IOP - Impact of the Covid-19 Pandemic on

by Ridar Hendri

Submission date: 03-Apr-2023 07:13AM (UTC-0700)
Submission ID: 2054634783
File name: Hendrik_2021_IOP_Conf._Ser.__Earth_Environ._Sci._934_012037.pdf (421.96K)
Word count: 4079
Character count: 20461

Impact of the Covid-19 Pandemic on Activities Socio-Economic Floating Net Cages (FNC) Business in the Koto Panjang Hydropower Reservoir, Riau Province

Impact of the Covid-19 Pandemic on Activities Socio-Economic Floating Net Cages (FNC) Business in the Koto Panjang Hydropower Reservoir, Riau Province

H Hendrik[1*], R Hendri[1], C Yolandika[1]

[1*]Department of Socio-Economic, Faculty of Marine and Fisheries, Riau University, Indonesia

*hendrik@lecturer.unri.ac.id

Abstract. The purpose of the study was to analyse the impact of social activities related to cultivation and outside the cultivation business as well as economic activities before and after covid-19. The method used in this research is a survey method. Data collection was carried out on 20 farmers, three fish seller, and two fish feed sellers. Data analysis was carried out quantitatively and qualitatively. The results showed that before the pandemic, 80% of FNC cultivators' social activities were done face-to-face and after the pandemic, only 40% were face-to-face and the rest were through mobile phones. Social activities outside the FNC such as worship, marriage and other attendance frequency is reduced by 5% - 25% after the pandemic. The economic activity of aquaculture has decreased after the Covid-19 outbreak by 50% in 2020 and 37.5% in 2021. In 2021 cultivators have made a profit but it is lower than the profit before the covid-19 pandemic. The economic activity of aquaculture has decreased after the Covid-19 outbreak by 50% in 2020 and 37.5% in 2021. In 2021 cultivators have made a profit but it is lower than the profit before the covid-19 pandemic. The economic activity of aquaculture has decreased after the Covid-19 outbreak by 50% in 2020 and 37.5% in 2021. In 2021 cultivators have made a profit but it is lower than the profit before the covid-19 pandemic.

1. Introduction

Covid-19 is a virus that attacks the respiratory tract and can cause fatal things that can lead to death. This virus is often equated with SARS-CoV, even though in fact in the genetic test conducted by WHO in January last year, these two viruses have differences. Even though they are both the Corona virus. However, in general it can be agreed that this virus is able to spread very quickly because an individual infected with this virus is able to accommodate trillions of virus particles that are ready to replicate thus providing a much greater chance of spreading in a human body [17].

COVID-19 is a group of viruses that can infect the respiratory system. The impact of this virus not only causes mild respiratory infections but can cause severe respiratory infections such as pneumonia and further cause death. There are approximately 200 countries that have been affected by this virus with a relatively high death rate. The high mortality rate is caused by two factors, namely individual factors including age. Then the patient's disease history is also included in individual factors. congenital diseases that can be dangerous if infected with this Coronavirus such as diabetes, liver disorders, autoimmune, cancer, asthma, and cardiovascular disease [18]. Furthermore, it was stated

that public awareness in Indonesia towards the recommendation to follow government policies such as physical distancing and PSBB was still lacking. External factors such as the lack of health facilities and medical personnel who treat patients result in an increasing number of deaths every day. In addition to increasing deaths, the corona virus also affects economic activities and community activities. [19] The United States national public health agency Centres for Disease Control states that 8 out of 10 deaths in America due to Coronavirus occur in people aged 65 years and over.

Due to the increasing spread of the virus, the government has set and banned social activities that involve many people in one place. This situation forces most people to reduce their activities outside the home and choose to work at home. As a result, the socio-economic system of the community underwent significant changes. The trading system which is usually carried out directly which is a habit of the community is transferred to an online transaction system. So, it can only be followed by some people and traders. Research result [20] explained that the income of fishermen and fish cultivators is decreasing due to the difficulty of finding buyers for their harvests. The most significant impact was the decline in fish prices by up to 50%. This is due to a decline in demand from the public, hotels and restaurants, most of which are not operating due to the COVID-19 pandemic.

The same situation is thought to have affected the floating net cage business in the Koto Panjang Hydropower Reservoir, which is one of the largest freshwater aquaculture production centres in Riau Province. Floating net cages are places for fish cultivation that are placed in deep and wide waters such as reservoirs, lakes or the sea. This business is economically very profitable because it is able to produce so many fish with a low risk of failure. [21] The FNC business in the Koto Panjang Hydropower Reservoir has considerable potential with considerable profits, this was true before the covid-19 pandemic. However, after the covid-19 outbreak, FNC business in this area is expected to experience a decline. Based on this, the study of the impact of the COVID-19 pandemic on the socio-economic activities of the FNC business in the Koto Panjang Hydropower Reservoir was carried out.

2. Method

This research was carried out in April-June 2021 at the Koto Panjang Hydropower Reservoir which is administratively included in the Sub District XIII Koto Kampar, Kampar District, Riau Province. The method used in this study is a survey method [1][2][22]. Respondents were collected based on a patterned questionnaire of twenty cultivators, three fish seller, and two fish feed sellers [3]. Respondents were determined intentionally with the consideration that they could represent the population [4][5]. Data collection was focused on the effect of COVID-19 on socio-economic activities, so the data asked were related to conditions in November 2019 with the consideration that Covid-19 had not yet occurred, November 2020 was eight months after Covid-19, and June 2021, which was thirteen months. after Covid-19. The data obtained were then documented and analysed quantitatively and qualitatively according to the description of the research object [6].

3. Result and Discussion

3.1 General Condition of Research Area

Koto Panjang Hydropower Reservoir was built in 1992 with an inundation area of 12,400 ha and a depth of 73-85 m. The reservoir water supply comes from the Kampar and Batang Mahat rivers that upstream is in the province of West Sumatra [7]. The construction of the reservoir is intended for water sources for power generation, flood control in the downstream area of the Kampar river, tourism, and fisheries business through fish rearing in FNC. Utilization of reservoirs for FNC business has been started since 2006 and until now the number continues to increase. In 2006 the number of cages in the Koto Panjang Hydropower Reservoir was 530 cage bags and in 2009 the number was more than 900 cage bags [8]. Meanwhile, in 2012 the number of FNC reached 1000 cage bags [5]. The number of FNC in 2020 is 1220 cage bags [9], while according to information from several fish cultivators the number of FNC is currently more than 2000 cage bags. This situation shows the increase in the number of cages in the hydropower reservoir waters is quite high. This high increase in the number of FNC is thought to be because the business is economically profitable. This FNC is

almost entirely made of an iron frame with the average manufacturing cost for one bag ranging from 6-7 million depending on the type of iron used for the frame. KJAs cultivated by the community are generally 5 x 5 m in size with an average depth of 4 m. The number of bags cultivated by each cultivator ranges from 4-200. If grouped by the number of cultivators, the highest number of cultivators will try 10-20 cage bags. For every 10-20 cage bags, cultivators need 1 worker.

Harvesting of fish is carried out on average after 5 months with a weight of 3-4 fish each kilo. Cultivators usually harvest in stages according to the number of cages they have. The more the number of cages, the faster the frequency of harvest time and vice versa. The types of fish that are kept 95% are goldfish and the rest are tilapia and catfish. Goldfish production from this area is marketed for consumption and restaurants in Riau and surrounding areas, as well as for fishing ponds in various areas in West Sumatra. The Covid-19 pandemic has caused some restaurants to have limited operating hours, while fishing pond businesses are limited in the number of visitors in accordance with the health protocols set by the government. This situation will lead to a decrease in demand for goldfish originating from the Koto Panjang Hydropower Reservoir.

3.2 The Impact of the Pandemic on Social Activities

Social activities in general can be interpreted as activities carried out by a person or group to achieve certain social goals. Next [10] Social activities are activities carried out together with community members in the surrounding environment. The social activities carried out by the community every day in the Koto Panjang hydropower reservoir, in this study were divided into social activities related to the FNC business and social activities outside the FNC business. Social activities related to the FNC business are more of a social interaction, for example in the purchase of feed, harvesting, and meetings between cultivators, traders and feed traders who discuss technical issues of cultivation and management of cage development. Social activities outside the FNC business that were observed in this study were religious activities, marriages, and other activities.

Based on the results of the study, it was found that before the Covid-19 pandemic, 80% of the social activities of cultivator, fish seller, and fish feed seller were done face-to-face, this was because the distance between them was relatively close and less than 10 km. After the COVID-19 pandemic, face-to-face social activities were reduced to 40%, more social activities were carried out through communication using mobile phones. Other social activities such as worship, marriage, and other activities have also undergone changes to be more clearly seen in Table 1 below.

Table 1. Percentage of attendance in Social Activities Before and After Covid-19 (%).

Description	before the pandemic	after the pandemic	percentage drop
Friday prayers	95	90	5,5
Religious wirid	90	85	5,8
Wedding party	80	75	6,6
Other activities	75	60	25

Based on Table 1, it can be seen that the frequency of attendance for community social activities has decreased between 5% - 25% after the pandemic. The lowest decline was in Friday prayers activities, meaning that before and after Covid-19, people in this area continued to carry out Friday prayers. According to them, this is done because Friday prayers is an obligatory worship every week for you men, while the biggest decrease is in the decrease in other activities such as celebrations and thanksgiving, which is reduced by 25%. The reduced activities for celebrations and thanksgivings, apart from being the result of COVID-19, are thought to be due to a decrease in their income, so that spending on consumption is decreasing. [11] The relationship between income and consumption is a unidirectional and proportional relationship, meaning that the lower the income, the lower the expenditure, including consumption expenditures for celebrations and celebrations.

In carrying out social activities, most of the people here have not implemented health protocols such as not wearing masks and not maintaining social distance when carrying out social activities. However, 80% of respondents believe that COVID-19 and the government can overcome this pandemic, as well as the impact of the Covid-19 pandemic, as many as 80% of people believe it will affect their health and income. This situation shows that public trust in the COVID-19 pandemic in this area is higher than other people's trust. [12] The level of public trust in the government in handling Covid-19 is relatively low or lacks trust.

3.3 The Impact of the Pandemic on Economic Activity

Economics is one of the important factors in human life, so it can be ascertained that in everyday life it always intersects with economic needs. The COVID-19 pandemic has affected all aspects of community life and economy, including aquaculture. Economic factors in aquaculture [13] are factors related to production costs such as seed costs, feed costs, drug costs, labor costs, pond area, capital, production and selling prices that affect the income of goldfish cultivator in South Dolo District. The Covid-19 pandemic will affect production costs and decrease fish prices [14]. Furthermore, it was stated that the COVID-19 pandemic had a very significant impact on the income of fish cultivators in Lubuk Linggau City. This is due to a decrease in fish prices and an increase in feed prices. Furthermore, it was explained that the decline in fish prices was due to reduced demand for fish in the area.

Based on the results of research at the Koto Panjang Hydropower Reservoir, the Covid-19 has resulted in an increase in the cost of feed, while the cost of seeds, labor and others has not changed. The type of feed used is sinking feed with brands such as Cargill, Comfeed, and Pokphan. The increase in feed costs has resulted in a decrease in FNC business activities in this area. FNC business activities that have decreased include fish seller, fish feed seller, and fish cultivators. Based on the results of the study, it was found that the number of traders who bought fish in FNC Koto Panjang ranged from 10-15 people every month depending on the amount of cage production in that month. Each trader buys fish 4-10 times a month with the amount purchased is 400-800 kg depending on the number of fish available by using a pickup truck. According to traders, in 2019 on average they bought fish at FNC Koto Panjang 8 times a month, in 2020 it was reduced to 4 times a month and in 2021 5 times a month. Based on this, it can be estimated that the production of FNC Koto Panjang in 2020 will decrease by 50% and in 2021 it will decrease to 37.5%.

Amount of feed sold the same year and month it also decreased, namely in 2019 the average sales were 4.5 tons per day, in 2020 it was 2 tons per day, and in 2021 it was 2.5 tons per day. This situation illustrates that feed sales in 2020 are only 45% of normal and in 2021 feed sales increase to 56%. The decline in feed sales in 2020 was due to the increase in feed prices from 430,000 per sack in 2019 to 490,000 per sack in 2020 and 465,000 per sack in 2021. The increase in feed prices by 10.45% in 2020 caused 50% of farmers not to engage in fish farming activities. In 2021 feed prices fell by 5.6% compared to 2020. [15] Feed is the biggest cost of raising fish, usually around 60% – 75% of the total production cost. Based on calculations at the Koto Panjang hydropower reservoir, the cost of feed is more than 80% of the total production cost. The increase in feed prices will result in a decrease in profits and can even cause losses to fish cultivator. This has caused the demand for feed in the Koto Panjang Hydropower Reservoir to experience a significant decline, however, other production costs have not increased. The price of fish in 2020 has decreased compared to the price of fish before the pandemic and in 2021 the price of fish has increased beyond the price before the pandemic, for more details, see Table 2 below.

Table 2. Average Amount of feed and Production of Goldfish per FNC bag before and after the Covid-19 Pandemic.

Description	2019	2020	2021	Unit
amount of feed	58	50	55	Sack
Fish Production	1 645	1 425	1 565	Kilogram
Feed price	430 000	490 000	465 000	IDR
Fish price	22 000	20 000	23 000	IDR

Based on Table 2, it can be seen that the price of fish decreased by 10% after the pandemic and increased 13% more than the price of fish before the pandemic in 2021. The use of feed in 2021 increased by 5.3% compared to the previous year, this was due to a decrease in feed prices. The increase in fish prices in 2021 is due to reduced fish supply as people reduce their feed purchases and reduce the number of cages operated in the previous period. [16] States that the factors that affect the income of FNC cultivators are the cost of feed, labor, and the age of the cultivators. In this study the factors that affect the income of cultivator are the price of feed, the price of fish, and the amount of production. The results of the calculation of the cost of feed in 2019 reached 82%, in 2020 it was 84%, and in 2021 it was 85% of production costs. So that the increase in feed prices greatly affects the income of fish cultivator, as shown in Table 3.

Table 3. The State of The FNC Business Before and After The Pandemic.

Descriptions	2019	2020	2021
Revenue	36.190.000	28.500.000	35.995.000
Goldfish seed	3.150.000	3.150.000	3.150.000
Fish feed	24.940.000	24.500.000	25.575.000
Labor	800.000	800.000	800.000
Other costs	500.000	500.000	500.000
Production cost	29.390.000	28.950.000	30.025.000
Profit	6.800.000	-450.000	5.970.000

Based on Table 3, it is known that the highest income from the FNC business was before the pandemic, in 2020 cultivators experienced losses and in 2021 cultivators had made profits but were still below the profits before the pandemic. Cultivators suffered losses in 2020 due to increased feed prices and decreased fish prices. The increase in feed prices in 2020 resulted in a drastic decline in demand for feed, this situation resulted in as many as 50% of cultivators not carrying out fish farming activities at that time. To overcome this problem, feed producers in early 2021 lowered the average feed price by 5.4%, while the price of fish increased by 15%. The increase in fish prices was due to the reduced number of marine cages used for aquaculture. This results in a decrease in the supply of fish. [11] said the price factor affects the demand and supply of an item, where the less the amount of supply, the price of the item will increase. However, labor costs, seed costs, and other costs such as diesel fuel, packing, and others did not change before and after the pandemic in this area.

4. Conclusion and Suggestion

4.1 Conclusion

Based on the results of the study, it can be concluded that the COVID-19 pandemic has affected the social activities of the FNC business. Before the pandemic, 80% of social activities were carried out face-to-face and after the pandemic 40%, the remaining social activities were carried out through communication via cell phone. Social activities outside the FNC business, such as worship and weddings, were reduced by 5%, and other activities were reduced by 25% after the pandemic.

The economic activities of the FNC business, such as fish rearing, marketing, and sales of fish feed, decreased by 50% in 2020. This decline was due to rising feed prices and declining fish prices, causing farmers to suffer losses. In 2021 the price of feed has decreased and the price of fish has increased, so that FNC cultivators will again benefit. However, the profits obtained by cultivators in 2021 are still below the profits before the COVID-19 pandemic.

4.2 Suggestion

In carrying out socio-economic activities, most people have not implemented health protocols. For this reason, stakeholders are advised to provide education about the importance of health protocols in reducing and preventing the spread of COVID-19.

5. References

[1] C. Yolandika, R. Nurmalina, and S. Suharno, *J. Penelit. Pertan. Terap.*, vol. 16, no. 3, pp. 155–162, 2017, doi: 10.25181/jppt.v16i3.93.
[2] D. Berliana, C. Yolandika, and N. Anggraini, *Int. J. Sustain. Biomass Bioenergy*, vol. 2(1), pp. 1–6, 2018.
[3] C. Yolandika, D. A. H. Lestari, and S. Situmorang, *J. Ilmu-Ilmu Agribisnis*, vol. 3, no. 4, pp. 385–392, 2015.
[4] B. Utoyo and C. Yolandika, *J. Sustain. Biomass Bioenergy*, pp. 1–5, 2018.
[5] B. Utoyo and C. Yolandika, *IOP Conf. Ser. Earth Environ. Sci.*, vol. 141, no. 1, 2018, doi: 10.1088/1755-1315/141/1/012034.
[6] S. Sutarni, L. Irawati, B. Unteawati, and C. Yolandika, *J. Food Syst. Agribus.*, vol. 2, no. 1, pp. 17–24, 2019, doi: 10.25181/jofsa.v2i1.1007.
[7] Heymann, D. L. and Nahoko S. (2020). The Lancet, 395(10224), 542–545. https://doi.org/https://doi.org/10.1016/S0140- 6736(20)30374-3.
[8] Ilpaj, S. M. and N. Nurwati. 2020. Journal of Social Work, vol. 3, no. 1, pp. 16-28.
[9] Centers for Disease Control and Prevention 2020. Coronavirus Disease 2019 (COVID-19).
[10] Sari, M. N., F. Yuliasara, dan Mahmiah. 2020. Tropimar Journal, vol. 2, no. 2, pp. 59-66.
[11] Syendrik. 2012. Terubuk Fisheries Periodic Journal, Faperika Unri, vol. 40, no. 1, pp. 45-51.
[12] Groves, R. M., Fowler, F. J. Jr., Couper, M. P., Lepkowski, J. M., Singer, E., Tourangeau, R. 2009. Survey Methodology. Second Edition, ISBN: 978-0-470-46546-2.
[13] PLN (State Electricity Company), 2002. Hyropower Reservoir Koto Panjang. Pekanbaru.
[14] Siagian, M. 2010. Journal of Fisheries and Marine Affairs, vol. 15, no. 1, pp. 25-38.
[15] Kampar District Fisheries Service 2020. Annual Report of the Kampar District Fisheries Service, Bangkinang.
[16] Napitupulu, Y.M.N. 2010. The Relationship between Daily Activities and Successful Aging in the Elderly Malang: Universitas Brawijaya, 1-19.
[17] Sukirno, S. 2016. Introduction to Microeconomic Theory Edition 3. Rajawali Pers. Jakarta: 446 pp.
[18] Mufti, M., A. S. Gatara, A. Afrilia, R. Mutiarawati. 2020. Journal of Social and Political Sciences, Sunan Gunung Djati University, Bandung, vol. 7, no. 2, pp. 137–157.
[19] Markisman, Anhulaila M. Palampanga, and Muhtar L. 2016. Journal of Catalogs, vol. 4, no. 3, pp. 58-69.
[20] Wahidin, L. O., Rudiansyah, Neksidin, dan S. Murtini. 2020. Journal of Inland and Coastal Fisheries, vol. 1, no. 1, pp. 36-45.
[21] Amalia, R., Amrullah, and Suriati. 2018. Proceedings of the National Seminar. Indonesian Education and Research Foundation (YAPRI) in collaboration with the Indonesian Multidisciplinary Research Forum (FORMIN). Multidisciplinary Synergy of Science and Technology, vol. 1.
[22] Hidayati, BH, Darsono, and U. Barokah. 2020. Marina Scientific Bulletin, vol. 6, no. 2, pp. 145-157.

IOP - Impact of the Covid-19 Pandemic on

ORIGINALITY REPORT

9%	8%	5%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	research.aalto.fi Internet Source	1%
2	Tsung-Ling Li, Shunichi Wakashima, Yasuyuki Goda, Rihito Kuroda, Shigetoshi Sugawa. "A CMOS image sensor using column-parallel forward noise-canceling circuitry", Japanese Journal of Applied Physics, 2014 Publication	1%
3	Zhihua Zhang, Guoguang Niu, Jin San Choi, Matthew Giegengack, Anthony Atala, Shay Soker. "Bioengineered multilayered human corneas from discarded human corneal tissue", Biomedical Materials, 2015 Publication	1%
4	Kalila Anafah, Fadia Rohmatun Nisak, Rohmatul Intan Nur K, Violita Tryas Kaulika, Moses Glorino Rumambo Pandin. "THE IMPORTANCE OF SOCIALIZATION TO THE PUBLIC ABOUT HEALTH PROTOCOLS IN THE ERA OF THE COVID-19 PANDEMIC", Academy of Education Journal, 2022 Publication	1%

5	www.theseus.fi Internet Source	1 %
6	ejournal.uniks.ac.id Internet Source	<1 %
7	www.atlantis-press.com Internet Source	<1 %
8	Silvy Mei Pradita, Humar Sidik. "Perubahan Sosial Ekonomi pada Industri Keramba Jaring Apung di Curug Apu Jatiluhur selama Pandemi Covid-19", Gulawentah:Jurnal Studi Sosial, 2020 Publication	<1 %
9	ejournal.unisbablitar.ac.id Internet Source	<1 %
10	eprints.uad.ac.id Internet Source	<1 %
11	Submitted to IAIN Kudus Student Paper	<1 %
12	K Suga, E Ohmichi, T Osada, K Kindo, M Sasaki, A Ohnishi, M Saito, T Kikuchi, S Nonoyama, S Adachi. " Anomalous behavior in M-T curve of β-FeSi single crystals ", Journal of Physics: Conference Series, 2006 Publication	<1 %

13	K Eddiwan. "Otolith Growth Pattern of Puntius Schwanenfeldii from the Koto Panjang Reservoir, Regency of Kampar, Riau, Indonesia", International Journal of Aquaculture and Fishery Sciences, 2018 Publication	<1 %
14	jgu.s3.ap-south-1.amazonaws.com Internet Source	<1 %
15	download.atlantis-press.com Internet Source	<1 %
16	ejournal.unida.gontor.ac.id Internet Source	<1 %
17	repository.poliupg.ac.id Internet Source	<1 %
18	ejournal.umm.ac.id Internet Source	<1 %
19	ouci.dntb.gov.ua Internet Source	<1 %
20	worldwidescience.org Internet Source	<1 %
21	iosrjournals.org Internet Source	<1 %
22	Reza Torabi, Kaveh Silakhori, Hamid Salmani Nejhad. " Comparative study of spark pin-array and printed circuit board surface	<1 %

plasma pre-ionization systems for transversely excited atmospheric CO laser performance ", Laser Physics, 2021

Publication

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		