The Ostrich Industry in Ghana: Prospects and Performance

Yaw B. Osei-Asare, Raymond Incoom, and John K. M. Kuwornu

The number of ostrich farms in Ghana has increased lately as a result of the high and faster financial returns these farms are accruing. This study assesses the performance of MacBaron Ostrich Farm by examining the trends in its output, operating performance, profitability, market structure, and future projections of income. Generally, there have been decreasing trends in meat output, value of hide exports, and sales at monthly rates of 0.58 percent, 0.25 percent, and 0.22 percent, respectively. Despite these low and declining trends, the profit level over the years has been increasing at 19.6 percent annually. The structure of the ostrich market mimics an oligopolistic market. Income projections using the three-year moving average revealed that the business will still be profitable over the next five years. The study recommends that MacBaron diversify its output by exploring other markets for ostrich products, such as processing the feathers and eggshells, and by increasing the bird slaughter rate since profit is a function of output. Water and electricity costs should be reduced by the use of energy saving bulbs and the maintenance of all thermostats in electrical systems in the brooder house. High-pressure, low-volume cleaning systems and nozzles on all water sprays should be employed. The study further recommends that proper records be kept to ensure good management and planning of inventory.

It is known all over the world that animal products form a very important part of the diet, particularly supplying proteins, fats, and oils to the human body. Animal products form a very important part of the protein and energy supply in the diet, especially in developed countries, and as economies improve or become more industrialized and have higher per-capita income they tend to depend more on animal products for their dietary protein and energy supply (Food and Agriculture Organization 1996).

Due to the recent awareness of the health effects of consumption of red meat, with its high concentration of fat and cholesterol, preference among most health-conscious people has shifted to meat with low fat and cholesterol content. One of these low-fat meats is ostrich meat. Ostriches produce a red meat, similar in taste and texture to beef. In addition, the protein content is comparable to that of chicken but the fat and cholesterol is significantly lower, providing an additional marketability.

Recently, a number of beef producers in Europe and North America have switched to raising ostriches commercially because of the higher and faster financial returns of ostrich production and the product's high demand in the global market (Global Ostrich 2003). The latest statistics show that current ostrich-meat production is not enough to meet the increasing demand in Europe, America, and Japan. It is expected that the ostrich meat may gradually replace traditional types of meat during the next decade (Shanawany and Dingle 1999). Compared with traditional livestock, ostriches rate very highly in terms of productivity: one female can produce between 30–60 chicks each year for up to 40 years. About 250kg of meat can be obtained from one "calf" but the total yield in meat from the annual offspring of one ostrich is 1,800kg (Shanawany and Dingle 1999). This production ability makes ostrich farming an extremely viable and highly economical proposition for developing countries.

Ostrich production started about ten years ago in Ghana when the leading farm, the Game Development Company, started a brooding program to supply breeding stock to prospective farmers (Game Development Company 1997). Other individuals also joined in the past few years, including MacBaron Farms located in the Greater Accra Region. MacBaron Ostrich Farm is a wholly owned Ghanaian enterprise, registered in 2005 under the Ghana companies' code of 1963. It has at least five years experience in ostrich production, having begun operations in 2001, and it is the largest ostrich farm in Ghana. MacBaron focuses on breeding ostrich, processing the meat and the skin (hide), and the supply of its products to corporate supermarkets, hotels, diplomatic missions, catering-service providers, and mining companies.

Ostrich production is a profitable venture practiced in many parts of the world. However, in Ghana, production started ten years ago, and

Osei-Asare and Kuwornu are lecturers and Incoom is a former undergraduate student, Department of Agricultural Economics and Agribusiness, University of Ghana, Legon.

there appears to be inadequate knowledge about the performance of the ostrich industry in Ghana. A study conducted by Akonor (2003) using the Game Development Company as a case study revealed that ostrich production is very profitable in Ghana. The results showed that the farm had a Net Present Value (NPV) of GH¢470.25 million for a breeding stock of ten females and five males and a benefit-cost ratio (BCR) of 1.74, attesting to the profitability of the farm. However, very little knowledge exists on the market structure of ostrich production and its future profitability in spite of the study by Akonor (2003). Only a few farms engage in ostrich production mostly for its meat, with MacBaron serving as a leader in this emerging industry. To the best of our knowledge, the nature of ostrich farming in Ghana has not been extensively documented. What have been the trends in the output and sales of ostrich meat and the value of ostrich hide in Ghana from 2005 to 2007? What kind of market structure prevails in the ostrich industry in Ghana? What has been the operating performance of participants in the industry, and are there any future prospects for firms in this emerging industry? This paper provides answers to these relevant questions raised using MacBaron as a case study with the aim of providing insights into the prospects of undertaking ostrich farming as a business. MacBaron was selected because it is largest Ostrich farm in Ghana and a major player in the industry, and as such is a preferred choice for study due its large herd size of over 1000 birds, its experience in the industry, and its willingness to provide relevant information for this study.

Review of Methodology

This section reviews the performance measures and other approaches adopted to assess the performance of the ostrich industry. Dzama, Mungate, and Topps (1995), in a survey of ostrich production in Zimbabwe, used number of eggs and fertile eggs laid per bird, and number of eggs laid by the best and worst birds per season to assess the performance of production. Simple correlation analyses were used to measure the strength of relationships among certain management practices—for example, the breeding season length and number of eggs produced. According to Omane-Addo (2004), performance measures play a major role in evaluation, control, and improvement of production processes; facilitate comparison of the performance of different organizations, plants, departments, teams and individuals; and help to assess employees. In studying the trends in output performance and profitability of Ghana Prison Service Farms, Omane-Addo (2004) used trend analysis and return on investment (ROI) to conclude that crop yields and profit levels decreased over time. Akonor (2003) used the net present value (NPV), benefit-cost ratio (BCR), payback period, and the internal rate of return (IRR) in determining the financial profitability of ostrich production in Ghana. Performance measurements can be grouped into two main phases (Ghalagini 1996): traditional methods (Phase One) lay emphasis on financial measures such as profit levels, return on investments, and productivity which are primarily based on management accounting systems. Phase Two measures have shifted from low-cost production to quality, flexibility, short lead time, dependable delivery, and implementation of new technologies and philosophies of production management such as total quality management (TQM), just in time (JIT), and flexible manufacturing system (FMS), among others.

As management always seeks a higher rate of returns on funds to be invested, return on investment (i.e., profit divided by average capital invested) has been used as an internal performance measure during recent years, although this had been accompanied by refinement in both theory and practice (Barker 1986). Ratios such as profit margin (net income to sales), gross-margin ratio (gross margin to sales), operating profit margin (operating income to sales), and net operating income (NOI) are also used in tracking operating performance.

Market conditions such as perfect or pure competition, imperfect or monopolistic competition, oligopoly, and monopoly (e.g., Nellis and Parker 2002; Koutsoyiannis 1979) are based on criteria such as the number of firms in the industry, type of products, control over price, conditions of entry, and non-price competition. The analysis of the market structure for a given commodity involves drawing up the marketing-channel map, and identifying the various participants and their functions and the linkages between them. It also includes computation of marketing margins and equity estimation and the identification of constraints that mitigate efficiency in marketing (Mendoza 1994).

Trend analysis tracks and discusses ongoing upward or downward patterns exhibited in time-series data which are not due to seasonality or random noise. It employs statistical or descriptive methods which involve using parameters that are very reliable over many years, ensuring a precise characterization of changes over time. Although it is often used in predicting future events, trend analysis could be used to estimate uncertain events in the past such as how much output was produced between two periods. Because research data are usually sample data, statistical procedures including sophisticated approaches such as time-series analysis and formal forecasting methods are commonly used. According to Arsham (2005), several approaches, including regression analysis, simple moving averages, and exponential smoothing, are used in the analysis of trends.

Empirical Application: Data, Analysis, and Results

This paper presents a case study of the MacBaron Ostrich Farm located in Tema near Accra, off the Dawhenya-Prampram road in the Greater Accra Region of Ghana. MacBaron Ostrich Farm started operations in August 2001 and engages in ostrich breeding and processing of the meat and the skin (hide). MacBaron also supplies its products to corporate supermarkets, hotels, diplomatic missions, mining companies, and catering services.

Secondary data on output prices (in GH¢), quantity of output (in kilograms), various cost items, and data on the various competitors in the ostrich business were obtained from MacBaron Farms. Gaps or missing data encountered during data processing were predicted using the simple moving-average method of forecasting. These lapses occurred for all the variables (i.e., for meat output, sales figures, and value of hide) from August to December 2005, January to April 2006 and November to December 2007. The output price is the price set by MacBaron in selling its meat on the local market at GH¢0.9 per kg for the body and GH¢2.5 per kg for the thigh. The skin or hide is valued at US$80.00 per hide.

Trend Analysis

Trend in Ostrich Output

Trend analyses is used to assess the trends in ostrich output, sales and value of hide. The results reveal that from January to March 2005 there was an increase in meat output from 875.5kg to 2,108kg, a sharp decline from March to May, and then a steady increase from June to December of that year (Figure 1). Meat output fluctuated haphazardly from January to December 2006 and began to rise again in the following year. Meat output declined steadily after July 2007. Generally, the period from January 2005 to December 2007 experienced an average monthly decline in meat output of 0.58 percent. This declining trend could be attributed to the replacement of missing data points with predicted values. Difference in slaughter weight of the birds could also influence the declining trend in meat output. Although positive growth suggests good performance, it cannot be concluded that MacBaron is under-performing in terms of its output since operating profits, as will be shown shortly, increased yearly for the period under study.

Trend in Meat Sales

The sale of meat from January to March 2005 increased from GH¢1,659.95 to GH¢4,024.4 (Figure 2). Sales then stabilized for a period and later surged up to around GH¢ 6,300 in May 2006, followed by fluctuations for the rest of 2006. Revenue from the sale of meat generally declined by a monthly average of 0.22 percent over the period under study; this could clearly be linked to the decline in meat output over the same period. Moreover, available data suggests a strong correlation between output and sales of ostrich meat by MacBaron.

Trend in the Value of Hide Exported

The trend in the value of ostrich hide exported over the study period mimics that of meat sales, with an average monthly rate of decline of about 0.25 percent (Figure 3). Average annual export value from 2005 to 2007 was US$24,506. The value of hide exports was US$29,855 in 2005, US$29,624 in 2006, and US$28,743 in 2007.

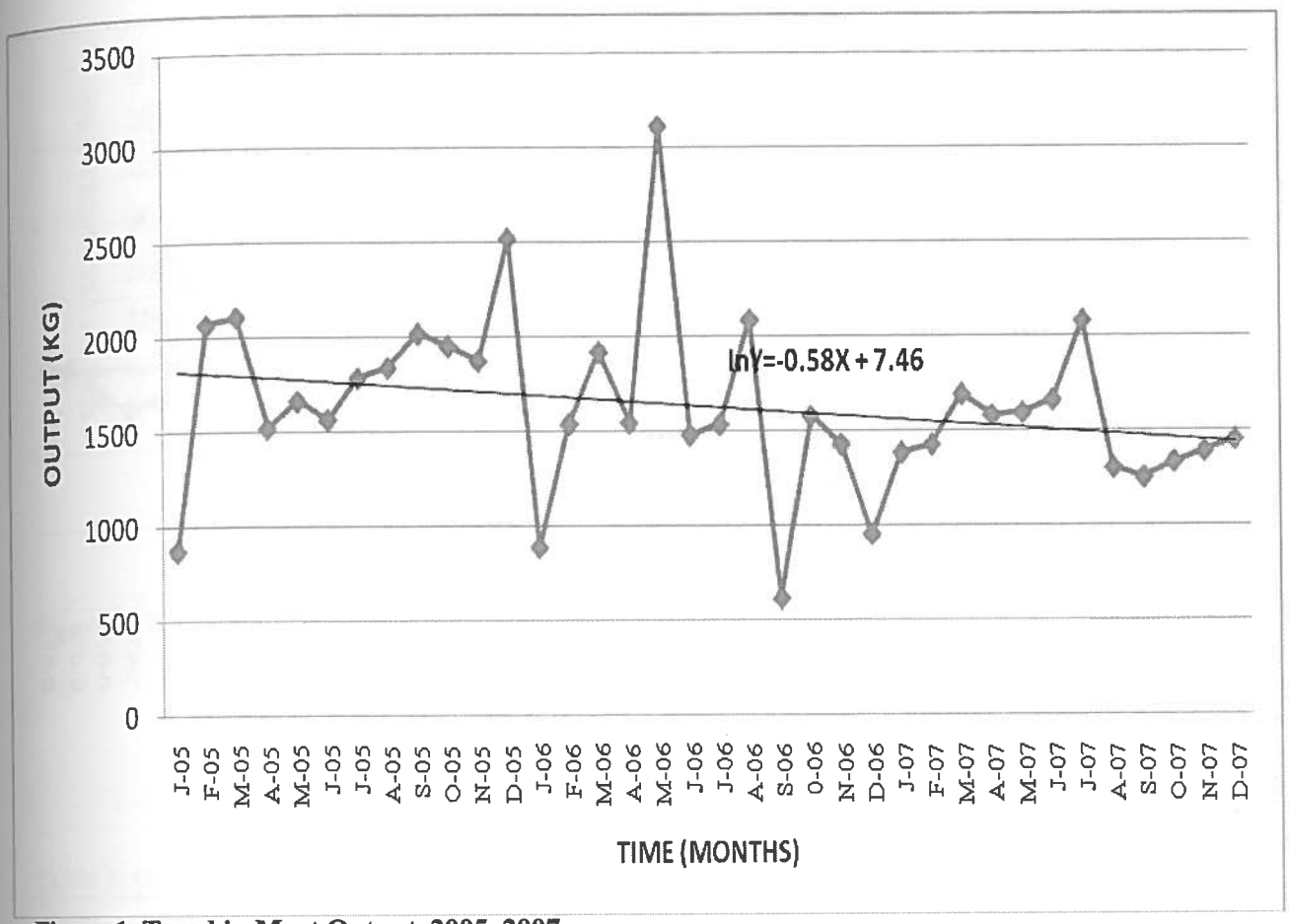

Figure 1. Trend in Meat Output, 2005–2007.

Market Structure of the Ostrich Industry

Based on the number of firms, conditions of entry, type of products, and control over price, the structure of the market for the ostrich industry in Ghana can be considered as being close to oligopoly. There are quite a number of farms (firms) in the ostrich industry: Pacific Farms at Lashibi (Greater Accra Region), Cisneros Farms in Sogakope (Volta Region), Meja Farms at Aveyime (Volta Region), Aqua Farms in Ashaiman (Greater Accra Region), Game Development Company at Sege (Volta Region) and Sarobi Farms in Cape Coast (Central Region). There are other ostrich farms situated in the northern part of Ghana. Before a farm is sited it must comply with laws and regulations of the Ministry of Health and the Ghana Food and Drugs Board. For example, an ostrich farm must be sited at a place that is outside of the locality or on the outskirts of a town to prevent transmission of zoonotic diseases. This regulation creates a form of barrier to entry. Moreover, the initial start-up capital is very high if not prohibitive. Ostrich meat can be differentiated into various distinct products—the body, thigh, fillet, steak, and sausages—and there appears to be some degree of product differentiation in the Ghanaian ostrich market. The few firms operating therefore have some level of control over price in the local market but not over the export price, which is an agreed price between MacBaron (in this case) and its buyers in South Africa.

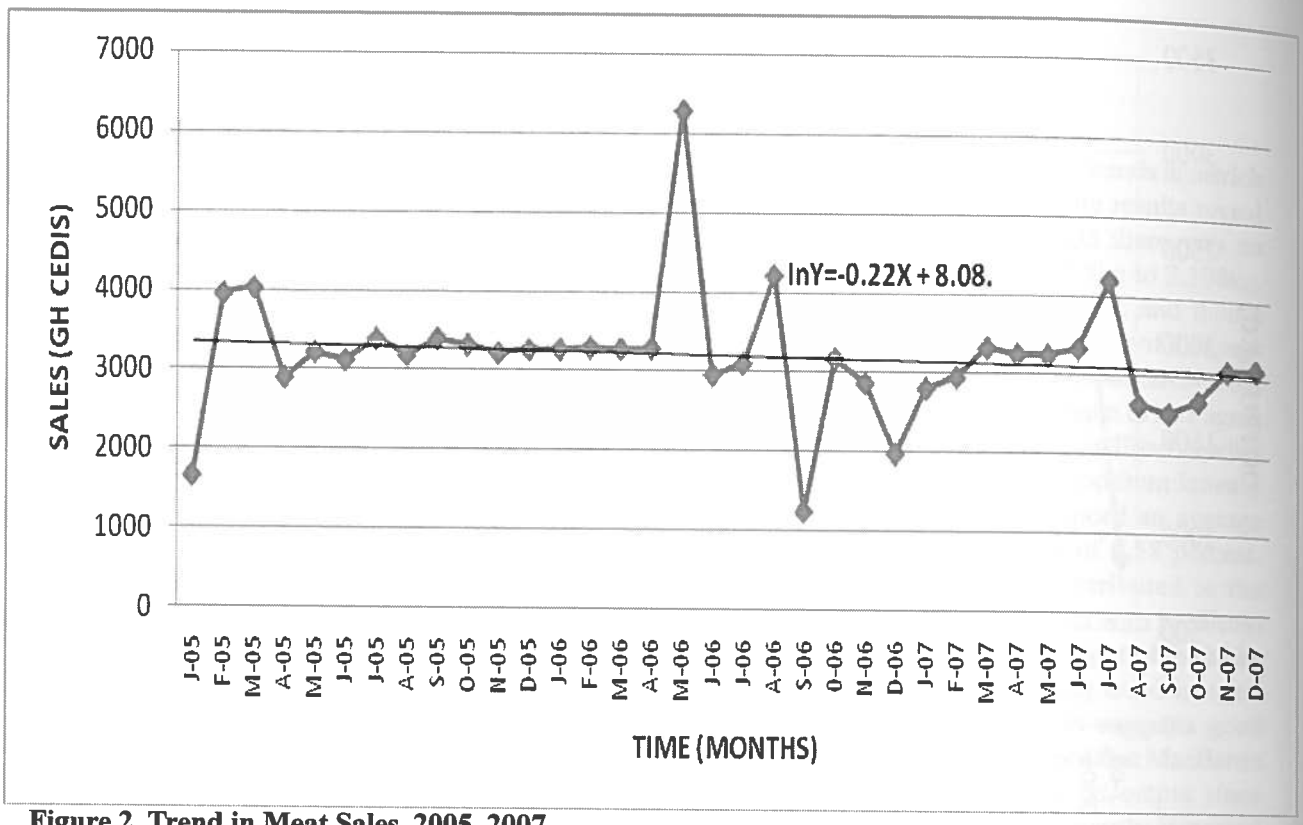

Figure 2. Trend in Meat Sales, 2005–2007.

Operating Performance and Profitability

Table 1 highlights the operating performance of MacBaron during three periods. The total revenue from MacBaron Farms increased from GH¢359,100 in 2005 to GH¢395,908 in 2007, representing an average growth rate of 10.5 percent over the period. The increase in revenues translates into increases in profit from GH¢252,900 in 2005 to GH¢266,330 in 2007, an increase over 2005 of 2.54 percent in 2006 and 5.31 percent in 2007.

However, as shown in Table 2, there has been a steady decline in the return on sales (ROS) values from 0.70 in 2005 to 0.69 (2006) and to 0.67 (2007), although the differences may not be statistically significant. Increasing operating costs throughout the period may be responsible for the small declines on ROS. However, profits increased due to a yearly five-percent increase in the price of products. There has been a marginal year-to-year increase in return on investment (ROI) from 0.89 in 2005 to 0.91 in 2006 and to 0.92 in 2007, based on the assumption of a yearly five-percent constant depreciation of the company's fixed assets.

Using a three-year moving average to project or predict the revenue of MacBaron's operations over the next five years reveals a 19.6 percent growth in revenues per year provided MacBaron continues to operate at the current level of operations.

Conclusions and Policy Recommendations

This study records declining monthly trends in meat output, sales, and value of hide of 0.58 percent, 0.22 percent, and 0.25 percent, respectively. However, operating-performance indicators suggest that

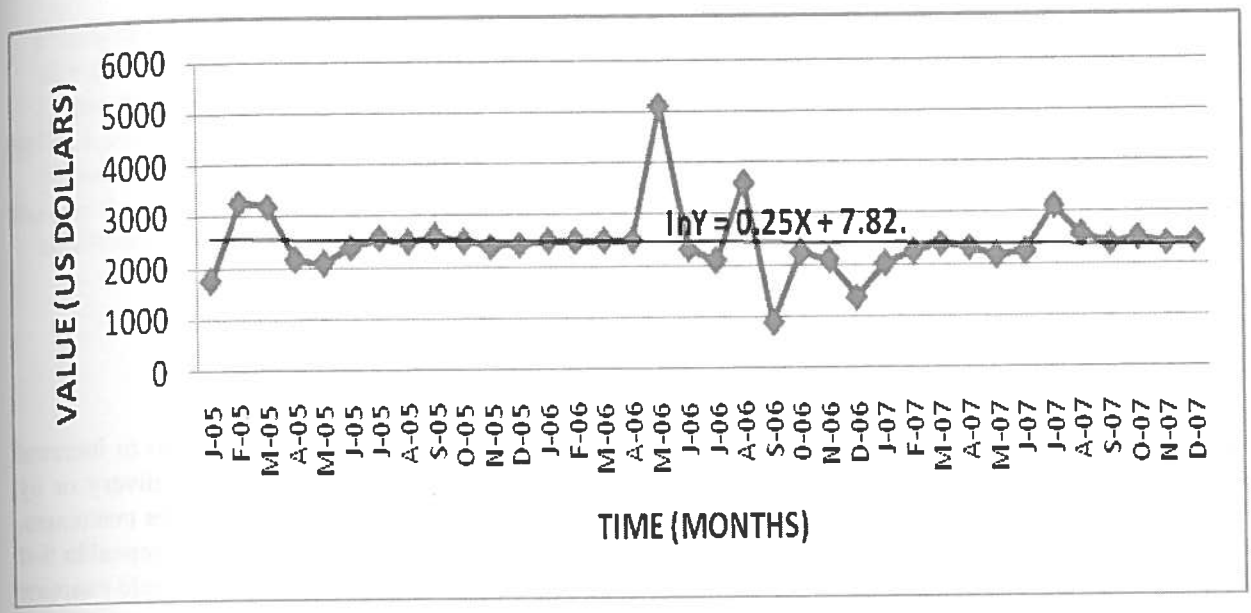

Figure 3. Trend in Value of Hide Exported, 2005–2007.

Table 1. Operating Performance of MacBaron Ostrich Farm.

Performance Indicators	2005 (GH¢)	2006 (GH¢)	2007 (GH¢)
Revenue:			
A. Meat production	270,000	283,500	297,675
B. Salted ostrich skin	89,100	93,555	98,555
Total Revenue	359,100	377,055	395,908
Operating cost			
A. Feed cost for parent stock (GH¢6.5/bird/month)	11,700	12,870	14,157
B. Feed cost for chicks/broilers, including drugs, average GH¢3.5	75,600	83,160	91,476
C. Water, electricity, and maintenance	7,500	8,250	9,075
D. Salaries – ten workers, average GH¢90/month	9,00	10,800	11,880
E. Transportation	2,400	2,600	2,990
Total cost	106,200	117,720	129,578
Profit before tax	252,900	259,335	266,330
Tax	0	0	0
Profit after tax	252,900	259,335	266,330

Source: MacBaron 2008.

Table 2. Return on Sales and Investment, 2005–2007.

Year	ROS	ROI
2005	0.70	0.89
2006	0.69	0.91
2007	0.67	0.92

MacBaron Ostrich Farm is performing quite well, and as such is an indicator of good prospects for the ostrich industry. The profits and return on investment of MacBaron have been increasing steadily over the years although the return on sales experienced declines over the same periods. Projecting from a three-year moving average, income is expected to increase at a rate of 19.6 percent annually over the next five years. Given that the taste of the ostrich meat is unpopular among Ghanaians and the nutritive value is somewhat unknown to them, MacBaron actually can be considered to be well since ostrich production on a commercial basis is a growing industry. The market structure of the ostrich industry in Ghana appears to be characterized by oligopolistic behavior as there are interdependencies among the firms in terms of marketing, advice on production methods, and control over the price of output in the market place.

Based on the results of this study, the following recommendations are proposed. First, MacBaron should take measures that will increase output since profit is a function of output. These measures could involve either an increase in the number of birds slaughtered yearly or exploring other markets for other ostrich products, such as the feathers and eggshells. Second, MacBaron could also reduce water and electricity costs since the return on sales is decreasing due to increasing annual costs. Electricity costs could be decreased by the use of energy-saving bulbs and the maintenance of all of the thermostats in the brooder house. Water costs could be reduced by using a high-pressure, low-volume cleaning system and using nozzles on all water sprays. Third, proper records should be kept to ensure good management and planning of inventory. Since the market is said to be near that of oligopoly, MacBaron should finds ways of strategizing (non-price-competitive strategies) to increase sales either through door-to-door delivery or by bringing the sales points closer to the customers. This study is limited in its scope and appeal in that it is a case study; further research should examine all ostrich farms to provide a general assessment of performance and prospects of the industry.

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