Surviving from shocks of the COVID-19: adaptation strategies of the Sama Bajo Tiworo small scale fishers as a response to the crisis

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Abstract. The COVID-19 pandemic has fundamentally changed social-economic life globally with no exception to the small-scale fisher in small islands region. This paper examines how the pandemic effects to the Sama Bajo social-economic life and to observe how the Sama Bajo response adaptively to the crisis. The research has been done in July until middle August 2020 in two small islands in Tiworo Straits. By using mix methods both quantitative and qualitative research methods to collect and analyse the data from 12 key informants, the research result shows that the COVID-19 has significant impacts to the blue swimming crab fishing activity and Sama Bajo food security in Tiworo Straits. Regarding this, to cover their household consumption of daily basis and to avoid them to fall into chronic poverty, the households built four major adaptation strategies. Interestingly, because of safety first rationality, during the crisis, the Sama Bajo pre-existing social insurance tends to be more powerful.

1. Introduction
The COVID-19 pandemic has fundamentally changed social-economic life globally. [1] argued that per the latest update of WHO on 18 April 2020, the massive outbreak of COVID-19 had spread in more than 200 countries. About 146,198 people had died after exposing the respiratory virus out of to nearly 2,164,111 confirmed cases, whereas more than 402,989 people have recovered from the virus. The updating data from WHO on 7 September 2020, the pandemic has infected for 27,032,617 people in the world including 881,464 deaths, reported to WHO [2]. In Indonesia, particularly, the present data has shown that confirmed cases are 194,109 [3]. Indonesia is the fourth most populous country in the world, and this is predicted to suffer greatly and over a longer period, when compared to other less-populous countries (ADB, 2020 cited by [4]). Furthermore, [4] argue when the COVID-19 hit China most severely during December 2019–February 2020, Indonesia declared no case of infection at all. Ministry of Health (2020); Statista (2020) cited by [4], informed that only on March 2, 2020, President Joko Widodo reported the first confirmed two cases of COVID-19 infection in Indonesia. As of April 2, the country has reached 1790 confirmed cases, 113 new cases, with 170 number of deaths, and 112 number of recoveries.
Nevertheless, the impact on economic and social sides has been essential besides the public health issues. Various enterprises are facing different issues with a certain degree of losses. Particularly, enterprises are encountering a variety of problems such as a decrease in demand, supply chain disruption, cancelation of export order, raw material shortage, and transportation disruption, among others [5]. Nevertheless, [5] also state that it is quite clear that enterprises around the globe are experiencing the significant impact of COVID-19 outbreak on their businesses. [6] argues that at the present day the immediate impact of COVID-19 in most parts of the world has been pointedly urban, the economic impact of COVID-19 spread quickly to rural areas. In most cases, the infection will eventually follow [6]. Additionally, [6] states that the Most of the world’s poor and food insecure live in rural areas, and although physical distance, relative isolation, lower population density and their own production of food play in favour for rural areas, they are particularly vulnerable to suffering chronic impact from the pandemic and the ensuing economic contraction. Rural areas, particularly in the developing world, are much less prepared to deal with the indirect and direct impact of the crisis [6].

In islets, to be specific in Tiworo islands, has experienced the economic crises due to the pandemic. Sadly, after hitting by west wind season started on November 2019 to April 2020, on March, when they started to the “normal” situation, the Tiworo islets, which is Sama Bajo as the majority, have to struggle to the COVID-19 and “new normal”, especially for the Sama Bajo Blue Swimming Crab (BSC) fishers who connect to the global market. BSC is the third highest of fishery product export value, below the shrimp and tuna. Based on [7], the total export volume of Indonesian BSC in 2019 reached 12,749 tonnes and the value reached more than USD 259 million. Therefore, related to the phenomena, the aims of this research are to examine how the pandemic effects to the Sama Bajo social-economic life and to observe how the Sama Bajo response adaptively to the crisis.

2. Materials and methods
The research had been done from July until middle August 2020 in two small islands in Tiworo Straits. The research was conducted in Tiga Island, Bero Village and Balu Island, Santiri Village, North Tiworo Sub-district, West Muna Regency, South-east Sulawesi (Figure 1).

![Figure 1. Research Sites](image)

By using mix methods both quantitative and qualitative research methods to collect and analyse the data from 6 key informants respectively from Balu island, Santiri village and Tiga Island, Bero village. We have used in-depth interview survey methods, by using open and close questions in the research instrument. The key informants were selected by purposive way who represent the marginal BSC small-scale fishers in the two centre area production of BSC in North Tiworo Islands.
3. Result and discussion

According to [8] that the world has already seen something unprecedented which we didn’t imagine after achieving the heights of science and technology. Even before the onset of COVID-19, the global economy was already going through a turbulent phase due to disruptions in trade flows and attenuated growth. This situation has worsened now due to COVID-19 by the demand, supply and liquidity stock infliction.

Even though, in two research sites, there are no confirmed cases of COVID-19, the pandemic has seriously hit the islet local economic. The regulation to reduce widespread of the pandemic by using social and even physical distancing have multi-plyer effect especially for marketing commercial export product such as BSC. The crab has been a core of local economy not only for the marginal Sama Bajo small-scale fishers but also stimulated both two villages local economies.

3.1. The COVID-19 effects to the Sama-Bajo fishers

Initially in Tiga islands, Bero village and Balu island, Santiri village, when the crisis started in Ramadhan, Sama Bajo household incomes dramatically plummeted because BSC global demand had stopped for a couple of weeks. As a result, the boat-dwellers experienced extreme declining household income. Despite the BSC available all year round, in the normal situation before the pandemic hit their livelihood, on the West wind time which starts from November to March, the BSC fisher would be difficulties to get the BSC and earnings could be very low in this famine situation. Nevertheless, on the next wind season, the BSC fisher will experience the brightness economic situation. In the east wind season, the BSC stock in abundant quantity. [9] emphasized that the east monsoon between June-July, while in May much due to transition season where the intensity of irradiation on the water surface was relatively preponderant. Figure 2 will show the comparison of key informant’s income before and when the COVID-19 outbreak on April 2020.

![Figure 2](image_url)

**Figure 2.** Comparison between before and during COVID-19 based on the total amount of fishing catch, net income and fishing cost of BSC per month in Tiga island, Bero village and Balu island, Santiri village, Year 2020
Based on Figure 2, in the West wind season, before the pandemic, during 5 months, the boat-dwellers in Bero and Balu only get 292 Kg and 145 Kg per month respectively, and income rate per month was IDR 7,291,667 ($ 1 = IDR 15,000) and IDR 4,462,500 in a row. On the contrary, the East wind season before the pandemic, the crab stock rate rocketed to the 450 Kg in Bero Island, and fishers could get income rate approximately to nearly IDR 11,250,000 per month. Either did with the Balu fishers, they got approximately 172 Kg for the crab rates, and IDR 5,150,000 per month in the East wind before pandemic. The fishers, especially in Bero, have income higher in the East wind season than in the West season. Related to this situation, our several key informants argue that the East season is their time to save money to tackle the economic turbulence situation in next West wind season.

Comparing to the West wind season started on November 2019 to March 2020, in the East wind season in 2020 started from May to Juli 2020 when the COVID-19 has become as a great shock, despite the crab catch rate rocketed from 292 Kg in Bero on the West wind season to 350 Kg on the East wind season, fishers only get income rate from their crab catch nearly to IDR 4,893,333. Meanwhile, in Balu Island, the fishers have only earned cash rate for approximately IDR 2,410,000. Additionally, the crab price for each kilogram was IDR 25,000 on the 2019 East wind season, meanwhile on the middle April 2020, the crab price rate has dropped to IDR 12,000 even many Sama Bajo crab fishers did not purchase their crab to their Bos because they extremely lost income and also almost broke, and could not live in debts with the Bos. One key informant said that her husband has to do “gantung perahu” or stopped to be a crab fisher and temporarily changed her husband livelihood from crab fishers to demersal fishers. In Balu, the crab stock is unpredictable due to overexploitation and ecosystem damaging from trawl fishing, sand mining, mangroves bark exploitation for fuel and blast fishing.

Moreover, the pandemic situation causing small-scale fisher household experienced food insecurity. The Figure 3 below will illustrate household food expense rate, maximum and minimum value of household expenses before and when pandemic happened.

![Figure 3](image.png)

**Figure 3.** Comparison between before and during COVID-19 based on average, maximum, and minimum of household fisher expense per month in Tiga island, Bero village and Balu island, Santiri village, Year 2020
Before the COVID-19 outbreak, the fisher household food expenses cash rate both Bero and Balu were lower than the expenses rate when COVID-19 economic impacts widespread starting April 2020. The main reason for these economic turbulence for the fisher households, because the price of main food has increased spectacularly during the new normal time. For the BSC fisher households, who are hardest-hit by COVID-19, this situation is a truly nightmare. One of the key informants stated that they spent for almost IDR 5,199,000 only for food per month, additionally they have to fulfill their six children diets not only for their main food but also for their daily snack. Another key informant argued reducing food consumption is the last choice for the household.

3.2. Household response to the crisis

Studies of livelihood strategy is fundamental to understanding household response to the crisis [10]. In addition, [10] described that the terminology of “livelihood” is defined as the capacity, asset, and activity needed to support household members. The term includes a wider interpretation than more income or employment opportunity, because livelihood strategies cover complex relationship among capability, asset, and activity, environmental condition, technological development, and also social dynamic (Singh & Gilman, 1999; Ellis, 2000; Titus, 2003; Start & Johnson, 2004 cited by [10]).

By using the responses typologies from [11], these strategies are clustered into 4 major categories: (1) coping strategy; (2) social relation-based strategy; (3) fishery-specific strategy; and (4) non-fishery-related strategy, we found several strategies as the responses to the criticalness situation from household both at two sites Tiga island, Balu village, and Bero islands, Santiri village. The details of research findings are provided in Table 1 below.

| No | Type of Response | Research Sites |
|----|------------------|----------------|
|    |                  | Balu Island | Bero Island |
| 1  | Coping Strategies | • Borrow money from “Bos”/Punggawa, and Daparanakan relatives |
|    |                  | • Reduce Food Consumption for Adult diets |
|    |                  | • Seek support from government social protection program |
| 2  | Social-relation | • Seek support from “Bos” through debt relation. |
|    |                  | • Seek food support from relatives |
| 3  | Fishery-related responses | • Increasing fishing effort |
|    |                  | • Expanding fishing ground |
|    |                  | • Change targeted species |
|    |                  | • Temporary stopped doing crab fishing activity |
| 4  | Non-fishery-related strategies | Using household member to get additional cash in micro level processing industry. |

Source: [11] modified based on primary data, 2020

[12] defined a coping response of household as the short-term response which they make as a reaction to an unexpected crisis or to sudden shocks that could shake their livelihood system. As stated in the section the COVID-19 effects to the Sama-Bajo Fishers, from in-depth interview, the crises have impacted to production through a decline in blue swimming crab price and household consumption. Related to these, both of household in Bero and Balu built the coping mechanism as we shown at table 1. For the household, the COVID-19 has deleted their hopes for saving money to cope next west wind season. Nevertheless, life must go on, consequently, the household survive with their pre-existing social ties by using patron-client relationship and inward looking of social ties through Sama Bajo social norms. One of the key informants stated that, their life has so much been depending on to their Bos who always gives them the social safety net, like fulfill their diet needs and also for their fishing cost. Besides the patron provides the link between small-scale fishers (clients) and national and international buyers [13], the Bos has been full of power actor especially if the household as a client has kinship relation to the Bos (see the key informant quote bellow):
“Karena dia itu merupakan bos saya, lagipula hasil melaut saya, juga jatuhnya sama dia. Jadi sudah seharusnya dia juga membantu kekurangan saya disaat Corona ini. Selain itu dia juga bukan orang lain, masih ada hubungan keluarga jadi lebih leluasa untuk minta bantuan” (In Bahasa)

“Because he is my Bos, besides I always sell my fishing catch for him, so he should help my difficulties in this COVID-19 situation. Moreover, he is my relatives, so that I can easily ask for help to him” (In depth interview with DRM, August 18th 2020).

Even though the household realize that these assistances are debt, and as a trap for them to be dependent fishers, the households trust their Bos as major solution for their difficulties. At the second place, Sama-Bajo relatives also as next solution besides the Bos or Punggawa. With social assistance from household Sama-Bajo relatives or in local terminology as “Daparanakanku”, the households are able to get additional food if they experience shortage for their diets during the crisis.

Social relation for the household defines as social ties which are not only their bounding relationship such as their link to their Bos and Sama Bajo relatives, but also their bridging and linking social capital to the government and land-dwellers. In this paper, we will focus on their dependency to the government related to social protection program.

![Figure 4](image_url)

**Figure 4.** Comparison between before and during COVID-19 based on average, maximum, and minimum of household fisher expense per month in Tiga island, Bero village and Balu island, Santiri village, Year 2020

Based on our data, we found that all of our key informants, who are survival households, agree that the COVID-19 brings them to get social protection program from the government. They also give agreement that in this crisis they actively try to get information about the assistance from the government. Before the crisis, all of key informants in Balu did not get the social assistance in 2019. Meanwhile, in Bero, there was three key informants confirmed for receiving the government assistance last year from Program Keluarga Harapan (PKH) just only get IDR 900.000 since 2018.
Now, only two key informants do not get the social protection program. While, 10 key informants get the assistance with average IDR 1,855,000 in Bero and IDR 1,200,000 in Balu (see Figure 4). Obtaining the social assistance is one of the household strategies for surviving in the crisis situation.

Another interesting research finding is related to the patron-client relation between “Bos” or Punggawa and the crab fishers. The “Bos”, as a better off household which is more capable for giving financial loans to the small-scale fisher households, has pushed their client to do more fishing activity (see Table 1). Due to their indebtedness to their patron, the fishers increase their fishing efforts such as improving days at sea and reefs, and doing migration to find richness fishing ground. Several key informants inform that they expand to Ambon and Biak to get more blue swimming crab catch by using their iron fish trap or “bubu”.

We have explained before at the section the COVID-19 effects to the Sama-Bajo Fishers about “gantung perahu”. We found that there is a key informant who is desperate to be a fisher. Moreover, this household could not live in the indebtedness with the Bos. Consequently, this head of household replaced their previous main livelihood from blue swimming crab fishers to demersal fishers.

Interestingly, the major role of “Bos” or Punggawa does not only support fishing activity, nevertheless, the Bos also provides an additional income to the fishers’ wife. We found that several key informants working in crab mini-plants inside the village. Every working day, women will receive maximum to IDR 20,000 depend on their ability for processing the BSC. At the end, women involvement to this non fishing income, as safety network on the small-scale fisher household perspective, decreases the possibility for the household to escape from patron-client debt trap.

4. Conclusion
Overall, it can be concluded that the COVID-19 has significant impacts on the BSC fishing activity and Sama Bajo food security in Tiworo Straits. Particularly for Balu community, they tend to more experience severe condition due to not only from the pandemic but also the ecological crisis. Regarding this, to cover their household consumption of daily basis and to avoid them to fall into chronic poverty, the households have built four major adaptation strategies. Interestingly, during the crisis, the pre-existing social insurance based on safety first rationality: patron-client and also the Sama Bajo inward-looking social ties tend to be more powerful, despite patron-client debt relation marginalize the small-scale fishers.

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