

## Evaluation of Clean Market Chain from a Biosecure Farm

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### Abstract

This paper presents the existing condition of a clean market chain (CMC) developed by the Indonesian government with the Australian government through AH 169/2006 project in 2011. This research aims at evaluating the existence of CMC update and to record the needs for mentoring for sustainability of the chain to provide product from a biosecure farm. Results of the study shows that the CMC still works and tend to expand with more stakeholders to get involved especially at the organizational buyers. Some policy initiatives need to be applied to make the chain sustain.

**Keywords:** clean market chain, eggs, biosecurity

### 1. Introduction

Eggs are poultry product consumed as a source of animal protein for many Indonesians because of their affordable prices. The outbreak of Highly Pathogenic Avian Influenza (HPAI) in 2003 has affected poultry industries in Indonesia. The government of Indonesia has developed policies through the implementation of biosecurity, that is about managing risks to prevent infectious diseases, pests and weeds entering livestock properties; and to prevent them spreading from an infected property to an uninfected areas. By taking up the biosecurity practices, it is expected that stakeholders in poultry industries contribute directly to cope with a potential disease outbreak and minimize the cost of its control and eradication at the farm and industry levels.

The poultry industry in Indonesia is at the beginning of a promising market segment. The poultry sector is playing an increasingly important role in meeting Indonesian consumers' demand for cheap, safe, food products. Although majority of poultry products are still being sold through traditional markets, an increasing proportion of chicken meat and eggs is being sold through a growing supermarket system. Power is shifting from the producer to the retailer. The larger retailers' buying power is allowing them to dictate price and use suppliers as intermediaries. In the higher end markets, it is more often the supermarket that decides which suppliers will meet their requirements and how they will do it (ACIAR, 2011). Further, smallholder poultry producers, as majority of Indonesian poultry sector, has good momentum to understand this change and develop methods to deliver what consumers demand, rather than simply providing the market with a generic product. Providing products from bio-secure farms marketed through a clean market chain (CMC) has the potential to increase confidence in the products.

The government of Indonesia and the Australian government developed a CMC trial project through AH 169/2006 project in three provinces in Indonesia including Bali, West Java and South Sulawesi. The aim of the CMC trial was to facilitate the implementation of a CMC through the creation of economic incentives for industry stakeholders, rather than being a 'donor'. In a CMC, the spread of virus is reduced because all the links in the chain have measures in place to minimize the risk of virus accumulation and the outbreak and spread of disease. The CMC requires that poultry from farms that have implemented approved biosecurity measures will pass through audited slaughterhouses and be sold in supermarkets that are able to charge a premium price for the product. The potential for obtaining a premium price, along with productivity benefits provided by better biosecurity,

Bali has developed tourist and supermarket sectors that demand safe, clean, healthy products. It was seen as a useful case-study area because it has more modern marketing arrangements than the other two provinces. Potentially, there may be greater potential for the niche Healthy Farm product to be successful in this market. There is also continued evidence of HPAI in the province and a determination by the provincial government to eradicate the disease. The implementation of CMC of eggs in Bali has been established in 2011 through the involvement of stakeholders in the chain including a biosecure farm, collector and Carrefour. The product sold through CMC is labeled "Healthy Farm" and stamped with the logo of the Indonesian Poultry Biosecurity Centre (PBUI-*Pusat Biosekuriti Unggas Indonesia*). In Bali, Carrefour Supermarket recommended an egg supplier, UD Limas, which supplied about 25,000 eggs per day to supermarkets, restaurants and hotels. The PBUI facilitated the linkage between the UD Limas and layer farms.

The ACIAR project finished in 2012. It is more than four years since the CMC was established. It is interesting to evaluate the sustainability of the CMC whether it still works or if any changes occur after the project ends. This research aims at evaluating the existence of CMC update and to record the needs for mentoring for sustainability of the chain to provide product from a biosecure farm. Moreover, the objectives of this study include finding out benefits obtained by the farmers in the egg CMC and who gains highest benefits

from the chain.

## 2. Research Methods

### *Location of the study*

Location of the study was selected purposively following the flow of the goods, from biosecure farm to organizational consumer (supermarket) in the CMC. This study took place from the location of biosecure farm that has PBUI biosecurity certification to get involved in the CMC trial project. There was only one biosecure farm at Petang village, regency of Badung, Bali Province that has PBUI biosecurity certificate to conduct CMC. Then it follows the movement of the product to UD Limas, acting as egg supplier to Carrefour. Lastly, Carrefour is the place to look at for the display of the Healthy Farm product in the CMC.

### *Data collection*

This study is a survey research starting from the farm that implemented biosecurity practices to the stakeholders involved in the CMC. Snowballing method was used to find out stakeholders involved in the CMC. Semi-structured questionnaire was used to attain any information regarding the aims of the study to stakeholders involved in the CMC.

### *Data analysis*

Data collected were analyzed using descriptive qualitative method. This is a description to achieve the aims of the study using several indicators such as:

- Stakeholders involved in the CMC;
- Biosecurity implementation at farm level.
- Logistic management by supplier from farm gate to supermarket.

## 3. Clean Market Chain Performance

Table 1 presents stakeholders involved in the egg CMC in Bali. At the beginning of CMC establishment in 2011, there was only one biosecure farm involved in providing eggs, that is layer farm at Petang village, Regency of Badung. Egg supplier in the CMC is UD Limas. This supplier trades native eggs, quail eggs, duck eggs to several supermarkets at tourism areas in Bali. Prior to the involvement of UD Limas in the CMC, the manager has got training from the ACIAR project to be able to get involved in the CMC and has been audited by the trained ACIAR auditor. UD Limas does the packaging according to the requirement of CMC (packaging with PBUI logo, see Figure 1) and send to Carrefour. Finally, Carrefour displays the CMC product at one corner, exhibit with other eggs from different suppliers. At the beginning of CMC establishment, several outlets were interested in getting involved to display “Healthy Farm” product, however only Carrefour was selected. This is considering that Carrefour is the biggest hypermarket in Bali and it has many expatriate buyers. Carrefour sells around 200 boxes of eggs daily. It is expected that consumers will have high willingness to pay for the CMC product as the eggs come from a healthy farm

Table 1. Comparison of stakeholders involved in the egg CMC in Bali, 2011 and 2015

No	Stakeholders	Year	
		2011	2015
1	Biosecure farm (s)	Petang Village	Petang dan Penebel Villages
2	Supplier	UD. Limas	UD. Limas
3	Outlet	-Carrefour hypermarket	- Carrefour hypermarket - Delta supermarket - Pepito supermarket

In 2015, UD Limas has been able to widen more stakeholders in the chain. At current situation, UD Limas takes eggs not just from Petang village (the first biosecure egg farm) but also from other village (Penebel village, Regency of Tabanan). UD Limas also has expanded its supplies to other supermarkets such as Delta and Pepito. It can be said that UD Limas, as a supplier in the CMC, has important role in widening stakeholders (distribution’s role) as well as a collector along the chain.

### *Evaluating biosecurity practices on farm*

Jubb and Patrick (2010) noted nine points to observe in the implementation of poultry biosecurity. These include the source of production input, traffic within the farms, distance of pathogen source to the shed, biosecurity at farm gate and sheds and condition of the poultry held. This study used Jubb and Patrick’s measures to evaluate the implementation of poultry biosecurity at Petang village and developing to 10 points to look at, as presented in Table 2.

Table 2. Biosecurity implementation from a biosecure farm in the CMC, 2011 and 2015 conditions

No	Description	Beginning (2011)	Current (2015)
1	Fence	Yes	Yes
2	Front door	Yes	Yes
3	Farm signage for no entrance	Yes	Yes
4	Padlock at farm gate	Yes	No
5	Possibility of other birds and animals to enter the farms	No	Possible
6	Vehicle entrance	Yes	Yes
	Vehicle sprayer	Yes	No
7	Foot bath at the shed door	Yes	No
8	Shed door	Yes	Yes
9	No entrance signage at the shed door	Yes	No
10	Padlock at the shed	Yes	No

As can be seen from Table 2, there are six out of 10 changes of biosecurity practices occur on the farm since establishment of the CMC. These include padlocks at farm gate and at the shed, foot bath at the shed door, sign no entrance at the shed door and possibility of other birds and animals to enter the farms. These changes occur as the farmer has changed the farm management system. At the beginning of CMC, the maintenance system of the chickens was semi-closed house and then changed to an open-house system. This system has automatically changed the environment and it also changes on farm biosecurity practices. Management changes into an open-house system have been developed in this farm because of increase in electricity bills. Electricity is one of the main component costs in a semi-closed house as source of power to warm the sheds.

Changes of the management system on the farm should be taken into consideration, whether it is still called a biosecure farm. The length of biosecurity certificate is actually for one year. This farm needs to be re-audited and mentoring is required to guarantee the implementation of biosecurity practices in the CMC. However, it should be taken into account who will do the auditing as the project has terminated few years ago. The auditing could be done by PBUI or Regional Livestock Office. Auditing of biosecurity certification should also include the cost of certification and authority of signature for the certificate. All stakeholders need to consider about the biosecurity certification so the consumers obtain the products according to their payment.

#### *Gains from the CMC*

Biosecure eggs are eggs come from a biosecure farm that has been audited by PBUI at the commencement of the CMC. As the product is labeled as a healthy farm product, it is expected that consumer has high willingness to pay for a different product. In turn, there will be incentive for farmers from that payment to apply biosecurity system. It is also expected that biosecure product will sustain in the CMC. Table 3 shows comparison of prices along the CMC.

Eggs are sold in numbers in the CMC, not according the weight. UD Limas (the supplier) sells the product to Carrefour in a package of 10 eggs, displays at Figure 2. At the beginning of CMC, egg price was IDR 8,500 (10 eggs) and it was sold at IDR 19,475 (in a box of 10 eggs). There was a margin of IDR 10,975, a price difference from Carrefour and farm gate. At this stage, farmer's share, a ratio between producer's price and consumer's price, was 43.65%. It shows that the comparison of farm gate price and selling price at the end of chain was 43.65%. Meanwhile egg price in 2015 was IDR 9,500 and the selling price was IDR 25,900, forming a margin of IDR 16,400 and the farmer' share of 36.68%. There is a decline of farmer's share from 2011 to 2015.

At farm gate price, result from the research shows that there is no different price between selling price of eggs to traditional market and to the supplier. UD Limas pays the same price for the eggs taken from the biosecure farm. Increase price at the end of CMC does not reflect at the farm gate price. It implies that there is no such incentive from the market in applying biosecurity. This is not at accordance of formation of CMC. It was expected that farmer gets premium price from a biosecure farm to maintain its sustainability for a healthy product.

Table 3. Egg prices along the CMCT, 2011 and 2015

No.	Description	Price in 2011 (IDR)	Price in 2015 (IDR)
1	Farm gate price (10 eggs)	8,500	9,500
2	Selling price (a box of 10 eggs) at Carrefour	19,475	25,900
3	Margin/ box	10,975	16,400

Despite of 'unfair price' from the chain, result from interviews with farmer noted that there are benefits from implementing biosecurity on farm. These include reduction in a disease risk and improved productivity. Farmer's perceptions of risk may play a role in their decision to invest in biosecurity. The risk averse may see the investment as a useful form of insurance, while those with less experience of disease or understanding of

disease movement might not wish to invest. Moreover, although farmer received no premium for products from biosecure farms, the owner was satisfied because there is increased productivity and reduced their personal and commercial risk.

## 5. Conclusion

Based on discussion, it can be concluded that:

1. The Clean Market Chain (CMC) developed by ACIAR project in 2011 still exists until current. The Healthy Farm trial has demonstrated the viability of CMCs driven solely by market factors, resulting in a wider stakeholders involved in the chain.
2. Farmer received the same price from selling a biosecure product to CMC and traditional market.
3. There is no premium incentive passing back to the farm gate from consumer's payment. Farmer perceived other forms of benefit from a biosecure farm.

## Policy Implication

1. There is a need for re-auditing for the farms to guarantee sustainable product from a biosecure farm. The length of biosecurity certificate is for 1 year. This can be carried out by Regional Livestock Office. By the same time, farms to be included in the CMC should be audited first.
2. Farmers and supplier (UD Limas) should work together to find out a fair sharing margin from premium price paid by the consumers to make the CMC sustain. dan supplier harus bekerja sama dalam mencari jalan untuk sharing margin dari harga premium yang diperoleh dari penjualan telur biosecure ini sehingga keberlanjutan pelaksanaan biosekuriti di peternakan bisa berkelanjutan.

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Figure 1. Farm healthy Label



Figure 2. Biosecure eggs at Carrefour display