

# **Circular Economy Of Quail Farming For Culinary Product Innovation-Based Quail For Developing The Culinary And Tourism Industry In Indonesia**

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## **Abstract**

The great potential of the tourism sector if collaborated with the quail-based culinary industry will increase the potential for new economic opportunities and will directly increase new jobs and will give an impact on Indonesia's economic growth which in 2023 has reached 5.05%. Based on BPS data (2023), the number of accommodation businesses in Indonesia was 29,005 businesses, 15% of them are starred hotels. In the hotel business, the culinary business is one of the sources of income. This is an opportunity for quail-based food products to be used as raw materials for culinary processing in hotels. The purpose of this study is to determine the circular economy of quail farming for culinary product innovation-based quail for developing the culinary and tourism industry in Indonesia. This study uses a descriptive method through literature studies. The results of the study showed that quail, besides having the advantage of a delicious taste to be used as a culinary ingredient, also has other advantages including: 1) having a high nutritional content; 2) easy to cultivate; and 3) having a unique and versatile taste in various dishes. Quail farming has a lot of potential to support circular economic practices, including: 1) Utilization of Quail Manure: 2) Eggshell Waste Processing: 3) Utilization of Quail Carcasses or Remains: and 4) Renewable Energy: 5) Edu-Farm Tourism. Innovation in product packaging and marketing can also increase the selling value of quail products, especially among young consumers who prefer practical and healthy food products. The export potential of quail products is also increasing with the increasing demand in the international market, especially in Asia and Europe. This will encourage the development of culinary products in supporting the Indonesian tourism industry.

**Keywords:** Circular Economy, Culinary Industry, Tourism Industry, Quail Farming, Innovation Products.

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## **I. Introduction**

Indonesia has various species of poultry, one of them is the quail, which is an endemic species in Indonesia that has important ecological and economic value. There are several types of quail that are naturally found in various regions in Indonesia, such as the Stone Quail (*Coturnix chinensis*) and the Red Quail (*Perdica asiatica*). The existence of this quail has long been part of the sustainability of the local ecosystem, having a role in maintaining environmental balance through its activities as an insect and seed eater. Besides as an endemic, quail also has its own cultural value in various regions in Indonesia, where local people often use quail as a source of food and ingredients in traditional rituals. The uniqueness of quail as an endemic animal of Indonesia adds to its appeal as a culinary ingredient that is not only delicious, but also rich in historical and cultural value. This will have an important role in supporting the development of the culinary and tourism industry in Indonesia.

Tourism is one of the economic factors that can quickly bring in foreign exchange for the country if managed properly and sustainably (Rifai & Kurniawan, 2023). The role of tourism in the economic sector is considered important, both as a foreign exchange earner and for other economic opportunities (Wicaksono, 2022). In 2023, the tourism sector contributed 3.9% of the Gross Domestic Product (GDP), this contribution increased when compared to 2022 which was 3.6% (BPS, 2024). The great potential of this tourism sector if collaborated with the culinary-based quail industry, will increase new economic potential and directly increase new jobs and will give an impact on Indonesia's economic growth which in 2023 has reached 5.05%.

Based on BPS data (2023), the number of accommodation businesses in Indonesia is 29,005 businesses, 15% of them are starred hotels. In the hotel business, the culinary business is one of the sources of income. This is an opportunity for quail-based food products to be used as raw materials for culinary processing in hotels. Besides, culinary product MSMEs can also utilize these food products-based quail to produce new culinary product innovations.

In today's digital era, tourists generally do not only look for interesting tourist destinations, but also want to enjoy unique cuisine based on taste and portion size, consider the nutritional value and art in serving dishes, as well as the application of a circular economy in its production process. A circular economy is a model that seeks to extend the life cycle of a product, raw materials, and existing resources so that they can be used as long as possible. The principles of a circular economy include reducing waste and pollution, keeping products and materials in use for as long as possible, and regenerating natural systems (MacArthur Foundation, 2015).

In terms of sustainability, quail-based products are more environmentally friendly. In the face of climate change and increasing awareness of the importance of environmentally friendly agricultural practices, quail products can be an effective solution. Research shows that quail farming has a lower carbon footprint compared to other poultry meat production. This makes quail products a better choice for consumers who care about the environment, as well as opening up opportunities for the culinary industry to adopt more sustainable ingredients. Tourists, in this case foreign tourists, pay close attention to the sustainable economy and Culinary Art of a food and beverage product, so it is a challenge for culinary entrepreneurs to continue to innovate to produce culinary products that are attractive and liked by foreign tourists.

Indonesia, as a country known for being friendly and having diverse cultures, has become one of the destinations for foreign tourists. Based on BPS data, the number of foreign tourist visits to Indonesia over the past 10 years has tended to increase before the Covid-19 Pandemic as seen in Table 1. Foreign tourist visits to Indonesia reached their highest figure in 2019 at 16.1 million people and experienced a drastic decline of 74.8% in 2020 to 4.05 million people and in 2021 to 1.55 million people as a result of the Covid-19 Pandemic. Then the number of foreign tourist visits began to increase by 251.2% to 5.47 million foreign tourists entering Indonesia in 2022 compared to 2021 which was only 1.55 million people after restrictions on community activities were relaxed. This is certainly an opportunity for the development of the culinary industry based on quail products.

**Table 1. Number of Foreign Tourist Visits to Indonesia in Year 2013 – 2022**

Year	2013	2014	2015	2016	2017
Foreign Tourist (person)	8,802,129	9,435,411	10,406,759	11,519,275	14,039,799
Change		7.2%	10.3%	10.7%	21.9%
Tahun	2018	2019	2020	2021	2022
Foreign Tourist (person)	15,810,305	16,106,954	4,052,923	1,557,530	5,470,000
Change	12.6%	1.9%	-74.8%	-61.6%	251.2%

Source: BPS, 2023

Many factors influence the number of foreign tourist visits to Indonesia, such as economic, social, cultural, educational, religious and other factors. According to (Kotler & Armstrong, 2012), factors that influence tourists' decisions to visit are influenced by cultural, social, personal and psychological factors of tourists. In addition, the increasing trend in the number of foreign tourist visits to Indonesia before 2020 was also caused by the Indonesian government's intensive development of various supporting infrastructure for the tourism industry and promoting tourism through various conventional and digital promotional media as well as the development of sustainable creative industries including the culinary industry.

Based on the explanation above, the purpose of this study is to determine the circular economy of quail farming for culinary product innovation-based quail for developing the culinary and tourism industry in Indonesia.

## **II. Research Method**

The method used in this paper is a study of literature related to circular economy and culinary product innovation-based quail. This literature study is used to find circular economy and various culinary product innovations-based quail for developing the culinary and tourism industry in Indonesia. The data used in this study is secondary data. Secondary data was obtained from the Ministry of Tourism and Creative Industries, the Statistics Bureau of Indonesia (BPS), the Ministry of Finance, Bank Indonesia, and various other related agencies or associations.

## **III. Result And Discussion**

### **Circular Economy of Quail Farming**

The circular economy is a model that seeks to extend the life cycle of products, raw materials, and resources so that they can be used for as long as possible. The principles of the circular economy include reducing waste and pollution, keeping products and materials in use for as long as possible, and regenerating natural systems (MacArthur Foundation, 2015).

Quail farming has a lot of potential to support circular economy practices, including:

**a) Utilization of Quail Manure**

Quail manure contains high levels of nitrogen, phosphorus, and potassium, so it can be processed into organic fertilizer for plants. This fertilizer supports sustainable agricultural practices and reduces dependence on chemical fertilizers. With good management, quail farming waste can even be used as organic fertilizer, supporting sustainable agriculture (Mutiarra et al., 2017).

**b) Eggshell Waste Processing**

Quail eggshells are rich in calcium can be recycled into animal feed additives or used as natural calcium supplements in agriculture and animal husbandry.

**c) Utilization of Quail Carcasses or Remains**

Unused quail carcasses or remains can be processed into protein flour which is used as raw material for fish or other livestock feed.

**d) Renewable Energy**

Quail droppings can be used to produce biogas as a renewable energy source, which can be used for household needs or the livestock business itself.

**e) Edu-Farm Tourism**

Edu-farm is a form of tourism that combines education with direct experience in a farming or livestock environment. In the context of quail-based Edu-farm, tourists not only enjoy recreation, but also learn about quail farming, livestock management, and its economic benefits. This concept supports sustainable tourism by providing visitors with insight into the importance of quail farming as a food source, business opportunities, and its contribution to the environment. Quail Edu-farm offers interactive experiences, such as observing the quail maintenance process, harvesting eggs, and trying quail-based culinary dishes. With this approach, tourists, especially families and children, can gain new knowledge while enjoying fun activities.

Quail farming is a relatively easy and efficient business. With a fast life cycle and high egg production rate, quail can be a profitable source of income for small to medium-scale farmers. In addition, quail farming requires less land compared to other poultry, making it a suitable choice for rural communities with limited land. In addition to its high productivity, quail are also known to be easy to maintain, do not require large areas of land, and are adaptive to various environmental conditions (Puspita et al., 2023). With the increasing development of agricultural technology, Indonesian people can also take advantage of innovations in feed, health management, and hatching technology to increase the productivity and quality of livestock products. With a short life cycle and relatively low maintenance costs, quail farming is an economical choice for small and medium-scale farmers (Mutiarra et al., 2017). Waste from quail farming, such as manure, egg shells, and leftover feed, can be used as raw materials for other purposes, such as organic fertilizer or animal feed, thus creating a more sustainable value chain (Puspita et al., 2023).

In addition to the farming aspect, processing of quail-based products also offers various business opportunities. Processed products such as salted quail eggs, quail satay, and quail egg-based snacks are increasingly popular in the domestic market. Innovation in product packaging and marketing can also increase the appeal and selling value of quail products, especially among young consumers who prefer practical and healthy food products. Not only that, the export potential of quail products is also increasing with increasing demand in the international market, especially in Asia and Europe. This will of course encourage the development of culinary products in supporting the Indonesian tourism industry.

**Benefits of Quail**

Every country in the world expects an increase in the number of foreign tourists entering their country. Increasing the number of foreign tourists is one of the quickest ways to increase the country's foreign exchange reserves from the tourism sector. The increasing arrival of foreign tourists shows that the economic condition of a country is good. For the development of the tourism industry in Indonesia, it is necessary to support the development of a culinary industry using local raw materials so that it can reduce dependence on imported raw materials. Quail as an endemic poultry animal of Indonesia can be an alternative food source for the development of a culinary industry using local raw materials.

In addition to having the advantage of a delicious taste to be used as a culinary ingredient, quail also has other advantages including: 1) having a high nutritional content; 2) easy to farming; and 3) having a unique and versatile taste in various dishes. Quail meat is rich in protein, vitamins, and essential minerals such as iron, magnesium, and phosphorus. This high nutritional content makes quail meat a healthy and nutritious choice for consumers. In addition, quail meat is also low in cholesterol and saturated fat, making it suitable for those who care about heart health. According to a report from the Food and Agriculture Organization (FAO) (2017), quail have a short life cycle and high reproductive ability. They can lay eggs every day, with a short egg incubation period, around 16-18 days. This allows farmers to develop quail farming businesses quickly and efficiently, making it an attractive business opportunity in the agricultural sector. Quail meat has a soft texture and rich flavour, which is suitable for various cooking methods, such as frying, baking, or cooking with traditional spices. This unique taste makes quail meat increasingly popular among chefs and culinary lovers who are looking for ingredients that are different from the usual.

Quail, which is small in size, has many extraordinary benefits for health and food security in Indonesia. Quail eggs are rich in various important nutrients, such as protein, choline, iron, vitamin A, vitamin B12, and folate. The protein content is twice than of chicken eggs, making it an ideal source of animal protein, especially for children and the elderly. Choline is important for brain development and memory, iron helps prevent anaemia, vitamin A maintains eye health, vitamin B12 is important for nerve and blood health, and folate is important for foetus development and prevents neural tube defects. One quail egg (9 grams) contains calories (14 grams), protein (1 gram), fat (1 gram), carbohydrates (0 grams), Fiber (0 grams), choline (4% of the daily value), riboflavin (6% of the daily value), folate (2% of the daily value, pantothenic acid (3% of the daily value), vitamin A (2% of the daily value), vitamin B12 (6% of the daily value), iron (2% of the daily value), phosphorus (2% of the daily value), and selenium (5% of the daily value).

Currently, the type of egg that is widely consumed by the public is chicken eggs. If a comparison is made of the amount of certain nutrients in 100 grams of quail eggs and chicken eggs, or about 10 quail eggs compared to two chicken eggs, it will show the nutritional results contained in chicken eggs in the form of calories (148), fat (10 grams), protein (12 grams), choline (61% of the daily value), riboflavin (32% of the daily value), vitamin B12 (43% of the daily value), and iron (9% of the daily value). While the nutrition of quail eggs with the same weight ratio produces calories (158), fat (11 grams), protein (13 grams), choline (48% of the daily value), riboflavin (61% of the daily value), vitamin B12 (66% of the daily value), and iron (20% of the daily value) (fdc.nal.usda.gov, 2018). In certain cases, namely in toddlers and school-age children who have egg allergies, it is recommended not to consume too many chicken eggs because it will cause boils, whereas quail eggs do not trigger this allergy.

### **Quail Potential**

Quail-based products are not only attractive in terms of taste, but also have significant economic potential. Quail products, both eggs and meat, have high selling value in both domestic and international markets. Quail eggs, for example, are known as one of the commodities with stable demand, especially in Asia. In addition, quail meat is also starting to be known in the global market as a premium ingredient in various dishes, especially in five-star restaurants.

Another uniqueness of quail-based products is the flexibility in their processing. Quail eggs, for example, can be processed into various processed products, such as salted eggs, smoked eggs, to healthy snacks that are now increasingly popular with consumers (Batubara et al., 2024). Meanwhile, quail meat can be used as a basic ingredient for various innovative dishes, from traditional dishes to fusion cuisine that combines various culinary elements from various cultures.

In addition, quail farming can also support sustainable agricultural practices. Quail farming requires relatively little land and feed compared to other poultry, such as chickens. Thus, quail farming has a smaller ecological footprint and is more environmentally friendly. This makes quail farming a more sustainable option for farmers who want to contribute to environmental conservation. The popularity of quail as a livestock commodity continues to increase along with stable market demand, both domestically and internationally (Subekti & Hastuti, 2013).

In addition to the factors mentioned above, quail-based products also have significant historical and cultural value. In some Asian countries, such as Japan and Indonesia, quail has long been part of local culinary traditions. In Japan, for example, quail eggs are often served in dishes such as bento and sushi, reflecting the aesthetic and balanced values in their dining culture. In Indonesia, quail eggs are often used in various traditional dishes, such as quail satay and chili eggs, which are not only delicious but also rich in cultural value.

From a culinary innovation perspective, quail offers many ways for experimentation and creativity. In recent years, chefs around the world have begun to prepare quail meat and eggs in a variety of new ways, including in fine dining and fusion cuisine. Quail products have been integrated into menus that combine elements from various culinary traditions, creating dishes that are not only innovative but also attract the

attention of global consumers. This trend shows that quail has great potential to develop into one of the main ingredients in the modern culinary industry. This diversity of preparations creates great opportunities for the culinary sector to continue to grow and meet the tastes of both local and global markets (Sang, 2012).

In addition, the sustainability aspect of quail-based products cannot be ignored. In the context of climate change and increasing awareness of the importance of environmentally friendly agricultural practices, quail products can be an effective solution. Research shows that quail farming has a lower carbon footprint compared to other poultry meat production. This makes quail products a better choice for environmentally conscious consumers, as well as opening up opportunities for the culinary industry to adopt more sustainable ingredients.

The export potential of quail-based products will increase with the increasing global demand for unique and high-quality food ingredients, quail products have a great opportunity to penetrate the international market. Countries in Europe and the United States are starting to show increasing interest in quail meat and eggs, which are considered premium products with high added value. This opens up opportunities for quail-producing countries, such as Indonesia, to increase their competitiveness in the global market through the export of high-quality products.

#### **IV. Conclusion And Suggestion**

In addition to having the advantage of a delicious taste to be used as a culinary ingredient, quail also has other advantages including: 1) having a high nutritional content; 2) easy to farming; and 3) having a unique and versatile taste in various dishes. Quail cultivation has a lot of potential to support circular economy practices, including: 1) Utilization of Quail Manure: 2) Eggshell Waste Processing: 3) Utilization of Quail Carcasses or Remains: and 4) Renewable Energy: 5) Edu-Farm Tourism. Innovation in product packaging and marketing can also increase the selling value of quail products, especially among young consumers who prefer practical and healthy food products. The export potential of quail products is also increasing with the increasing demand in the international market, especially in Asia and Europe. This will encourage the development of culinary products in supporting the Indonesian tourism industry. With supporting from the government and related institutions, the Indonesian people can further develop this business potential through training programs, access to capital, and product promotion. This will not only improve the welfare of local farmers, but also contribute to national economic growth. Given the existing potential, quail-based businesses can become one of the new economic pillars for Indonesian society, especially in the environmentally friendly and sustainable agribusiness sector.

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