

## ECONOMIC PRODUCTION OF BROILER INDUSTRY IN MALAYSIA

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**ABSTRACT.** The poultry industry is the most advanced and independent among livestock industry in Malaysia with over 100 percent self-sufficient level (SSL) since 2004. The Ministry of Agriculture and Food Industry (MAFI) has launched National Agrofood Policy 2021-2030 (DAN 2.0) in October 2021. One of the objectives is to increase the poultry's SSL to 140.2 % by 2030, an increase from 104.10 % in 2020. The objective of this study was to analyze the production cost of selected commercial broiler farms in Malaysia. The scope of the study was to evaluate the economic assessment of broiler production in order to understand the industry widely and also to identify which segments along the production line need to be improved and at the same time to ensure that this industry remains competitive and productive. Production cost data were obtained from selected commercial broilers via questionnaire forms. The result showed that the average broiler production cost is RM4.40/kg. Small farms have higher total average cost per kg, which is RM4.70, followed by commercial-scale farms at RM4.43 and medium-scale farms at RM4.29, respectively. Feed cost contributes 66 % of the total production cost of whole expenditure followed by day-old chick's cost, 19 %. The average profit estimation is RM0.65/kg based on RM5.05/kg for the ex-farm price of live poultry.

*Keywords:* broiler, economic of production

### INTRODUCTION

Malaysian poultry consumption per capita among Malaysians was 48.7 kg in 2019, making it the third world largest poultry consumption (OECD, 2021). The poultry industry is the largest contributor among the livestock industry in the 2016 Economic Census – Livestock sub-sector, with a gross output of RM9.058 billion in 2015 (DOSM, 2017). The industry also proves to be an essential component in Malaysia's economy as one of the main daily food supplies for Malaysians. Malaysia had exceeded 100 percent self-sufficient level (SSL) for poultry production since 2004 (DVS, 2014). However, Malaysia still imported 73,289.9 million tonnes of poultry meat in 2019 (DVS 2021), which were used to make sausages, burgers, and other processed foods. In 2020, Malaysian Quarantine and

Inspection Services (MAQIS) confiscated 176.7 tonnes of imported frozen chicken worth of RM1.4 million (BERNAMA, 2021). Although they were confiscated because they were imported without a legal permit, the halal status of these chicken meats also caused other issues among consumers.

The Ministry of Agriculture and Food Industry (MAFI) launched National Agrofood Policy 2021-2030 (DAN 2.0) in October 2021. One of the objectives is to increase the poultry's SSL to 140.2 % by 2030, an increase from 104.10 % in 2020 (MAFI, 2021). With the raised production, it is hoped that the poultry industry will not only satisfy the fresh meat needs for local consumers, but will also be able to supply the requirements for processed food products, exports to other countries, and varieties such as special cuts, or

organic poultry meat for the consumer. However, increasing production is quite challenging. According to DVS, the number of poultry farms in Malaysia decreased on average by 2.8 % every year between 2016 and 2019. Poultry farmers face many challenges, such as land regulations imposed by the local authorities, nuisance complaints from the public, and financial constraints. An economic analysis was conducted to evaluate the estimated average costs of broiler farm production in Malaysia, as well as to identify the current issues faced by poultry farmers. This study also identifies which parameters have the greatest effect on broiler farming expenditure.

**MATERIALS AND METHOD**

**Study area and data collection**

A total of 26 broiler farms are selected randomly all around Malaysia. The primary data were collected using structured questionnaires and face to face interviews with broiler farmers. The farms were visited to understand more about the current broiler farming practices and conditions in the field.

A series of discussions with DVS’s state staff and a pilot study were conducted in Penang in order to improve the quality of questionnaires and data collection skills, as well as to minimize data rejection. The actual data collection was

conducted from May to July 2019 in selected farms in Peninsular Malaysia, Sabah, and Sarawak. Poultry farms were divided into three scale categories according to DVS guidelines (unpublished data). The total number of each farm size is as shown in Table 1.

**Data Analysis**

A set of questionnaires was structured to collect demographic and economic data from the selected farms. The elements that are included in the questions are the rearing period, numbers of chicks and mortality rate, by-product revenues, variable costs, and fixed costs.

Descriptive statistics are used to represent the socioeconomic characteristics of the respondents, which provide summary data, including position in farms, education level, age of broiler farmers, race, ownership, broiler farming status and growing cycle per year.

The relevant primary data contains information about various costs involved as shown in Table 2. The by-product revenue in broiler farming includes the sale from chicken droppings if any.

The equation below is used to calculate the estimated costs to produce 1 kg of poultry meat (DVS, 2010; MARDI, 2012). Therefore, the result for the cost of broiler production is in Ringgit Malaysia per kilogram (RM/kg).

**Table 1.** Number of studied farms and scale category.

Farm-size group	Farms	
	Number	Total farms (%)
Small (less than 10,000 birds)	3	11.54
Medium (10,000 – 50,000 birds)	12	46.15
Commercial (more than 50,000 birds)	11	42.31
<b>Total</b>	<b>26</b>	<b>100%</b>

$$\text{Cost of production / kg poultry meat} = \frac{\sum \text{Variable Cost} + \sum \text{Fixed Cost} - (\sum \text{By-product revenue})}{\sum \text{Quantity of production (kg)}}$$

The cost of broiler production is calculated per batch, which ranged between 32 to 49 days of rearing per cycle.

## RESULTS AND DISCUSSION

### Socioeconomic characteristics

The socioeconomic characteristics of the farmers are important to describe ownership and other social perspectives (Figure 1 - 4). The data show that 65.4 % of the respondents are the broiler farm’s owners, while 11.5 % are the farm’s managers. The rest of the respondents are the farm’s supervisors, veterinarian and administration. Most of the respondents are from the 40-59-year-old age group which contributes

61.5 % of the total responses. Meanwhile, 23.1 % are from the 20-39 year-old age group and only 15.4 % respondents are over 60 years old. In terms of race, half of the respondents are Chinese, followed by Malay at 30.8 %, and 11.5 % are Indian. The remaining 7.7 % consist of other races from various ethnic groups in East Malaysia as well as non-Malaysian workers. 34.6 % of the respondents have tertiary education, with 11.5 % graduated from college or polytechnic and 23.1 % are university graduates. More than half of the respondents have their secondary education qualification (53.9 %). The remaining 11.5 % receive only primary education.

Descriptive analysis of broiler farmers shows a general scenario about broiler farming

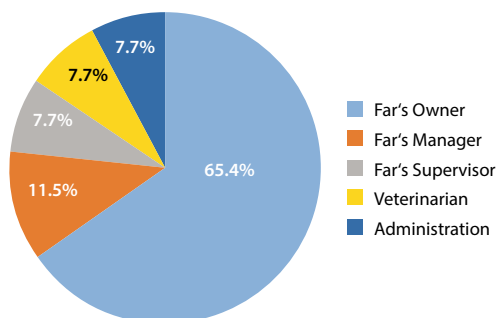


Figure 1. Respondents' positions.

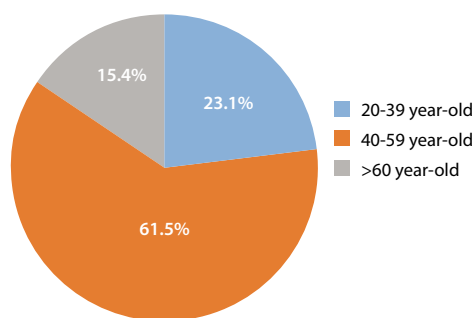


Figure 2. Respondents' age group.

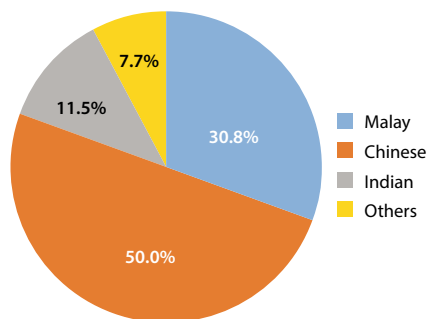


Figure 3. Respondents' race.

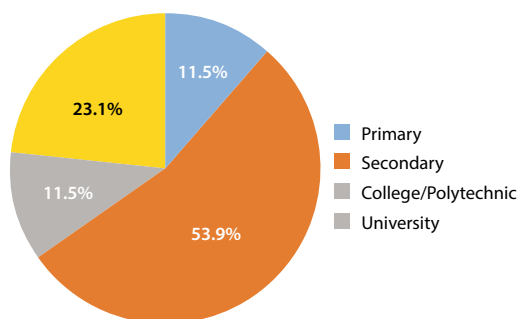
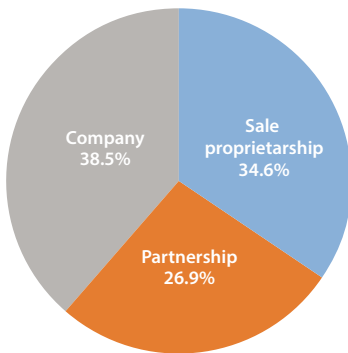


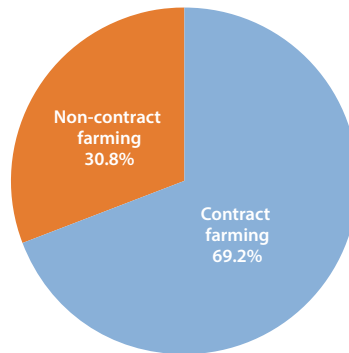
Figure 4. Respondents' education level.

in Malaysia (Figure 5 - 8). 38.5 % of the broiler's farms are owned by company or corporation and 34.6 % are sole proprietorship. The remaining 26.9% of the farms are partnerships. A majority of participating farms, at 69.2% are broiler contract farms (BCF). The BCF system is where farmers have an agreement with broiler integrators, where broiler farmer provides the land, build broiler houses and infrastructure, labour, and management, whilst the integrator provides DOC and feeds as well as technical support and marketing. Then, the broilers are sold back to the

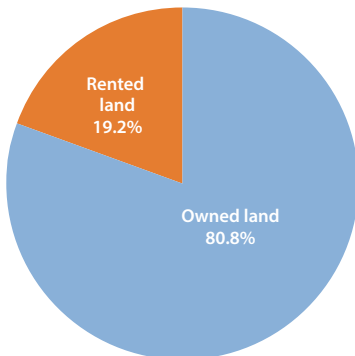
integrator according to the final live weight. 80.8 % of the respondents own the land for broiler farming. Only 19.2 % of the respondents rent the land. An optimum one growing cycle of broilers would take two months including a cleaning period, therefore there are six growing cycles of broilers per year. The result shows that the average growing cycle that can be achieved by the respondents is 5.2 cycles per year. 30.8 % of farms achieved 6 cycles, and 38.5 % said they produced 5 cycles of broilers in a year.



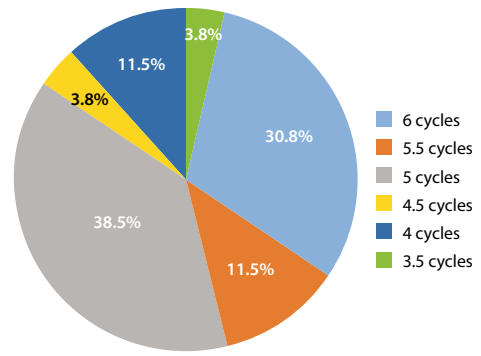
**Figure 5.** Farm's ownership.



**Figure 6.** Farm's status.



**Figure 7.** Land's ownership.



**Figure 8.** Broiler's growing cycle per year.

### Cost of Broiler Production

From the data calculated using the equation above, the average broiler farming total cost is RM4.40 per kg of broiler's weight. When the total average cost per broiler is broken down by farm size, small farms have the highest total average cost per kg, at RM4.70, followed by commercial-scale at RM4.43 and medium-scale at RM4.29 (Figure 9).



**Figure 9.** Comparison of cost of broiler production per kilogram according to scale categories.

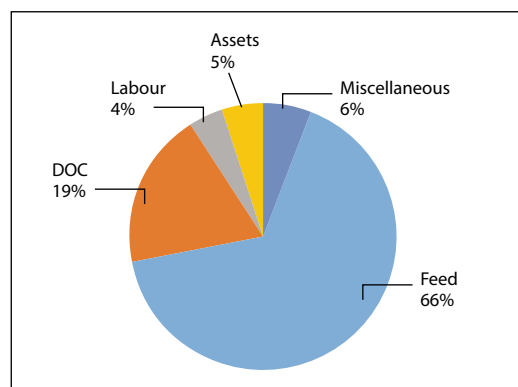
Table 2 shows the average cost of each parameter per kilogram of broilers' live weight which is listed according to farm categories. All the parameters in the table are common parameters used in economic studies of poultry production.

**Table 2.** Cost of broiler production per kg live weight (RM).

Parameter	Small-scale	Medium-scale	Commercial- scale
DOC	RM1.00	RM0.84	RM0.81
Broiler Feed	RM3.18	RM2.93	RM2.83
Labour salary	RM0.14	RM0.21	RM0.14
Drugs & veterinary services	RM0.11	RM0.07	RM0.16
Utilities	RM0.06	RM0.06	RM0.07
Miscellaneous	RM0.04	RM0.06	RM0.07
Assets depreciation & fixed capital	RM0.20	RM0.14	RM0.37

The comparative study shows several parameters that contribute the most to broiler farming cost which can be determined by comparing the percentage of costs in each parameter. The drugs and veterinary services and utility costs are then combined with miscellaneous costs.

Figure 10 illustrates the average cost of production in Malaysian broiler farms as a percentage ratio. Feed prices are the costliest of all parameters, accounting for 66 % of the total, followed by DOC costs (19%). Labour and asset costs account for 4 % and 5 % respectively, while miscellaneous costs account for 6 %.



**Figure 10.** Percentage of cost of broiler production in Malaysia.

The results of this study are in line with previous studies (Abdurofi *et al.*, 2017; Santoso *et al.*, 2018; Md Isa *et al.*, 2019) that broiler feed cost aggregates around 60 to 70 % of the total production cost. The higher proportion of feed cost affects the poultry industry since local poultry farms rely heavily on imported corn and soybean which are the main raw materials in poultry feed composition. Since 2014, the Malaysian Ringgit has steadily weakened compared to the US Dollar. This has affected the price of the imported corn and soybean that are used as animal feed. There was a sharp increase of 23 % in the price of imported animal feed in 2017 compared to 2016 as shown in Table 3. Since then, the price of imported animal feed has remained at a high price. The higher the price of the imported animal feed, the bigger the expenditure of broiler producers.

Due to the price increase of imported animal feed, especially corn, and at the same time the high importance of ensuring food stability and security, the Government of Malaysia under the Agriculture

and Food Industries Ministry (MAFI) has set up a grain corn cultivation pilot project in potential states in Peninsular Malaysia since 2015 (DOA, 2017; DOA 2020). Again in 2021, the MAFI minister emphasised the importance of implementing a long-term policy to encourage the cultivation of local grain corn (Malay Mail, 2021).

**Comparative costs among farm’s scale**

Table 4 shows the percentage of expenditure for broiler farming according to farm scales. Small and medium scale farms have comparable cost percentages, with feed price being the highest at 68 %. Meanwhile, commercial farms’ feed cost is 64 %, which is 4 % lower than small and medium scale farms and 2 % lower than the Malaysian average. Most of the commercial-scale farms are managed by big companies that have the capability to buy animal feed in large volumes and at the same time own feed millers. Hence these factors can reduce some costs in their feed supply.

**Table 3.** Imported animal feed in Malaysia, 2015-2019.

2015		2016		2017		2018		2019	
Quantity Mil M.Tonnes	CIF Value Mil RM	Quantity Mil M.Tonnes	CIF Value Mil RM	Quantity Mil M.Tonnes	CIF Value Mil RM	Quantity Mil M.Tonnes	CIF Value Mil RM	Quantity Mil M.Tonnes	CIF Value Mil RM
6.3	8,346.81	6.3	8,122.78	4.9	7,782.29	4.5	7,308.91	4.3	6,692.09

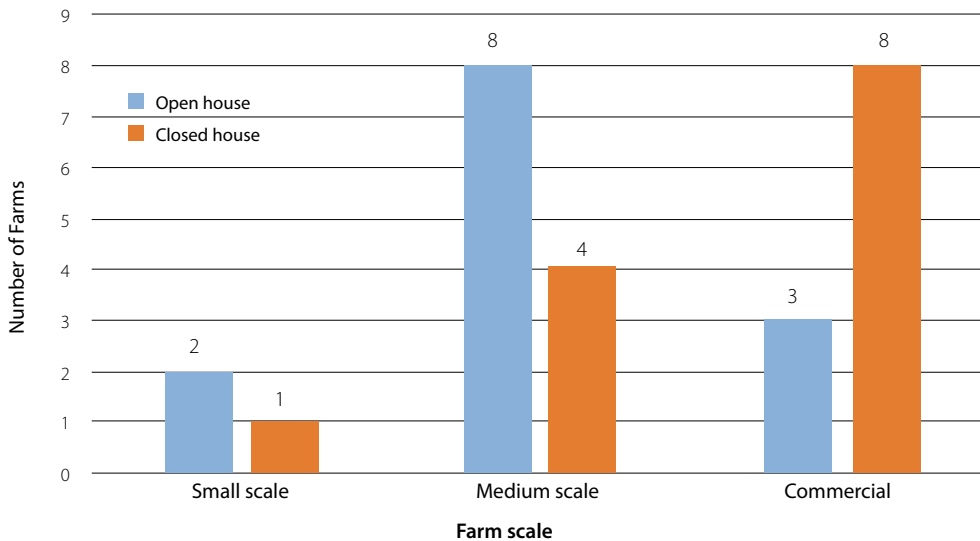
Source. DVS, 2021

**Table 4.** Percentage of expenditure in broiler farms in Malaysia.

Parameter	Small scale	Medium Scale	Commercial
Feed	68 %	68 %	64 %
Day-old Chicks (DOC)	21 %	20 %	19 %
Labour salary	3 %	5 %	3 %
Assets and fixed capital	4 %	3 %	8 %
Miscellaneous	4 %	4 %	6 %
Mortality rate	4.08 %	3.89 %	3.97 %

It can also be observed from Table 4 that DOC percentage cost in commercial farms is slightly lower than small and medium scale farms at 19 %. However, the assets' cost for commercial-scale farms shows a substantial difference compared to small and medium-scale farms. Commercial-scale farm assets account for 8 % of its costs, whereas small and medium-scale farms' assets account for just 4 % and 3 % of their costs respectively. Based on the data collected, it is discovered that in order to accommodate

a large number of flocks, commercial farms typically invest in a closed-house system, which is far more expensive than the open or semi-closed house system that is commonly used in small and medium-scale farms as shown in Figure 11. A closed-house system that can accommodate 60,000 chickens ranges from RM500,000 per house and can reach up to RM2 million per house. The interests of fixed capital are also included under assets in calculating the cost. Eight of the 11 commercial-scale farms in



**Figure 11.** The number of farms that use open house system or closed-house system according to farm's scale.

this study had disclosed that they have received loans from financial institutions to upgrade and expand their farm.

The commercial-scale farms had a minimum of 50,000 birds per house and 72.7 % of the commercial-scale farms used closed-house systems, hence the miscellaneous costs are higher than small and medium scale farms. The costs are mostly from higher utility bills, especially electricity.

In livestock farming, farm management is one of the important criteria in order to ensure maximum growth and production performance. Mortality in broilers results in loss of income for farmers, thus they will try to achieve the lowest mortality rate possible. The mortality rate for these 26 farms varies, from as low as 0.48 % up to as high as 8 %. Small-scale farms have the highest average mortality rate of 4.08 %, followed by commercial-scale farms at 3.97 %, and medium-scale farms have the lowest average mortality rate at 3.89 %. During the interview, most of the respondents stated that they would like to achieve mortality rate lower than 4 %, preferably less than 3 %. Some of the broiler farmers provide bonus to the farm managers if they can achieve a mortality rate of less than 4 % as an incentive. Good farm practices are usually reflected in the mortality rate of the farm.

## CONCLUSION

The study had revealed that the estimated average total cost in producing 1kg of poultry meat in Malaysia is RM4.40/kg. The highest cost in broiler production is the feed cost which accounts for 66 % of the total production cost, followed by cost of day-old chicks, at 19 %. The average profit for farmers in 2019 was RM0.65/kg considering that the average ex-farm price for a live broiler in 2019 was RM5.05/kg.

This amount of profit is considered low since poultry farming is regarded as a 3D (dirty, dangerous, and difficult) job. With low profit margins and many restrictions, it is a challenge for the Malaysian Government, particularly the Department of Veterinary Services to encourage more participation and investments in order to increase the country's SSL in poultry production. Participation and cooperation from other agencies such as local authorities and financial institutes are needed to ensure that the local livestock industry can strive and provide food stability and safety to the consumer.

## REFERENCES

1. Abdurofi, i., Ismail, M. M., Abdul Wahab, K. H., & Gabdo, B. H. (2017). Economic Analysis of Broiler Production In Peninsular Malaysia. *Int. Food Res. J.*, 24(4), 1387-1392.
2. BERNAMA. (2021). MAQIS serah lapan tan ayam beku kepada Zoo Negara. Retrieved from <https://www.astroawani.com/berita-malaysia/maqis-serah-lapan-tan-ayam-beku-kepada-zoo-negara-286645>
3. Department of Agriculture. (2017). Pelan Pembangunan Industri Jagung Bijian [Slide Presentation]. Retrieved from [http://www.doa.gov.my/index/resources/aktiviti\\_sumber/sumber\\_awam/penerbitan/kertas\\_pembentangan/seminar\\_jagung\\_bijian\\_2017/kertas\\_pembentangan2.pdf](http://www.doa.gov.my/index/resources/aktiviti_sumber/sumber_awam/penerbitan/kertas_pembentangan/seminar_jagung_bijian_2017/kertas_pembentangan2.pdf)
4. Department of Agriculture. (2020). Pembangunan Tanaman Jagung Bijian. Jabatan Pertanian Negeri Terengganu. Retrieved from <http://doa.terengganu.gov.my/2020/12/16/pembangunan-tanaman-jagung-bijian/>
5. Department of Statistics Malaysia. (2017). Economic Census 2016 - Livestock. Department of Statistics Malaysia Official Portal. Retrieved from [https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=405&bul\\_id=bEkvWDRrSWw4OGttVTduamVmWVN5UT09&menu\\_id=Z0VTZGU1UHBUT1VJMFpaXRRR0xpdz09](https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=405&bul_id=bEkvWDRrSWw4OGttVTduamVmWVN5UT09&menu_id=Z0VTZGU1UHBUT1VJMFpaXRRR0xpdz09)



6. Department of Veterinary Services. (2010). Panduan Penternakan Ayam Pedaging. Jabatan Perkhidmatan Veterinar.
7. Department of Veterinary Services. (2014). Self-Sufficiency in Livestock Products, 2004-2013. In *Livestock Statistics 2012/2013* (pp. 12-13).
8. DVS, Department of Veterinary Services. (2021). *Livestock Statistics 2019/2020*. Department of Veterinary Services Malaysia.
9. Malay Mail. (2021). Agriculture Ministry to implement policy to encourage corn farming for animal feed. Retrieved from <https://www.malaymail.com/news/money/2021/05/03/agriculture-ministry-to-implement-policy-to-encourage-corn-farming-for-anim/1971345>
10. Ministry of Agriculture and Food Industry (2021). *Dasar Agromokanan Negara 2.0 2021-2030: Pemodenan Agromokanan Menjamin Masa Depan*.
11. Malaysian Agricultural Research and Development Institute (2012). *Panduan Pelaburan dan Kos Pengeluaran Ternakan*.
12. Md Isa, A. H., Ismail, M. M., Samsuddin, N. S., & Abdurofi, I. (2019). Profitability of Broiler Contract Farming: A Case Study in Johor and Sabah. *Int. J. Bus. Soc.* 20(2): 521-532.
13. The Organisation for Economic Co-operation and Development (2021). *Meat consumption. Agricultural Output-Meat Consumption-OECD Data*. Retrieved from <https://data.oecd.org/agroutput/meat-consumption.htm>
14. Santoso, S. I., Sarjana, T. A., & Setiadi, A. (2018). Income Analysis of Closed House Broiler Farm with Partnership Business Model. *Bul. Peternak.* 42(2): 164-169.

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