

Socio-Economic Study of Food Stuff and Herbal Medicine for Free-range Chicken as Efforts to Increase Food Reliability and Edibility

Adi Sutanto
University of Muhammadiyah Malang
sutantoi@umm.ac.id

Wahyu Widodo
University of Muhammadiyah Malang

Achmad Mauriza
University of Muhammadiyah Malang

Apriliana Devi Anggraini
University of Muhammadiyah Malang

Imbang Dwi Rahayu
Universitay of Muhammadiyah Malang

Abstract. This study examined the strategic roles in aspects of the food reliability and edibility, which purpose is to: 1) Find out the potential availability of organic food stuff and traditional herbal medicines used for free-range chickens. 2) Find out the determinants of the availability of organic food stuff and traditional organic herb used for free-range chickens. 3) To find out both technical and economic benefits and health of organic food stuff and organic herb used for free-range chickens. This study is based on experimental research and surveys, which were conducted at the enclosure of closed range of University of Muhammadiyah Malang in 2015 to 2019. The survey research was conducted in Malang and Tulungagung to examine the market response to organic herb products for livestock. The experimental object used was giant chicken by giving various food ration treatments and herbal medicines separately with different times. The herbal medicines used were saffron, curcumin, and turmeric. The results of this study show the followings: 1) Production factors of organic food sources are classified into three: physical resource, technical and social-cultural farming actors. 2) Herbal medicine is a commodity that must be developed continually in livestock, especially free-range chickens, proven by its benefits in health. 3) Feeding factor and the use of organic herbal medicine are food components that mutually strengthen the development of food Edibility.

Keywords. *socio-economic, feed, herbal medicine, free-range chicken, canvas model*

INTRODUCTION

Food reliability and edibility for humans and livestock need serious attention because it is still vulnerable to happen in Indonesia, especially the resistance of poultry food. Poultry needs additional herbal food, which is mostly still exported. In Indonesia, additional traditional food stuff are cultural heritage referring to herbal medicines, as made Javanese and

Madurese people [1]. Local herbal medicines are potential, cheap, and safe of hazardous chemicals to be used as an alternative green product to replace drugs [2].

To examine the strategic role in the aspects of reliability and food Edibility as mentioned above, this study is based on the study of aspects of organic food and herbal medicine to: 1) Find out the potential availability of organic feed stuff and traditional organic herb used for free-range chickens; 2) Find out the determinants of the availability of organic feed stuff and traditional organic herb used for free-range chickens, and 3) Find out the technical and economic benefits and health of organic feed stuff and traditional herb used for free-range chickens.

METHOD

This study is based on experimental research and surveys, which were conducted at the closed enclosure of University of Muhammadiyah Malang in 2015 to 2019. The survey research was conducted in Malang and Tulungagung to examine the market response to organic herb products for livestock. The experimental object used was giant chicken by giving various food ration treatments and herbal medicines separately with different times. The herbal medicines used were saffron, curcumin, and turmeric [3].

This study used the Business Model Canvas (BMC) model approach developed by Osterwalder and Pigneur (2012) to analyze data. The BMC approach is one of the approach tools used to describe and manipulate business models easily and simply, helping to understand, explaining, and predicting profitable activities should be carried out. Analyzing using BMC Model includes nine key elements 1) Value proposition, 2) Customer segments, 3) Channel, 4) Customer relationship, 5) Key resource, 6) Key activities, 7) Key partners, 8) Cost structure, and 9) Revenue stream.

RESULT

Fodder determines the success of a particular business, especially free-range chickens, which mostly have been developed in Indonesia. However, the food

stuff is mostly mixed with both harmful chemicals and non-chemicals to zoonotic livestock and human health. Thus, efforts are needed to increase the role of organic foods so that food edibility can be recognized [3].

This study used the role of herbal medicine regarding food edibility by the Decree of the Minister of Health No. 381/Menkes/SK/III/2007 concerning National Traditional Medicine Policy (KOTRANAS). One of the goals is to make traditional medicine for the main commodity that provides multiple benefits, which employ opportunities and reduce poverty.

Description of Research-Specific Studies Determinants of Organic Foods

The determinants of rice production can at least be classified into three factors: physical resource factor, technical factor, and socio-cultural factor of farming. Physical resource factor includes rice fields or moor, and microclimate conditions that affect rice growth and development. The problems faced in the last two decades are the reduction in rice fields because of physical development, the narrow ownership of business land for farmers, the decrease of the land fertility, and the increase of pests. The decrease of rice fields seems unavoidable [4].

The Use of Organic Herb for Livestock

Traditional herbal medicine is applied in livestock business as well as the use of modern medicines [5]. Along with the shifting of modern concepts, people prefer using herbal medicine to replace for chemical medicines.

Study of the Business Canvas Model

The results of the study using the business model are shown in Table 1.

Table 1. Canvas Feed and Herbal Medicine Business Models

Key Element	Feed	Herb
a. Value proposition	<ul style="list-style-type: none"> Organic Health 	<ul style="list-style-type: none"> Organic Health Easy to get
b. Customer Segments	<ul style="list-style-type: none"> Limited Certain (group) 	<ul style="list-style-type: none"> Unlimited Wide community
c. Channel	<ul style="list-style-type: none"> Direct Indirect Online Media 	<ul style="list-style-type: none"> Direct Indirect Online Media (market tools)
d. Customer relationship	<ul style="list-style-type: none"> Specific Economy motives 	<ul style="list-style-type: none"> General Non-economy motives
e. Key resource	SDM, limited infrastructure and technology	SDM, limited infrastructure and technology
f. Key activities	Dynamic and significant experimental research	Dynamic and significant experimental research
g. Key partners		
h. Cost Structure	Not specifically identified	Not specifically identified
i. Revenue stream	Not specifically identified	Not specifically identified

Source: Results of research studies (data processed)

Value Propositions. Organic foods and herbs are beneficial combinations to be developed, especially for free-range chickens, because they are made naturally and easy to obtain [6]. However, both organic foods and herbal medicine have no attention of farmers because it is difficult to get raw materials due to their high price or deficiency.

Customer Segments. The results showed that farmers offered both rice and maize only to middlemen and farmers as well as intermediary traders as their regular customers. It was not widely marketed because the

production was relatively low comparing to the total needs of livestock production. Thus, the target of consumers as well as the market segment to farmers is relatively limited to the production. Specifically, market segmentation related to the level of consumer economy income cannot be mapped, as well as segmentation based on demographics (age), community, and specific behavior of the target consumer farmers (e.g. its reaction to change the price of rice and organic corn) does not occur in this organic pack market segmentation. Thus, this study is difficult to find out consumer’s behavior in obtaining organic food needs.

The use of traditional medicines reduces the use of modern medicines, which are relatively expensive. The trend of reusing natural wealth as a herbal medicine is a heredity of ancestors to increasingly widespread, not only for humans but also livestock. The use of plants as an antibiotic is known as herbal medicine, but this term is not yet widely known among farmers. It is not as popular as herbal medicine for humans. This study found that there are factories that produce herbal medicine massively, especially the use of herbs for livestock.

Channels. Good organic food products in the form of rice, bran, corn, and herbal herbs are distributed in various ways, depending on the consumer’s segment of farmers. The distribution can be direct sales or coordination by intermediary traders, such as middlemen, distributors, marketing staff or websites. The more creative sales channels, the greater opportunity to promote organic food and herbal medicine to customers. The results of this study were promoting herbal medicine through advertising, sales promotion, public relations, personal sales, and direct marketing, which influenced the decisions of consumers in buying livestock herbal products.

Customer Relationships. Farmers must be able to build and maintain relationships with customers. One of them is to design information and communication based on information technology. Thus, it is easy to promote the products to consumers, especially related to bargaining. In addition, farmers only provide loading costs for milling for rice, bran or grain, so the price is relatively cheap. Because organic food production is relatively limited, its price is relatively low. That is why mostly middlemen come for business so that good relation between farmers and traders is relatively well maintained. Price issue is not a serious problem faced by farmers and traders. The merchants partially pay for purchase after a certain period of time because of the large nominal values. Thus, the trader takes the food, and then will be paid after the merchant receives payment from the end consumer.

Key Resources. Resources owned by farmers in the research area for both herbal food and herbal medicine, the level of education, knowledge, skills, and experience in the use and utilization of herbal products are relatively moderate with relatively limited scale of business control, thus making it very difficult for farmers to scale up their business development. This is also supported by the limited and simple use of technology [7].

Key Activities. This study is based on experimental research that produces several findings as follows: 1) The use of food and organic herbal medicine does not have a significant effect on the efficiency of free-range chicken, but it has a significant influence on the income over food cost (IOFC) of free-range chicken food. 2) Herbal medicine can be used as a food preservative to spur the growth of free-range chickens, as well as antibiotic growth promoters (AGP) which have negative effects on free-range chickens. 3) Natural antibiotics in herbal medicine can be an alternative use to save AGP without adverse effects on foods [8] [9].

Key Partnerships. The success of farmers and herbal producers in developing organic herbal foods and herbs is inseparable from the cooperation role of various parties to enhance their capabilities. Organizational support at the farm level is an important key in cultivating organic farming. This is related to counseling and certification issues. Organic agribusiness at the level of small farmers will be difficult to run without the support of farmer organizations. In some areas, farmer organizations have been well established, but it is still difficult to run them in certain areas. Institutional farmer groups have not yet functioned properly, they are merely as a medium to facilitate coordination and organization related to service programs [10].

Cost Structures. The costs that the farmers pay to develop organic foods and herbs are planting, maintaining, and harvesting costs, in which they are quite costly to the production activities. Transporting cost is mostly charged by collectors or farmer group members who come to transport the food stuff. The cost is relatively cheap.

Revenue Streams. The source of business income for food and organic herbs is obtained from the difference of sales revenue minus total cost. It describes the profit of the company from customer segments. The business model can be developed in the field of production by franchise, processing services, and other possibilities. This study requires further studies on business opportunities that can be developed with various models.

CONCLUSION

This study aims to determine the potential availability of organic food stuff for free-range chickens and to study traditional herbal medicines that indicate these followings: 1) Determinants of producing organic food stuff are classified into three main factors: physical resource factor, technical factor, and social-cultural factor of farming. Meanwhile, there are other factors that need to be considered: producers and labor, institutional and partnership farmers, and the organic food market; 2) Herbal medicine is a commodity that must be continuously developed in livestock, especially free-

range chickens, as proved by its benefits in these animals' health, and 3) Both organic food and the use of herbal medicine are two components that mutually strengthen each other to develop food edibility.

REFERENCES

- [1] Ahmed M H, Atti K A, Malik H E, Elamin K M, and Dousa B M. Ginger (*Zingiber officinale*) Root Powder As Natural Feed Additive For Broiler Chicks *Global Journal of Animal Scientific* 383-389, 2014.
- [2] Rahayu I D, Widodo W, and Sutanto A. The effect of fermented organic feed usage on the health status of kampung chicken *International Journal of Biosciences(IJB)* vol 12 chapter 4 p 35-42, 2018.
- [3] Rahayu I, Widodo W, and Sutanto A. Produksi Pakan Organik Ayam Broiler Untuk Keamanan dan Ketahanan Pakan dan pangan Di Indonesia *Laporan Penelitian Unggulan Perguruan Tinggi*(Malang: Universitas Muhammadiyah Malang), 2015.
- [4] Kusnandar, Padmaningrum D, Rahayu W, and Wibowo A. Rancang Bangun Model Kelembagaan Agribisnis padi Organik dalam Mendukung Ketahanan pangan *Jurnal Ekonomi Pembangunan* vol 14 chapter 1(*Indonesia, June 2013*)pp 92 – 101, 2013.
- [5] Karangiya V K, Saysani H H, Patil S S, Patil D D, Garg K S, Murthy N K, Ribadiya and Vekariya S J. Effect of Dietary Supplementation of Garlic, Ginger and Their Combination on Feed Intake, Growth Performance and Economic in Comercial Broilers *Vet Word* vol 9 chapter 3 pp 245-250, 2016.
- [6] Widodo W, Rahayu I D, Sutanto A. Nutritive Content Assessment of Organic Feedstuff from Various Regions in East Java Province: Indonesia as Potential Exploration Efforts of Local Poultry Feed. *International Journal of Biosciences (IJB)* vol 12 (3) pp 18-23, 2018.
- [7] Selim N, Youssef S, and AF. Abdel Salam A S. Evaluation of Some Natural Antioxidant Sources in Broiler Diets : 1-Effect on Growth, Physiological, Microbiological and Immunological *International Journal of Poultry Science* vol 12 pp 561-571, 2013.
- [8] Suriya R, Zulkifli I and Alimon A R. The Effect of Dietary Inclusion of Herbs As Growth Promotore in Broiler Chicken *Journal of Animal and Veterinary Advances* vol 11 (3) pp 346-350, 2012.
- [9] Onyimonyi A E, Chukwuma P C, dan Igbokwe C. Growth and hypocholesterolemic properties of dry garlic powder (*Allium sativum*) on broilers. *African Journal of Biotechnology* vol 11 chapter 11 pp 2666–2671, 2012.
- [10] Wahyuningsih S. Pengembangan Agribisnis Ditinjau dari Kelembagaan vol 3 (1) pp 9-20, 2007.