

ESTIMATING THE COSTS OF EGG PRODUCTION AT SMALL, MEDIUM AND COMMERCIAL-SCALE LAYER FARMS IN MALAYSIA

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ABSTRACT. A sudden price hike of eggs at the end of 2018 could be due to an increase in production costs. Understanding production costs is useful to the government to take necessary measures to prevent future price hikes. The objective of this study was to estimate the cost of egg production in poultry farms in Malaysia. A survey was conducted at 28 layer farms selected according to the production scale. 19.2% were small-scale layer farms, 31.2% medium-scale and 49.6% commercial-scale. The calculated cost of production of RM0.22 to RM0.36 per egg in West Malaysia was within the range recorded by the Department of Veterinary Services (DVS), and RM0.33 to RM0.40 per egg recorded in East Malaysia. The high production costs in East Malaysia was mostly due to higher feed prices and therefore, efforts should be undertaken to formulate cheaper poultry feed without compromising its quality in order to maintain the prices of egg in the future.

Keywords: poultry, layer, egg production cost, economic analysis

INTRODUCTION

The production of chicken egg in Malaysia achieved 13% excess of supply in 2018. Malaysia currently exports 10% to 15% to Hong Kong, Dubai, Maldives, and Singapore (DOSM, 2018). Several inputs influence the costs of production including cost of feed,

day-old chicks (DOC), labour cost, utility, vaccination, fuel, maintenance, and other equipment costs (Abdurofi *et al.*, 2017; Sarfraz *et al.*, 2008).

In 2015, Malaysia imported 3.5 million tonnes of corn to meet the requirements of feed for the poultry industry (Sarfraz *et al.*). The economic sustainability of a farm needs to be emphasised as farms use mostly imported feed (Abdurofi *et al.*, 2017). Nevertheless, in order to ensure sustainability with regard to production costs especially among small and medium-sized farmers, Malaysia has implemented an integrated poultry production in which feed, chicks, vaccination and veterinary services would be provided by an integrator, while the other costs would be incurred by the producer.

In the first week of November 2018, Malaysia experienced a sharp increase in egg price. The price of Grade A egg in Putrajaya was increased by RM0.11 per egg from its normal price but declined sharply in the third week of the same month (Bernama, 2018). This could be due to several factors.

Firstly, the sharp increase in egg prices was due to the closure of a major poultry farm in Perak upon suspicion of bird flu (Audrey, 2018).

The closure of 16 layer farms in Pulau Pinang since 2016 could also be one of the factors. It resulted in a shortage of supply which dropped to an estimated 70% compared to the year 2016 (Manjit, 2018).

In addition, the price of feed increased due to unfavourable monetary exchange rates which, in turn, affected the price of eggs.

Information regarding the costs of egg production in Malaysia is lacking since most researchers have been focusing on broiler production analysis. Therefore, this study was conducted with the objective of estimating the costs of egg production in small, medium, and commercial-scale layer farms. With this information, the DVS would be able to use it in support any intervention to reduce costs such as proposing the least costly feed formulation and improvements on biosecurity in mitigating losses due to diseases.

MATERIALS AND METHOD

This study used 10% of the sample size from the total number of registered farms for the purpose of the survey. They were identified, selected and classified according to the production scale defined by DVS: (a) small-scale (less than 10,000 birds), (b) medium-scale (between 10,000-50,000 birds) and (c) commercial-scale (more than 50,000 birds). The survey was conducted at the selected 28 layer farms as shown in Table 1. The medium and commercial scale farms, however, were split into smaller groups to reduce bias and ensure the accuracy of the sampling. Therefore, a total of five medium-scale layer farms were split up into two

smaller groups: (a) 10,000-25,000 birds and (b) 25,001-50,000 birds. 21 commercial-scale layer farms were split up into five different groups; (a) 50,001-100,000 birds, (b) 100,001-300,000 birds, (c) 300,001-500,000 birds, (d) 500,001-1,000,000 birds and (e) more than 1,000,000 birds.

The primary data was acquired through a survey method using structured questionnaires which were distributed to the selected farmers starting from May to July 2019. Before conducting a real survey, a pilot study was carried out in Pulau Pinang for 6 layer farms in February 2019 to test and improve the questionnaire. The questionnaire included 63 questions that contained information regarding feed consumption and cost, labour cost, utility, vaccination, assets, and maintenance as well as other related information. All respondents were interviewed and asked to fill out the questionnaire form during the farm visits.

The template to calculate the egg production costs was structured by taking into account the fixed costs (depreciation cost of fixed assets and loan interest rate), variable costs (DOC or pullet and feed costs) and variable costs (labour costs, vaccination, utility, maintenance, and miscellaneous costs). All fixed costs and variable costs were based on farm budgetary records gathered during farm visits. The simple economic calculation was performed using Microsoft Excel to derive production costs.

Table 1. Number of surveyed farms according to Malaysian states.

States	Farm Scale*	Number of Farms
Kedah	Small	1
	Medium	1
	Commercial	1
Pulau Pinang	Small	1
	Medium	3
	Commercial	2
Perak	Medium	1
	Commercial	3
Selangor	Commercial	3
Negeri Sembilan	Commercial	2
Melaka	Commercial	2
Johor	Commercial	3
Pahang	Commercial	1
Sabah	Commercial	2
Sarawak	Commercial	2
Total		28

* (a) small-scale (less than 10,000 birds), (b) medium-scale (between 10,000-50,000 birds) and (c) commercial-scale (more than 50,000 birds).

RESULTS AND DISCUSSION

Variable costs of egg production in Malaysia

The variable components considered in production cost calculation were feed, DOC or pullet, labour, utility, packaging, maintenance, vaccination, and fuel. As expected in this study, the feed price contributes to the higher percentage which was 84.9% of the total variable costs followed by DOC or pullet, labour cost and the lowest was fuel cost as depicted in Figure 1.

Management practices and costs of egg production in small-scale layer farms (less than 10,000 birds)

The farms were open-house systems and have been operating for more than 5 years. Farm A, however, recorded a higher mortality rate as compared to Farm B with a percentage of 12.5% and 3.0% respectively (Table 2). This is one of the reasons for the higher production costs per egg incurred by Farm A as the higher the mortality rates reduced the total egg production. Farm A did not fully utilise its layer sheds. Only 2 out of 3 sheds were occupied and the sheds in use were not in full capacity. The laying period

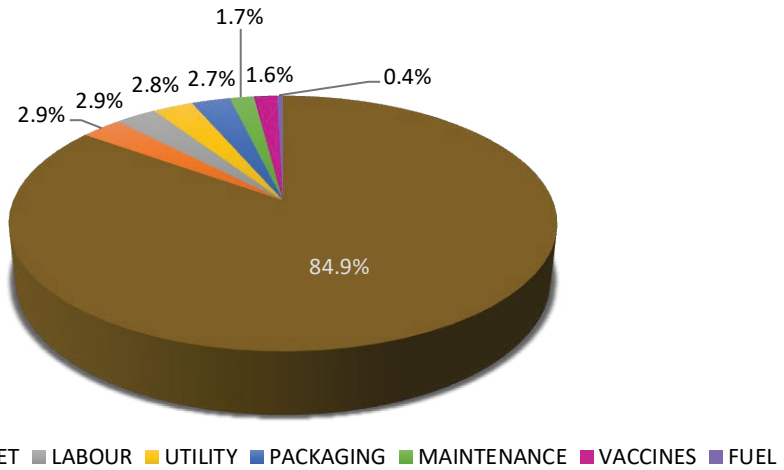


Figure 1. Variable costs of egg production in Malaysia.

Table 2. Estimated egg production costs for small-scale layer farms in the year 2019.

Parameters		Farm A	Farm B
Housing system	:	Open-house	Open-house
Number of day-old chicks	:	9,000 birds/cycle	8,500 birds/cycle
Mortality rate per cycle	:	12.5%	3.0%
Current number of hens	:	3,500 birds	6,790 birds
Average egg production	:	80%	80%
Egg production period	:	50 weeks	71 weeks
Total gross return	:	9,450.00	43,609.95
Total variable costs 1	:	333,490.00	595,183.68
Total variable costs 2	:	33,915.38	111,616.87
Total fixed costs	:	13,914.28	85,494.62
Estimated egg production cost (RM)	:	0.36	0.25

Source: Survey Data 2019

of Farm B was 21 weeks longer than Farm A, resulting in its higher egg production and proportionally reduced cost per unit. Farm A, therefore, has a less efficient cost management. The management of Farm B has another six layer farms of the same company which reflects the lowered costs

in input procurement from higher abilities and competencies in farm management. This subsequently contributes to the lower production costs compared to Farm A. The costs were RM0.36 per egg (Farm A) and RM0.25 per egg (Farm B).

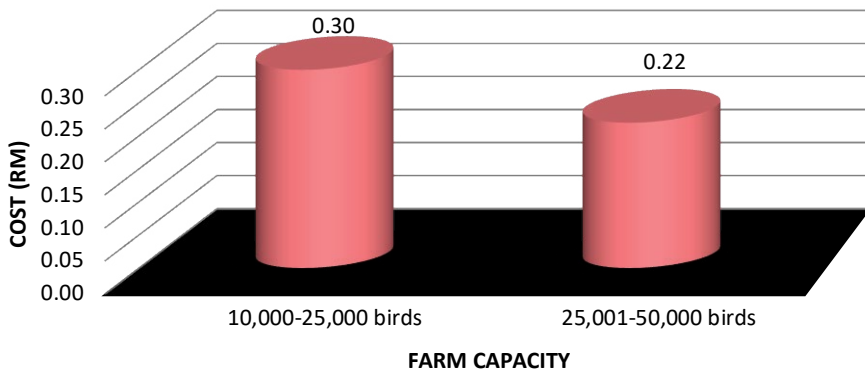


Figure 2. Average estimated costs of egg production for medium-scale layer farms in the year 2019.

Management practices and costs of egg production in medium-scale layer farms (10,000 – 50,000 birds)

All medium-scale layer farms visited in this study were using an open-house system. The average estimated cost of egg production for layer farms with a capacity of 10,000-25,000 birds in West Malaysia was RM0.30 per egg, but only RM0.22 per egg in farms with a layer population of 25,001-50,000 birds (Figure 2). The study also discovered that all sampled farms with the capacity of 25,001-50,000 birds have been operating for over 40 years which contributed to lower production costs as the farm management is able to minimise the burden of debt, particularly on assets and infrastructure.

Management practices and costs of egg production in commercial-scale layer farms (more than 50,000 birds)

The majority of farms selected in this study were commercial-scale size. Out of 22

commercial-scale layer farms, 68.2% of farms were operating as closed-house systems, 22.7% of farms were both open-house and closed-house systems and only 9.1% were open-house systems. The average estimated cost of egg production in West Malaysia and East Malaysia are shown in Figure 3 and Figure 4, respectively. The results revealed that the cost of egg production incurred by commercial-scale producers in West Malaysia were between RM0.28 to RM0.32 per egg. Whereas, RM0.33 to RM0.40 per egg was the cost incurred by producers in East Malaysia. Costs were higher in East Malaysia as compared to West Malaysia, mostly due to higher feed prices of that region.

Overall findings

The findings obtained from this study were only estimates of costs due to the lack of systematically recorded data especially among small-scale and medium-scale layer producers. The reliability and validity of the data cannot be confirmed and this

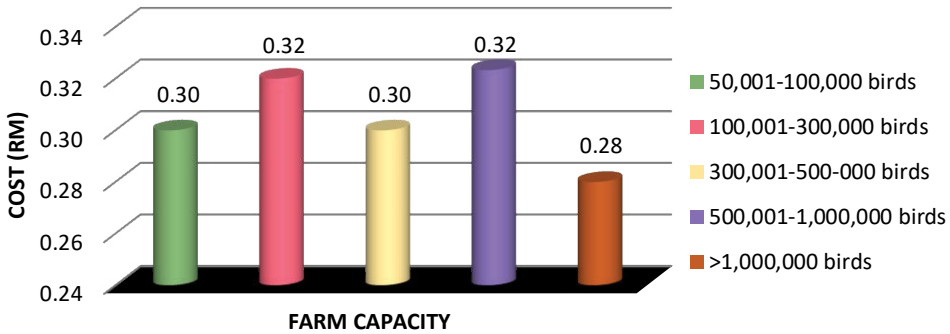


Figure 3. Average estimated cost of egg production for commercial-scale layer farms in the year 2019 in West Malaysia.

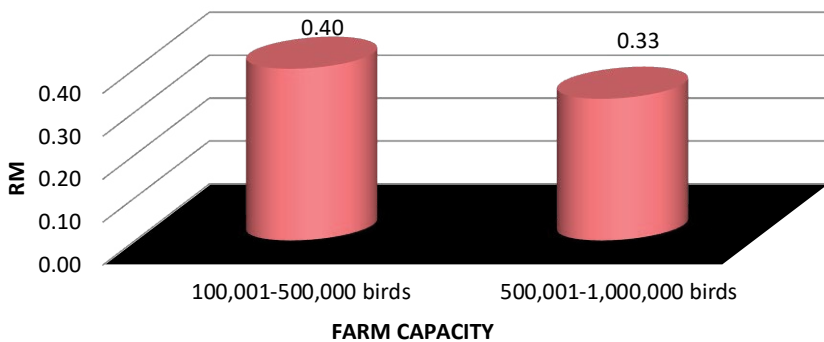


Figure 4. Average estimated cost of egg production for commercial-scale layer farms in the year 2019 in East Malaysia.

would cause the calculations to be under or overestimations.

According to the interviews conducted during technical visits, several layer producers depend entirely on imported feed. A few farmers, however, have formulated their own feed mixed with commercial feed in order to reduce cost. This study found that the profitability of poultry producers can be improved through the reduction of feed costs (FAO, 2003; Tandogan and Cicek, 2016). Therefore, further studies related to alternative poultry feeds need to be

undertaken to produce high-quality poultry feed formulations at competitive prices. It is also proposed that the government intensify research and development activities to develop and diversify feed sources from local raw materials.

This study found that more than 50% of the egg producers in West Malaysia were focused on small and medium-scale layer production, in reference to the data acquired from the DVS. A previous study reported that small-scale farms are not economical as feed prices will affect more than 70% of the total

production costs. As small-scale farmers are more exposed to high feed prices and diseases, contract farming was implemented to minimise the risks and enable higher profitability for small operators (Abdurofi *et al*, 2017).

There were several other factors that influenced the cost of egg production other than feed prices (Figure 1). For instance, a good layer housing system keeps the hens growing well and enables increased productivity (Razak and Sallahuddin, 2016). As observed in this study, the implementation of closed-house systems could improve the health of laying hens, thus reducing the mortality rate of flocks and indirectly reducing cost (FAO, 2003). This was further emphasised by Pragya (Pragya, 2017). In addition, good animal husbandry practice (GAHP) should be promoted and further strengthened at each farm to ensure proper management with good biosecurity systems so as to achieve a sustainable production (Syed Mohammad and Abdul, 2002; Mohd Syauqi *et al.*, 2015).

CONCLUSION

This study described the estimation in costs of egg production in Malaysia for the year 2019. Bird flu and shortage of supply had resulted in a sudden increase in the price of eggs in November 2018. In order to increase the production of eggs in Malaysia, this study recommends that the government identify methods and ways to attract more investors to become involved in the poultry industry. Apart from that, an inexpensive feed could be formulated locally to reduce the country's

dependency on imported feed. Besides, the government has to ensure the continuous supply of the product in order to maintain reasonable prices of eggs in the market. The industry players should ensure production is at affordable prices for the consumer whilst optimising profits. The farmers should be advised to record information regarding feed consumption and prices, labour cost, utility, and other related costs to be able to systematically estimate the production costs of each farm. The contract farming system as suggested by many analysts could be one of the solutions for small and medium-scale operators to reduce the costs of production and ensure that farming activity is profitable.

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