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Explain why Malaysian broiler industry facing production problem

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Abstract

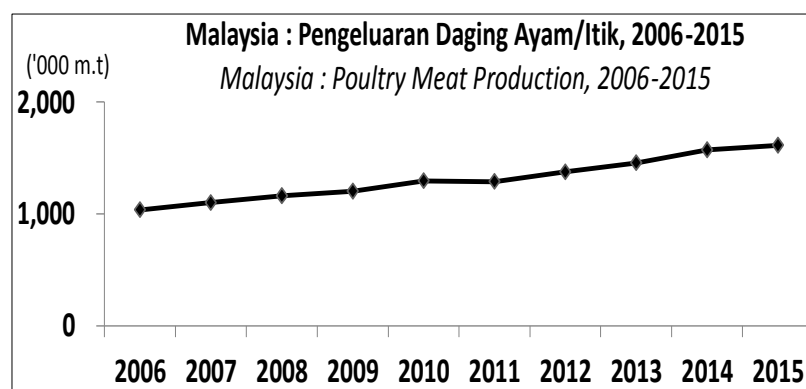
This study examines the economic viable and the financial assessments of the broiler farmer sector in peninsular Malaysia. The paper draws on the results of the secondary data that taking from University Putra Malaysia, these data collected by a team of researchers/enumerators from the Institute of Agricultural and Food Policy Studies (IKDPM), University Putra Malaysia. The findings disclosed that the broiler farm tolerate major cost from acquiring operating inputs especially feed, but it still gaining profits because of the high demand, high self-sufficiency and the stability of the industry. ON the other hand the sensitivity analysis appears that this industry is more sensitive to selling prices and feed cost. The study suggests that the chicken production in Peninsular Malaysia is financially profitable and economically viable to the long project assessment. This industry also may sustain at any level of risks. However, the government needs to take serious intervention to the industry, since the problem of high cost production is still remain in the farm operation.

Keywords: Broiler farmers, broiler, financial projection, economic analysis

Introduction

Malaysian society has seen an increase of 900% per capita consumption from 1960 to 2015. On the other hand, per capita consumption of beef encountered an almost 260% rise within the similar time of period (DVS, 2017)^[9]. Table 1 shows the per capita meat consumption development in Peninsular Malaysia from 1960–2015.

Malaysia is considered as one of the highest poultry purchasers in the world with a per capita consumption of 50.67 kg in 2015 (DVS, 2017)^[9]. In 2010, Malaysia broiler production came high in contribution to the aggregated livestock production with a 53.2%, which was estimated at RM10.85 billion (Tapsir *et al.*, 2011)^[26]. The industry has witnessed a high level of self-sufficiency accomplishing 113.55% in 2015 (DVS, 2017)^[9].



Source: Department of Veterinary Service, Ministry of Agriculture, Malaysia 2017.

Fig 1: Shows the increasing broiler production from 2006-2015.

In Malaysia few giant companies dominate the broiler production, and they can be put into five segments based on size: grandparent, broiler parent, layer parent, commercial broiler and commercial layer. Table 1 shows the controlling giant companies of the broiler production.

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Table 1: Production of broiler in peninsular Malaysia (2010-2013)

Types of operation	No. of Companies	No. of Farms	Population (m)
Grand parent	4	4	0.90
Broiler parent	23	79	11.35
Layer parent	5	14	0.31
Comm. broiler	Individual/contract	+/- 2600	118.52
Comm. layer	Individual/contract	+/- 300	47.35

Source: Department of Veterinary Services (DVS), Fowl Section. Putrajaya. Malaysia. 2017

Agrofood Statistic (2013) presented that in Peninsular Malaysia the consumption of broiler had been reached a one of highest percentage, represented 96% of the poultry industry which consumed in 2012, whereas other poultry meat and ducks generally represented around 1% and 3% Consecutively. Hence, to reach a higher potential point in demand for poultry meat, the broiler industry in Malaysia should make the meat accessible at sensible cost by sustainable operating of the production conserve private profitability.

However, Shamsudin (2013) [24] states that despite the fact that the poultry meat in Malaysia are self sufficient, There are still relevant issues such as access to production, sustainability, and the lack of optimal use of resources. For example, the profit that can be gain from sales after deducting the cost production can be considered as a small margin, which constrained farmers in selling there products by selling in low benefits whether selling a single bird or a kilogram of broiler.

Rahman *et al.* (2003) [20] also asserts that poultry production does not bode well, based on the net returns (net investment), thus make the new investment stream constrain. Many researchers cited that one of the main reasons is the higher costs of feed, their questions research was "why poultry production does not perform well and depend on the direction of the prices of the primary components of feed (Elsedig *et al.*, 2015; Chanjula and Pattamarakha, 2002) [10, 4]. They believe that the broiler production major issues are the high cost of feed, also the lack of prevention knowledge of selection and mating process, disease and disease outbreaks.

The importance of the paper In the national agricultural production sector in Malaysia livestock considers as one of the importance contributors, the poultry section was participate by 5.88% in gross domestic product (GDP) in Malaysia in 2015 (Department of Statistics, Malaysia, 2017).

Problem statement

Based on the figure of self-sufficiency level, the broiler industry in Malaysia increased self-dependency from 2006 to 2015. The rise of self-sufficiency goes along with the increment of production and consumption of broiler in Malaysia. This trend may create the opportunity for the Malaysian government to keep the sustainability of broiler industry and expand the industry to be more competitive. In order to sustain this industry and become major exporter in chicken production, the government needs to increase the production, at the same time, encourage broiler farms to gain the yield more efficiently and effectively (DVS 2017) [9]. The information of farm production is essentially required in order to find the input and output of broiler system. The input may arise from the total expenses during the production and the output is initially from the total number of production. Regarding the study of Ravindran, (2013) [21]

the cost of feed constitutes as the major problem of broiler, any change of this cost will impact significantly to the input and output of the broiler sector.

Moreover, if the broiler project is financially viable and highly profitable, this circumstance may boost the production of broiler industry in Malaysia, whereas it will encourage new farmers to participate in the industry and the existing farms will increase their output due to the high output with the inexpensive input will generate more profit to their income.

After observing the problem of broiler industry in Malaysia, the actual information of broiler project appraisal in term of farms' viability and profitability needs to be investigated. The farms financial information will describe cost of production and the project assessment will determine either the industry is financially viable or not.

Research Question

- How does the broiler industry assessment the socio-economic?
- What is the most major cost that affects the cost? And Why?

Research objectives

- To describe the socio-economic of the broiler farmers in peninsular Malaysia
- To describe cost analysis and financial projection.

Literature Review

Types of ownership

Demographic and Socioeconomic features are a fundamental data to describe socially the immediate status of poultry farms ownership and management in Peninsular Malaysia, The classes incorporate the farmers age, level of education, working experience, performance scale and its sources of capital. The data uncovered that from the category of age, the majority of farmers are in the age class of 51 years and above and they can reach 40% from whole industry while the young farmers represents just 8%.

Poultry industry is one of the industries that drain capital and this deflects newcomers from investing in this field. This explains the lack of interest of young farmers in entering this area and therefore it can be noted their numbers are small. In the educational aspect, just 8% has a degrees, and who has a diplomas represented 8%, 27% of the participants received primary school education, while the most of the farmers are secondary educated and they are representing 56% in education aspect for farmers.

In terms of agricultural expertise, the farming experience for more than 10 years it is the features by the majority which represent 60% in broiler production, while 20% of the farmers their experience in production from 5 to 10 years, the rest 20% of the farmers their experience from 0 to 5 years. Ezeibe *et al.*, (2014) [14] express that the business

enterprise exercising gives positive effect on management practices.

To distinguish particularly their resource management, sustainability and productivity, the operators were arranged into three classifications; below (30,000 birds) categorized as small scale, in between (30,001 to 125,000 birds) categorized as medium scale and the large scale in production is (over 125,000). The outcome appeared around 90% of farmers were in the small and medium scale classifications while the remaining 10% are large scale categories. This will impact the productivity since there is no feasibility of scale in small operations. This finding is similar to the discoveries of Farooq *et al.* (2001) [15] and Ahmad *et al.* (2008) [1], that the small and medium scale operators are the majority of the farmers.

Credit is a critical element that empowers agriculturists to buy sufficient inputs and to achieve ideal working capital to achieve a perfect yield. It can be seen that 52% of the domestic poultry farmers independently export their credit, while 48% of the farmers depend on advances from institutional source to raise credit for poultry production. However, the government is currently offering loans at a 3.75% subsidized rate as an incentive for the industry. (Gabdo, B. H., Mansor, M. I., Kamal, H. A. W., & Ilmas, A. M. 2015) [16].

Feed cost issue

Feed cost is considerable as one of the highest sensitive components cost that constraint the poultry sector in Malaysia, which constitute 70% of production cost (Ariffin *et al.*, 2014) [2], the amino acid and protein are the highest cost feed elements and they must achieve the level required of ingredients for the poultry feed formulation (Corzo *et al.*, 2005; and Darsi *et al.*, 2012) [6, 7]. In 2008 during the food crisis at the peak, the feed elements of aggregate costs for poultry production raised from 51.8% in 2001 to 68.7% in 2008 (Donohue and Cunningham 2009) [8].

Feed costs in the poultry industry rise and fall in line with supply and demand for the ingredients that make up every ton of feed. Approximately 60% of the average US poultry diet is corn, with another 25% of the diet made from soybean meal.

Methodology

This paper focuses on applying data analyses, namely descriptive-production analysis. Therefore, the description of farm budgetary as fixed cost, variable cost, net return, input-output ratio and Feed Conversion Rate (FCR) are explained to understand clearly the outcome of descriptive-economic analysis.

Conceptual framework

Conceptual framework is very important to provide clear path of the research project's goal. It determines the flow of aspects of research process with beginning from problem statement, data presentation, data collection, data analysis and finally connect to outcome of the study (Sharon and Matthew, 2012; Eneizan *et al.*, 2018; Eneizan *et al.*, 2016a) [23, 11, 12].

In this study, the illustration of conceptual framework is explained by figure 2. At the first stage, the research tries to elaborate the problem of broiler industry, which is previously explained from the problem statement in chapter one. Then, finding the actual data from broiler farms in

Peninsular Malaysia that is initially based on primary data observation and any literatures or recent information as secondary data. Once the data has been collected, the data analyses are applied by methods namely descriptive-production analysis. The descriptive-production analysis illustrates the socio-economic characteristics of the farmers; production background such as average weight of the chicken, mortality rate, and Feed Conversion Rate (FCR); and farm budgetary includes the information about fixed cost, variable cost, net return and input-output ratio.

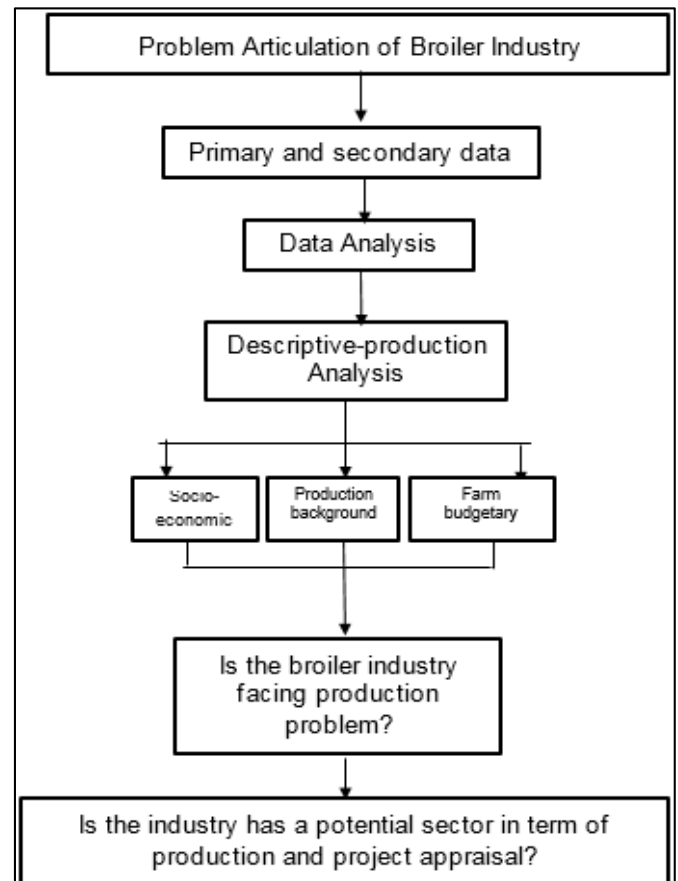


Fig 2: Conceptual framework

Descriptive-production background

In order to illustrate the production background of broiler farms, the study uses the analytical approach as descriptive statistics and simple economic analysis. According to Jaggi, (2012) [18] and Eneizan *et al.*, (2016b) [13], descriptive statistics provide a summary data; it is normally presented as graphical and numerical figures to have actual background of the data. The descriptive data includes the age of farmers, education level, working experience, business types and technological input in coop system. On the other hand, Heady and Dhillon, (1998) emphasized that economic analysis may be simple or complicated, it depends on type of farm and adapted technology. Thus, the research applies farm budgetary technique to compute economic costing-variables namely fixed cost, variable cost, net return and input-output ratio.

Production function equation:

$$Q = f(cv, cf)$$

Where,

Q = the quantity of output

C_v = the quantity of variable inputs used
 C_f = the quantity of fixed inputs employed

In this equation, the analysis of production cost will be measured based on the variable inputs and fixed inputs. Then, according to Sahzadi *et al.*, (2006)^[22], one of the most essential ratios in animal production is attaining Feed Conversion Ratio (FCR).

In General, the poultry farms always manage the feed consumption as efficient as possible in order to minimize this ratio. For instance, if the FCR constituted at 2, it may be assumed that the farm management in adapting technology converts 2 kg of feed into 1 kg of meat, this circumstance, however, is not efficient in broiler production.

Feed Conversion Rate equation:

Total Feed (kg) / Total Weight (kg) =FCR

Results and discussions

The results are elucidates the descriptive analyses that introduce the background information of the socio-economics and the farm managements. The information of farmer background includes age, gender, education level, business status, coop systems and farming experiences. The background of broiler production is explained by the average value and consists of total size farm, price of Day Old Chick (DOC), mortality rate, average weight in producer and feed conversion rate (FCR).

Moreover, the attribute of initial investment (fixed cost) and operational cost (variable costs) are elaborated as well as coop cost, feed cost, labor cost and maintenance costs.

Descriptive analysis and Economic analysis

Table 2 illustrates the descriptive analysis of broiler farms. The descriptive analysis elucidates the general information of the broiler farmers in term of age distribution, gender, education level, business status, system of coop and experience in the farm. Based on age distribution, majority (44%) of them were above 50 years of age. Followed by the range age between 40-49 years old (29%), 30-39 years old (22%) and below than 30 years old (6%) respectively. Then, About 92% per cent of them were male and female's ownerships were 8%. Educationally, only less than 1% of the broiler farmers never attended any formal education, most (56%) of the farmers attended high school/vocational schools and the least about 27% and 16% were schooling at primary education and higher education respectively. In terms of business status, most (64%) of the farmers engaged in contract farming and only 36% was non-contract farming. Then, the open system was still the prior technological adoption of the broiler farmers as 63% of them were preferred to adapt open system and about 37% generated close system. Furthermore, the broiler farmers had high experience; most (66%) of them had more than 11 years of production experience and only 33% of the farmers run the business less than 10 years.

Table 2: Socioeconomic attributes of broiler farmers

Attribute	Frequency	Percentage (%)
Age		
Below 30 years	19	6.13
30-39 years	67	21.61
40-49 years	89	28.71
Above 50 years	135	43.55
Gender		
Male	286	92.26
Female	24	7.74
Educational level		
Uneducated	3	0.97
Primary Education	83	26.77
High school/vocational	173	55.81
College/University	51	16.45
Business status		
Contract farming	198	63.87
Non-contract farming	112	36.13
Coop Systems		
Open system	194	62.58
Closed system	116	37.42
Broiler farming experience		
0-10 years	105	33.87
11-20 years	112	36.13
Above 20 years	93	30.00

Table 3 explains the average production background of broiler industry in Peninsular Malaysia. It is interesting to note that broiler farmers in Peninsular Malaysia used the land capacity with a mean farm size to 6.37 acres for applying 7 coops and approximately it may occupy about 56, 510 Day of Chicks per one cycle production. Then, the mean price of DOC at farm level was RM 1.62 per bird and selling price per kilogram of chicken implied to RM 4.44. In one cycle production, the level of mortality rate constituted about 4.30%. Yet, on average weight per chicken, farmers

produced 2.17 kg/chicken in order to sell it at the farm gate. The result of mortality rate and average weight of broiler production, however, identified within the result from DVS statistics. Furthermore, the information on Feed Conversion Rate (FCR) is important to illustrate feed consumption each bird per kilogram (Sahzadi *et al.*, 2006)^[22]. Thus, the average value of FCR in Peninsular Malaysia was 1.43; implying the consumption of 1.43 Kg of feed will increase the bird's weight by a kilogram.

Table 3: Average production background of broiler farms in Peninsular Malaysia

Variables	Values
Number of day old Chick (DOC) per cycle	56,510
Total size of farm (acre)	6.37
Coop quantity	7
Price of DOC (RM)	1.62
Selling price per kg	4.44
Mortality Rate (%)	4.30
Average Weight of Broiler (kg)	2.17
Feed Conversion Rate (kg of feed/ kg of meat)	1.43

Source: Survey Data 2013

The table 4 below showed the common items of initial investment in applying the broiler farms. Initial investment or fixed cost goes to project investment as permanent assets and any related stuffs to perform farm production. Building a henhouse or coop represented almost 68.26 % from the list of total fixed cost. On average, the broiler farm requires at least about RM 625,980.83 to set up the total coop system. Then, the number of lorry also constituted to the second

major of capital investment. This circumstance, however, is common since the transportation is being primary activity for the broiler farm to transfer its production to the farm gate. Nevertheless, the general tools in the direct production system namely feed box, drinker, play wood were not highly contributed to the total cost of farm investment. The percentage of those items was solely less than 2% to the total investment.

Table 4: Initial investment of broiler industry in Peninsular Malaysia

Fixed costs	Cost (RM)	Percentage (%)
Coop (Size: 45" x 400")	625,960.83	68.26
Trance	46,872.54	5.11
Fence	10,005.00	1.09
Lorry:	110,231.71	12.02
Car (4x4 wheel):	33,967.74	3.70
Feed box:	15,099.81	1.65
Drinker:	16,492.12	1.80
Generator:	33,191.56	3.62
Plywood:	1,439.79	0.16
Farm Road	9,689.36	1.06
Tyres Treatment	8,673.67	0.95
Preventive room	5,368.75	0.59
Total fixed cost RM	916,992.87	100

Source: Survey Data 2013

The list of variable cost pattern in broiler production illustrated particularly in table 5 below. The variable cost in broiler production consists of any cost instrument in spending in one cycle production. The result showed that the total variable cost per cycle production was paid to RM 467,478.86. In other assumption, in order to produce one kilogram of chicken, the broiler farm needs to recompense

at RM 3.97. However, the primary cost is reflected in the feed expenses to the total of variable costs, since the broiler farms need to spend about RM 2.75 in producing one kg of chicken. It may be assumed that any changing of the feed cost will significantly effect to the total expenses of broiler production or cost of feed is highly sensitive to the broiler production cost.

Table 5: Variable cost pattern

Variable cost items	Cost per farm (RM)	Cost per kg
Day old chicks	92,037.90	0.78
Feed	322,878.20	2.75
Labour charges	15,897.57	0.14
Medicines/veterinaries	11,898.93	0.10
Electricity/diesel	7,177.21	0.06
Transport	4,900.22	0.04
Maintenance	3,328.53	0.03
Sawdust	2,642.56	0.02
Cather cost	2,188.77	0.02
Water and gas	2,470.27	0.02
Miscellaneous items	2,058.70	0.02
Total variable cost RM / kg	467,478.86	3.97

Source: Survey Data 2013

Furthermore, in terms of percentage proportion in broiler expenses (Figure 3), the cost of feed cost was dominated as higher cost among other operational cost during production

in one cycle. The proportion feed cost of broiler industry in Peninsular Malaysia constituted about 69.1% from the total expenses and it was followed by the cost of Day Old Chick

(19.7%). Regarding on Ravindran, (2013) [21] stated that 70% of total cost of broiler production proceeds to the feeding instrument and it followed by day old chicks (22%), and the rests as labor charges, electricity and medicines (10%). This findings, however, almost has similar proportion from the previous results namely Ahmad *et al* (2008) [1], Ravindran (2013) [21] and Singh *et al* (2010) [25]

where the feed cost listed as the high cost production. Furthermore, the next ranks of expenses costs are followed by labor charge, medicine/veterinaries, electricity cost, transport cost, maintenance cost, sawdust, catcher cost, water/gas and miscellaneous items, constituting as 3.4%, 2.5%, 1.5%, 1.0%, 0.7%, 0.6%, 0.5%, 0.5% and 0.4% respectively.

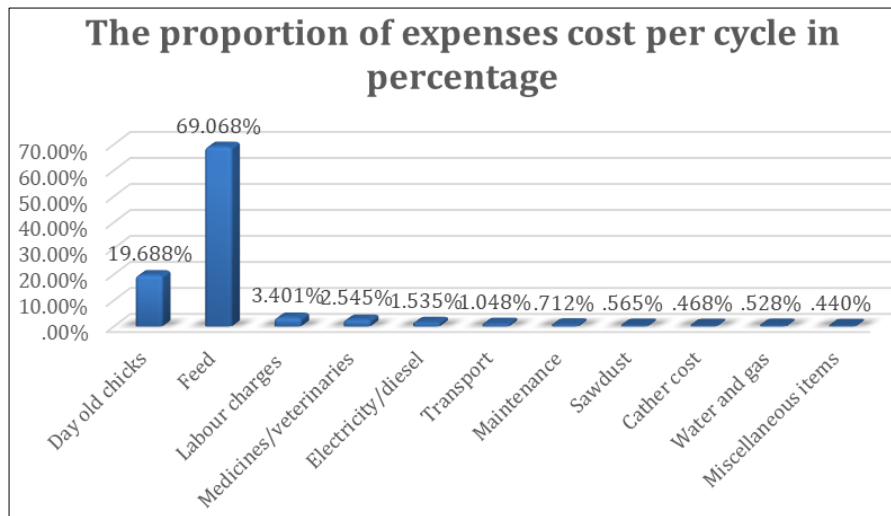


Fig 3: The percentage of expenses distribution (Source: Survey Data 2015)

The Table 6 illustrated the average net return of broiler farm in Peninsular Malaysia. The net return of broiler production focused on the mutual calculation of net cash flow method. The instruments of depreciation cost and government tax were imposed to attain the net return value either per cycle or per bird. In order to compute the net return, the entities of initial investment or fixed cost should not be applied to avoid bias estimation (Chen and Koebel, 2013) [5]. Moreover, Baumol and Willig (1981) [3] solely emphasised the initial investment is generally employed in computing the long run business or project assessment. Thus, in this part, the value of net return is described by the value of total revenue, total variable cost, depreciation cost and tax obligation. The finding revealed that broiler farms in Peninsular Malaysia simply received the earnings after tax was RM 154,736.65 per one cycle production. Furthermore, the profit per kg could be attained by 47 cent and RM 1.02 per bird sold.

Table 6: Net return to broiler farms for tax paying enterprise

Variables	Values (RM)
Per farm net profit	
a. Total revenue	2,612,800.13
b. Total fixed cost	916,992.87
c. Total variable cost	2,337,394.30
d. Total depreciation cost	69,090.29
e. Total cost (c+d)	2,406,484.59
f. EBT (a-e)	206,315.53
g. Tax (EBT*25%)	51,578.88
h. EAT (f-g)	154,736.65
i. Depreciation	69,090.29
<i>Operating cashflow (h+i)</i>	223,826.94
Per bird net profit	
Net profit per Kg (RM)	0.47
Net profit per chicken (RM)	1.02

Source : Survey Data 2013

Table 7 showed the input-output ratio of broiler farms in Peninsular Malaysia. In assumption, the input-output ratio is a ratio to determine the return of the farm and evaluate farm's efficiency. The ratio is mainly computed by dividing the total cost as the input cost and revenue as output cost. The result presented that the ratio of broiler industry in Peninsular Malaysia is 1: 1.12, indicating each ringgit of input invested in broiler production will receive profit by 12 cents. However, Khair, (2012) denoted that the high return on investment is not necessarily to be the most profitable broiler farms.

Table 7: Value of input to output (returns) in broiler production in Peninsular Malaysia

Items	Value (RM)	Per Kg
Input cost (kg)	467,478.86	3.97
Output cost (RM)	522,560.03	4.44
Ratio	1 : 1.12	1 : 1.12

Source: Survey Data 2013

Conclusion and discussion

The main objective of the study is to investigate the economic and financial analysis of broiler industry in Peninsular Malaysia. In order to examine the broiler sector to be considerably viable. The study provides specific objectives, in the purpose to examine the socio-economic attributes of the broiler farmers, illustrate the production background from the farm, compute farm budgetary analysis, assess the financial viability in the project appraisal and simulate the changing scenarios in the broiler project viability.

The objective of the study is to explain the socio-economic profile, broiler production background and farm budgetary in Peninsular Malaysia. Based on the outcome, it has shown that majority of the broiler farmers were mature, male

ownership, considerably educated, associating with contract farming, applying open system and having experience more than 10 years in running their business. Then, in the farm, the total DOC per cycle production constitutes about 56,510 birds, with size area of 6.37 acres, which may build about 7 coops. Price of DOC is selling at RM 1.62 and price of the farm gate is RM 4.44 per kilogram. Furthermore, farmers were facing the number of bird mortality rate by 4.30% in average per production cycle and the ration of feed conversion rate (FCR) constitutes 1.43, indicating in order to product 1 kg chicken, the farms need to supply about 1.43 kg of corn. In terms of farm costing, building the coop system presents as the higher capital investment to set up the broiler business and the instrument of feed cost in the cycle operation, engulfs tremendous amount of cash. Therefore, the farms should be aware of the issue of feed cost in the farm management.

In sum, the findings have provided the essential inputs to the Malaysian government in taking seriously the action to the broiler industry in Peninsular Malaysia. The chicken production in Peninsular Malaysia is financially profitable and economically viable to the long project assessment. This industry also may sustain at any level of risks. However, the government needs to take serious intervention to the industry, since the problem of high cost production is still remain in the farm operation.

Recommendation

The information concerning about the potential industry of broiler farm in Peninsular Malaysia may be enforced highly to the Malaysian government. Since the result has positive assumptions and provide comprehensive background in the production and project viability. Thus, the following recommendation are considered as:

The feed cost instruments proceed almost 70% from the total production. Thus, the innovation of replacing the current feed ingredient with the inexpensive feed formula is needed to reduce the production cost. If the feed cost reduces, the farm will receive more income, then, the price of chicken subsequently will decrease. Moreover, the Malaysian government should solely protect the current feed price, since the study has shown that an increase of feed cost by 5% will impact the industry to be not financially viable or bankruptcy.

The study shows that majority of the farmer are both of mature and senior citizenship. The participation of young generation to be a broiler farmer is not determined. Thus, the necessity of extension program is required in giving awareness to the youth to involve in the broiler sectors. Since the young generation has a struggle spirit and creative ideas, where it may likely influence to the efficiency of broiler production.

Coop system constitutes as higher cost for initial investment, thus the owner of broiler farm should aware in building new coop system in order to run the business more efficiency. Moreover, since the cost investment to build new broiler farm is too expensive, the government may promote to provide the simplest loan schemes to new farmer to involve in this industry. By employing new farms in the industry, will lead the rise of production and maintain the industry more locally stable in advance.

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