

Analysis of the Impact of the COVID-19 Pandemic on Lobster Cultivation Activities (*Panulirus* spp.) in East Lombok Regency

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Abstract

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The COVID-19 pandemic has caused lobster cultivators (*Panulirus* spp.) in East Lombok Regency to try to fulfill their daily needs by looking for other jobs. The purpose of this study was to determine the impact of the COVID-19 pandemic on the sustainability of the lobster cultivation business in East Lombok Regency. The research method used was descriptive qualitative method based on the data generated during the research. Analysis of the data used in this research was the Net Benefit Cost Ratio to determine the amount of net profit from costs and investments. Stakeholder perceptions were analyzed descriptively. The results of the analysis show that the lobster cultivation business is still feasible to do, so it can be concluded that the COVID-19 pandemic has no impact on the sustainability of the lobster cultivation business in East Lombok Regency. To maintain the continuity of lobster cultivation in East Lombok Regency, it is necessary to ensure the availability of feed and guarantee access to marketing.

INTRODUCTION

Indonesia as a maritime country has fairly wide sea areas and is rich in diversity of biological resources, one of which is lobsters (*Panulirus* spp.). Lobster is an important economic commodity for both local and export consumption. The demand level for lobsters keeps increasing dramatically for the domestic and export markets. This leads to high fishing efforts to meet the high market demands for lobsters (Pratiwi, 2018). Indonesia is the 17th world lobster exporting country, while in the ASEAN region Indonesia is the world's main lobster exporter. Based on data from the Central Statistics Agency in 2019, in the period of Quarterly 1 of 2014-2019 the export value of Indonesian lobster commodities grew by an average of 3.54% per year, while the export volume

decreased by 10.55% per year. The export value of lobster in the period of Quarterly 1 of 2019 reached USD7.09 million, an increase of 0.69% compared to 2018 (Sudarwati, 2020).

Indonesia is the largest lobster producing country to meet the needs of the world community. To date, lobsters are obtained from nature, and as a result of high demand, the number of lobsters continues to decline in nature. Lobster catches should be handled wisely, so that the availability of lobsters which are a potential fishery commodity and have an important economic value can be maintained (Pratiwi, 2018).

East Lombok Regency has territorial waters as a producer of lobsters in Indonesia. In some water areas on the

island of Lombok, some sources of lobster seeds are found, primarily from the type of sand lobsters and pearl lobsters. The locations for lobster seed producers are found in several locations, including in Central Lombok Regency which consists of the waters of Gerupuk and Bumbang Bays, Awang Bay, and Selong Belanak waters. The territorial waters of East Lombok Regency which become lobster producers include the waters of Ekas Bay and Telong-Telong Bay (Erlania *et al.*, 2016).

East Lombok Regency, West Nusa Tenggara Province has a potential marine area for lobster cultivation. The areas of marine waters used as a lobster cultivation area by coastal communities in East Lombok Regency include Ekas Bay and Jukung Bay. Types of lobsters that are cultivated consist of pearl lobsters (*Panulirus ornatus*) and sand lobsters (*Panulirus homarus*). Cultivation of lobsters is the main support for the economy of coastal communities in East Lombok Regency in Keruak Sub-District and Jerowaru Sub-District (East Lombok Marine and Fisheries Agency, 2021).

The Covid-19 pandemic that has hit Indonesia since March 2020 has caused a decrease in the lobster cultivation business. The Covid-19 pandemic has caused lobster cultivators in East Lombok Regency to try to meet their daily needs by looking for other jobs. The purpose of this study is to determine the impact of the Covid-19 pandemic on the sustainability of the lobster cultivation business in East Lombok Regency.

METHODOLOGY

Place and Time

This research was carried out in 2021 with the research locations determined purposively, namely in Jerowaru Village, Pemas Village, Pemongkong Village, Sekaroh Village, Seriwe Village and South Batu Nampar Village, Jerowaru Sub-District, East Lombok Regency, West Nusa Tenggara.

Research Design

The research method used was descriptive qualitative method based on data generated during the research. Primary data were collected from interviews, questionnaires and documentation techniques, where respondents were determined using a probability sampling method, while secondary data were obtained by studying relevant literature. Utama (2016) stated that probability sampling is a sampling technique which gives each individual the same possibility to become a sample. The total number of respondents in this study was 120 people, consisting of 100 lobster cultivators, 10 offices/institutions working on lobster cultivation, 5 lobster entrepreneurs, and 5 observers/activists on lobster cultivation in East Lombok Regency.

Work Procedure

Data in this study were obtained through a literature review and direct interviews with stakeholders (respondents) based on a prepared questionnaire. Interviews were conducted from April to July 2021 to 120 respondents. The data that had been collected were then tabulated into a table that had been prepared, and the data collected were further analyzed to draw conclusions for this research activity.

Data Analysis

Data analysis used in this research was the Net Benefit Cost Ratio to determine the amount of net profit from costs and investments. The Net B/C Ratio analysis would be calculated using the formula (Pujawan, 2004; Hidayat *et al.*, 2018):

$$\text{Net } \frac{B}{C} \text{ ratio} = \sum_{t=0}^{t=n} \left(\frac{(\text{NPV})(+)}{(\text{NPV})(-)} \right)$$

Where:

B = profit in year-t

C = production cost in year-t

t = period of time (years)

NPV = difference between profit and cost

If the Net B/C Ratio > 1 , then the lobster cultivation activity is still profitable (Pasaribu, 2012). Net B/C Ratio data and stakeholder perceptions were presented in tables or graphs and were then analyzed descriptively to obtain the conclusions.

Variables observed in the implementation of this research included: 1) Average production costs before the pandemic, 2) average production before the pandemic, 3) BEP before the pandemic, 4) average production costs after the pandemic, 5) average production after the pandemic, 6) BEP after the pandemic, 7) stakeholder information, covering all respondent information which is related to the impact of the COVID 19 pandemic on lobster cultivation, and 8) descriptive analysis to determine the impact of the Covid- 19 pandemic on lobster cultivation in East Lombok Regency.

RESULTS AND DISCUSSION

Impact of the Covid-19 Pandemic on Production Costs

Lobster cultivation is profitable to be used as a cultivation business because in East Lombok Regency the tools and materials for the making of floating net cages (FNC) are available, natural food (rough fish and snails) is also available, and access to marketing is affordable. Lobster cultivation in East Lombok Regency continued both before and during the Covid-19 pandemic because lobster cultivation is one of the main jobs of coastal communities in East Lombok Regency (Susanti *et al.*, 2017).

The type of lobster cultivated in East Lombok Regency consists of two species, namely the sand lobsters (*P. homarus*) and the pearl lobsters (*P. ornatus*). The feeds used are rough fish and snails, which are the cultivators' own catch because generally the cultivators also have a side

job as a fisherman. Meanwhile, tilapia feed is purchased from fish cultivators in the vicinity of the cultivation site. Makasangkil *et al.* (2017) explained that lobsters require a significant amount of animal protein composition to meet their nutritional needs.

Production costs during the Covid-19 pandemic have increased, especially in the amount of feed needed during cultivation activities. The high demand for feed which is caused by longer maintenance duration due to a lack of buyers is the cause of increased maintenance costs. Soebjakto (2020) explained that the Covid-19 pandemic has caused disruption to all supply chains of the aquaculture industry, both in the domestic and export sectors. The economic downturn has an impact on the low purchasing power of the people so that the demand for fishery products decreases.

Lobsters cultivation in East Lombok Regency used a floating net cage (FNC) system in which the material of FNC consists of Betung Bamboo and HDPE. Each FNC unit consists of 4 plots with the size of each plot 3x3x1 meter. FNC units have an economic value of about 5-10 years depending on the maintenance. Each FNC plot is capable of producing lobsters in consumption size of 17 kg to 20 kg with a weight in a range of 200-250 g per head.

Lobster seeds stocked for cultivation activities come from nature. The size of stocked lobster seeds generally consists of three size groups, which are 1-2 grams, 3-5 grams, and 20 grams. Junaidi *et al.* (2020) explained that lobster cultivation is one of the marine aquaculture activities that still heavily depend on the availability of natural seeds. Lobster seeds from nature are available in sufficient quantity and are abundant on the island of Lombok, especially in the southern waters.

Table 1. Production cost of lobster cultivation.

Type	Weight (g)	Unit Price	Feed Cost	FNC Making Cost
Pearl Lobster	1-2	Rp19,000 / head	Rp1,000,000	Rp15,000,000- Rp16,000,000
	3-5	Rp25,000-Rp27,000 / head		
	20	Rp350,000 / kg		
Sand Lobster	1-2	Rp2,500-Rp3,000/ head		
	3-5	Rp8,000-Rp12,000 / head		
	20	Rp260,000 / kg		

The Impact of Covid-19 Pandemic on Marketing

Lobster is one of the leading aquaculture commodities in the waters of Ekas Bay and Jukung Telong Elong Bay, Jerowar Sub-District, East Lombok Regency (Nursan *et al.*, 2021). This is in accordance with great attention given by the central and regional governments to the existence of lobster cultivators. In 2020, the lobster cultivation area in East Lombok Regency was designated as Lobster Village, and in 2021 it was upgraded to Lobster Estate.

Marketing is one part of the business chains that supports the success of a business, and therefore a guaranteed market system will be a motivation and protection for business actors including lobster cultivators in East Lombok Regency. Lili (2019) stated that marketing in the fisheries sector has an important role as the improvement in the market system will encourage an increase in production directly or indirectly. Prior to the Covid-19 pandemic, marketing of lobsters in consumption size ran quite well, and there were guaranteed prices that benefited lobster cultivators. Guaranteed market is not only a motivation for cultivators but also a motivation for the emergence of new entrepreneurs in the purchasing and selling of lobsters. The price of lobsters in consumption size before the Covid-19 pandemic consisted of: 1) Sand lobsters (*P. homarus*) of Rp. 350,000 – Rp. 400,000/kg, and 2) pearl lobsters (*P. ornatus*) of Rp. 900,000/kg (East Lombok Marine and Fisheries Agency, 2021).

During the Covid-19 pandemic, the marketing price of lobsters is very dynamic, so it affects the conditions of

lobster cultivation in East Lombok Regency. Several things have happened during the Covid-19 pandemic, especially during the implementation of PPKM, including the fact that lobster marketing has experienced some hindrance, lobster prices have dropped drastically, feed prices have increased, and there have been high operational costs.

Lobster marketing in East Lombok Regency during the Covid-19 pandemic is experiencing hindrance so farmers are being panicked about the marketing of lobster products. The small number of buyers of lobsters, which is only intended to meet the local needs, has caused prices to drop drastically. Another problem also arises because the payment system by local entrepreneurs is carried out with a debt system of up to one month. The selling price range of lobsters at the cultivator level includes: 1) Sand lobsters (*P. homarus*) of Rp. 200,000 – Rp. 220,000/kg, and 2) pearl lobsters (*P. ornatus*) of Rp. 450,000/kg (East Lombok Marine and Fisheries Agency, 2021).

Net Benefit Cost Ratio

The average profit earned before the Covid-19 pandemic was IDR 2,665,000 while during the pandemic it is IDR 2,570,000 for each FNC plot. The results of data analysis with the Net B/C Ratio before the pandemic period obtained a value of 1.21 while during the pandemic it is 1.05. The value of the Net B/C Ratio is greater than one. This result is in accordance with the statement of Pasaribu (2012) that lobster cultivation activities are profitable and feasible to be developed both before and during the pandemic.

CONCLUSION

The COVID-19 pandemic does not have an impact on the sustainability of the lobster cultivation business in East Lombok Regency. Lobster Cultivation in East Lombok Regency both before and during the Covid-19 pandemic is feasible to do. However, the Covid-19 pandemic has affected both production and marketing operational costs. The high demand for feed which is caused by longer maintenance duration due to a lack of buyers is the cause of increased maintenance costs. To maintain the continuity of lobster cultivation in East Lombok Regency, it is necessary to stabilize the availability of feed and ensure access to marketing.

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