day old chicks and 47% of them have no technical supervision. This was opposite for the closed production units as they own the farms, produce one old chicks and adopt technical supervision. The major cost components are cost of feed, one day old chicks and depreciation on fixed items estimated at 56.7%, 28.3% and 9% respectively. The main obstacle for effective production were the high cost of feed and chicks, instable electric current and electricity cost beside farm rent.

Keywords: poultry, closed system, costs.

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Introduction

The world poultry production has been steadily rising at the rate of 4% annually (Daghir, 2008). About 45% of the world population is potential consumers of poultry meat. There is a high income elasticity of demand for poultry meat in the developing countries. The productivity of poultry has almost tripled in the last 100 years through genetic selection, improved nutrition, and implementation of modern technology, improved housing environment, better disease control, excellent management, processing and improved storage. Chicken meat production has been increasing globally, highest being Asia and South

America, range being 5-7% since 1990 (Daghir, 2008).

In Sudan investment in poultry industry was estimated at 200 million dollars in the year 2006 – 2007 by the Animal Production Directorate of the Ministry of Animal Resources and Fisheries (Oashek, 2009). The rise in poultry production and consumption in Sudan generally and in Khartoum State particularly may be attributed to many precipitating reasons including, increased preference to white meat, rise in living standards and the change in food habits. Broiler meat production was estimated at about 25000 tones (Agricultural census, 2009).

Broiler farming in Sudan has emerged as the fastest growing segment of animal husbandry.

However, the profitability of a broiler industry largely depends on the selection of superior commercial strains of broilers, quality economics of feeding, adoption of sound managerial practices and efficient marketing system.

Khartoum State ranks first in broiler production in Sudan; it produces about 90% of the total broiler production country wise (Wagge Allah, 2011). In 2008 the total number of chickens was estimated at 9.5 million (Agricultural Census, 2009). The egg producing farms were found to be 525 farms while the broiler farms were found to be 164. The latter were distributed in the three districts of the State (Khartoum, Khartoum North and Omdurman, 39%, 37% and 24% respectively (Agricultural Census, 2009).

Objectives This study was conducted to investigate some economic aspects of broiler production in Khartoum State together with the problems facing broiler industry on the hypothesis that some obstacles hinder effective broiler production in Khartoum State.

Materials and Methods

A stratified random sample of 30 farms was investigated, out of which 3 farms were of closed environment system, number being limited, and 27 of open housing system. The required data was collected using a structured questionnaire. Data on Production costs, management, risk factors associated with production as well as the general information were gathered. Descriptive analyses beside partial budgeting approaches were used to analyze the data.

Results and Discussion

Management of broiler farms in Khartoum State

According to the Agriculture Census (2008), two production systems dominated in Khartoum; these were the closed and open

systems. The number of closed system farms accounted for 19 (11.6%) of the total number of broiler farms, while the open system accounted for 145 farms (88.4%). They differed largely in capital investment costs, operating costs, managerial practices as well as the efficiency of the marketing system. The closed system of production is adopted mainly by the intensive broiler production units of large and medium size. These units represented 10 % of the farms as shown in Table (1) and produced 95.4% of the total broiler production. Although the open system accounted for about 90% of the broiler units in the State, it participated by less than 5% of the production. The study showed that most of the intensive closed-environment system broiler companies, of more than 3000 feddans, were in Khartoum metropolis and cover about 90% of the broiler production in Khartoum State. Khartoum North comes next in production but solely in small and medium- sized open system farm units, sizes ranging between 1 – 10 feddans. The farm ownership reflected high farm rent percentage among open-system which affects business returns negatively. These findings agree with Wagge Allah (2011) who found that 67.4% of the farms were in this range, compared to 100% farm ownership among closed-system farms.

Technical supervision as shown by this study (33%), for open farms, was far less than that recorded by Wagge Allah (2011) who found that 97.7% of the sample studied was under veterinary supervision. The discrepancy may be due to the concept of technical supervision used by the two studies in including indirect supervision.

The study also noted that the mortality rate was >5% in majority of open farms, this agrees with Hassan (2005) who found mortality rate ranging 2.5 – 7.5 in open farms. This may be attributed to the fact that open farms had no control over environment factors, such as high temperature, and were exposed for diseases

Table 1: Management of broiler farms in Khartoum State

Item	Unit	Open system	Closed system
Production system	-----	90	10
	Rented	80	-----
Farm ownership	Owned	20	100
	Total	100	100
Technical supervision	Technicians	33	0
	Veterinarians	20	100
	None	47	0
	Total	100	100
Mortality rate	> 5%	59	-----
Average feed conversion ratio	2 : 1	11	100
Source of vaccines and medications	Public sector	60	33
	Private sector	40	67
	Total	100	100
Presence of parent stock	Non	100	33
	Present	-----	67
	Total	100	100
Incubator and hatching availability	Not available	89	----
	Available	11	100
	Total	100	100
Source of day old chicks	Farm production	7	34
	Importation	-----	33
	Local companies	93	33
	Total	100	100
concentrate source	Local companies	100	33
	Importation	-----	67
	Total	100	100

Source : study survey

For closed farms mortality rate was within 5% which is acceptable as the Directive Brochures for Most of the Broiler Hybrids Raised in Sudan – Ross, Hybro, Lohman and Arbor Acre - put mortality at 2 – 5 %. The production period was 40-45 days for open and closed farms.

The study showed that only 11% of open farms obtain 2:1 feed conversion ratio. That means feed requirement was higher in open than closed farms to obtain one kg body weight. In other words, feed efficiency is lower in open farms as compared to closed farms, as lower the feed conversion ratio, the higher is the feed efficiency.

Only 33% of the closed farms had parent stock and non for the open farms. 11% of the open farms own hatcheries whereas all closed farms owned hatcheries for the production of commercial stock, the latter depends largely on imported fertilized eggs. The other broiler producers obtained their needs of one day old chicks from high quality specialized companies locally and abroad. Presence of parent stock and hatcheries helps stabilization of production. Regarding the concentrate feed, most open farm owners buy from the large companies. These can avail the required foreign hard currency, which might not be available for small farm units.

The Operating Costs of Raising 1000 Broiler Chicks

Table (2) shows that the highest cost was feed at average of 56.7% which agrees with Wagge Allah (2011) and Abdel Gadir *et al.*, (2001) and El Amin *et al.*, (2008), who estimated the feed cost at 56.0% for Sudan . Kalla *et al.*, (2013) recorded 58.13% in Nigeria. The relatively low cost of feed in Sudan may be attributed to the fact that 95% of the feed ingredients are produced locally. Feed cost is less for closed system, due to the economies of scale on large farms. Large farms are able to purchase the inputs in bulk and at lower prices for further mixing of various feed ingredients at their own farms. This is true for day old chicks where cost was lower in closed system of production. As the study revealed that the average chick cost represents 28.3% of the operating cost, this percentage is higher than the 19.13% that reported by Kalla *et al.*, (2013) in Nigeria. However, ElAmin *et al.*, (2008)

estimates were 31% for Sudan. This is because production of chicks in Sudan depends mainly on the imported fertile eggs. According to this study, feed cost and chick cost constitute 85% of the total broiler operating costs which indicates that reduction of both and specially the feed can reduce the broiler cost considerably.

Utilities, especially electricity cost is higher for closed farms beside depreciation of pens and equipments, supervision and packing materials. On reviewing the cost per bird, it can be seen that it was lower for closed farms as they have economies of large scale and have better control over the environment factors in addition to owing of incubators and other modern facilities.

Another factor which affects broiler production negatively and adds indirectly to the production cost was that 30% of the study sample of the open system units depends on purchased feed.

Table 2: The Operating Cost of Raising 1000 Broiler Chicks

Cost item	open SD	system SD	Closed system SD	Open system%	Closed system%	Average%
Day old chicks	2194.5		1798	28.5	28.1	28.3
Feed	4381		3616	56.9	56.5	56.7
Utilities cost	46		134	0.6	2.1	1.35
Labour	131		122	1.7	1.9	1.8
Supervision	61.5		64	0.8	1	0.9
Medicines and vaccines	77		45	1	0.7	0.85
Carcass preparation	85		83	1.1	1.3	1.2
Packing materials	31		26	0.4	0.4	0.4
Pens and equipment depreciation	693		512	9	8	8.5
Total	7700		6400	100	100	100

Source: study survey

Most (72%) of the investigated dealers in broiler market stated that the high market prices posed a problem as they directly affect the demand in the short run and even the production process in the long run.

The study showed that 40% of the dealers in broiler marketing secure supplies from the large companies and the remaining 60% secure their supplies from large companies as well as the small sized units.

Production problems

As shown in Table (3), the most important

problems facing broiler producers in Khartoum State were the high costs of production inputs, high electricity cost and instability of electric current for both systems, beside high farm rent for open farms. While the study conducted by Taru *et al.*, (2010) revealed that the major problems facing broiler producers in Meme Division of Cameroon were low market prices, high cost of feed, veterinary services, and transportation.

Table 3: Production problems

Production problem	Open system	Closed system
High production input prices	90	100
High electricity cost & instability of electric current	57	66
High farm rent	67	-----

Source: study survey

Concussion

The study concluded that most large companies and the broiler intensive production units are located in Khartoum metropolis and the bulk of traditional small and medium sized units are mainly in Khartoum North. Closed system of production is better in management aspects; they own their farms, have technical supervision, mortality rate and feed conversion ratio were acceptable. They also have hatcheries and was able to import some inputs. Due to this, and due to the economies of scale, cost of production was lower for closed farms. According to this study, feed cost and chick cost constitute 85% of the total broiler operating costs which indicates that the main factors that affected cost and sale prices of broilers include high feed and one day old chicks costs, electricity cost, farm rent reduction of both and specially feed cost can reduce the broiler cost considerably.

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بعض الجوانب الادارية والاقتصادية لإنتاج الدجاج اللّاحم فى ولاية الخرطوم

فاطمة عثمان مرحوم الغوث ، اسامة الشيخ يس ، تماضر الخنساء النور عنقرة و عصام محمد عبد الوهاب

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المستخلص :

شهد انتاج فراخ اللحم نمواً سريعاً فى العقد الاخير بولاية الخرطوم . هدفت هذه الورقة الى دراسة بعض النواحي الاقتصادية والإدارية لإنتاج فروج اللحم فى ولاية الخرطوم بالتركيز على العقبات التى تعوق الانتاج الفاعل . وتم اتباع المنهج الوصفى والاستقرائى عبر استبيان لعينات عشوائية طبقية تمثلت فى 30 وحدة انتاجية بالقطيعين المغلق والمفتوح . تم تحليل النتائج بالنسبة المئوية البسيطة بالاضافة الى الميزانية الجزئية . توصلت الدراسة الى ان معظم انتاج فروج اللحم فى حاضرة الخرطوم فى الشركات الكبرى ومعظم الانتاج فى منطقة الخرطوم بحرى فى الوحدات الصغيرة والمتوسطة. تعمل معظم وحدات انتاج فروج اللحم (90%) بنظام الوحدات المفتوحة، بينما تعمل بقية الوحدات تحت ظروف نظام الانتاج المغلق وهذه تنتج (95.4%) من جملة انتاج فروج اللحم . تقوم معظم الوحدات المفتوحة بايجار المزرعة (67%) وتعتمد على شراء الاعلاف والكتاكيت عمر يوم واحد. بينما (47%) من وحدات الانتاج هذه لا تملك اشرافا فنيا. تمثلت اهم تكاليف الانتاج فى تكلفة الاعلاف والكتاكيت عمر يوم واحد والإهلاك للمعدات الثابتة حيث متوسط النسبة 56.7% و 28.3% و 9% على التوالي. كانت اهم العقبات للإنتاج الفاعل هى ارتفاع تكلفة العلف والكتاكيت وعدم استقرار الامداد الكهربائى و ارتفاع تكلفتة بالاضافة الى ارتفاع تكلفة ايجار المزارع.

