# How Small-scale Fishermen Survive During the Pandemic of Covid-19

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ABSTRACT

This study aims to examine how the Kendari Bay's coastal fishermen survive during the Covid-19 pandemic, especially from an economic perspective. However, the Covid-19 pandemic that occurred in the last three years has been able to shake the economy in several levels of society, including small-scale fishermen. The object of this research is 50 small-scale fishermen on the coast of Kendari Bay with data collection methods using surveys and interviews. Data analysis was carried out to reveal the characteristics of small-scale fishermen on the coast of Kendari Bay, to examine the impact of the COVID-19 pandemic on fishermen's income, and the constraints faced by fishermen from an economic perspective. The results show that small-scale fishermen averagely work as fishermen from a young age, as a form of inheritance from their parents and cannot complete basic compulsory education. Surprisingly, the Covid-19 pandemic does not have much impact on fishermen's income because the biggest impact comes from weather factors and the high cost of boat fuel. One of many issues that the fishermen need to deal is the difficulty on accessing capital and financial to start a business. This is happening due to limited information for these fishermen. The novelty of this research is in the study of the impact of the pandemic which is associated with access to public finance.

## Introduction

During the Covid-19 pandemic, the Indonesian economy experienced shocks and pressures that impacted various sectors. The pressure on the sector also affects the economic actors involved in it. Among these economic actors, there are several vulnerable professions, one of which is fishermen (Jomitol et al., 2020). Fishermen are one of the economic actors who are in the primary sector group who are at risk of being affected by the pandemic. Specifically, small-scale fishermen are defined by Law No. 45 Tahun 2009 as a category of fishermen who are still traditional in the way of catching fish, both the tools used and the size of the fishing area. The purpose of catching fish is only to meet the needs of daily life. The category of small-scale fishermen can be found in almost all coastal areas of Indonesia, one of which is the Kendari Bay Coastal Fisherman which is the focus of this research.

This is in line with research (Prasetyo et al., 2021) which states that the slow response to the pandemic reduces economic capacity and has an impact on the dynamics of people's work.

Fishermen on the Kendari Bay Coast have the characteristics of coming from the Bajo and Bugis tribes who are famous as sailors and live side by side with the sea. The existence of this tribe is a sign of the way of life of small-scale fishermen who live in simplicity. Not only the way to go to sea, but the time and equipment used are still traditional. Their motive is to become fishermen only, to fulfill their daily needs, if there is excess, that is what they sell. In general, the lives of fishermen on the Kendari Bay coast are still in uncertainty of income because they depend on the seasons and the weather which is also erratic. In the COVID-19 pandemic situation, all sectors are under pressure due to the obstruction of the movement of people and goods, then what about the coastal fishermen of Kendari Bay.

Several previous studies have shown that the pandemic has an impact on fishermen as found by Sari et al., (2021) who researched fishermen in Indramayu sub-district. The results show that during the COVID-19 pandemic, small and large-scale fishermen continued to make efforts to catch fish with the same fishing gear and area even though their income decreased. Small-scale fishermen adapt by reducing their fishing area to minimize losses while large-scale fishermen try to find additional sources of capital to keep their operations running. The next research is which not only looks at the impact of the pandemic on fishermen but also examines the resilience of fishing communities during a pandemic. The results show that the resilience of the community in the study area of PPN Karangantu is low, while the factors that influence the resilience of fishermen are government assistance, ship ownership and client patrons.

Preliminary research conducted by Jomitol et al., (2020)on small-scale fishermen in Sabah, Malaysia found that the COVID-19 pandemic disrupted the food supply chain and affected everyone involved in the fishing industry. In line with this, Rahman et al., (2020) found that the COVID-19 pandemic could lead to a food crisis in Bangladesh if appropriate action was not taken, due to several factors such as lack of fishery production, lack of demand, labor shortages and rising commodity prices. fish that disrupt the food supply chain. Furthermore, Vaity, Bhavesh B. & Shinde, (2021) conducted a study that revealed the condition of Indian fisheries during the lockdown and after the lockdown. The results show that the decision to lock down or limit activities has a severe impact on the economy of the Indian fishing community, both small and large scale.

Based on previous research and the current condition of the coastal fishermen's economy, the latest in this research, apart from the object and time of the research, is the study of how fishermen survive from an economic perspective. Although the COVID-19 pandemic has hit almost all sectors and economic actors, the impact felt will be different between coastal fishermen in one area and another. What are the characteristics of fishermen on the Kendari Bay coast, how the

impact of the pandemic is felt and how small-scale fishing communities on the Kendari Bay Coast survive during the pandemic from an economic point of view need to be studied in this study. The following Table shows that agriculture, forestry, and fisheries are the leading sectors in Kendari City which have the third largest contribution after construction and trade to Kendari's GRDP for the last 3 years.
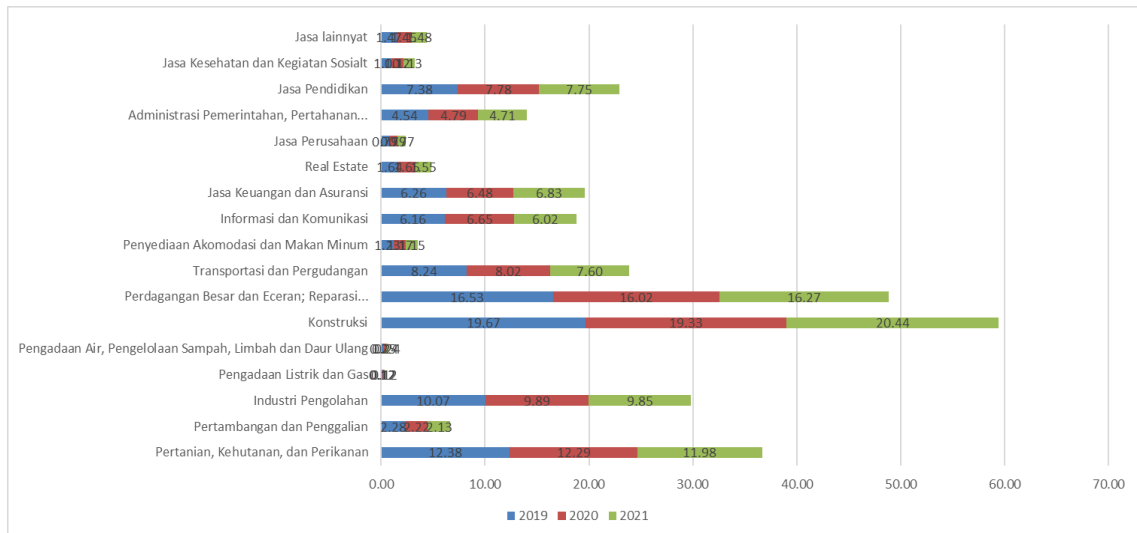


**Figure 1. Distribution by Sector to GRDP Kendari**

If viewed in more detail, the production in the Kendari fishery sector is the largest compared to the plantation and livestock sub-sectors (BPS Kendari, 2022). This is because capture fisheries in Kendari are one of the primary commodity centers for local supply and export needs in Southeast Sulawesi. The captured fishery products traded consist of Cakalang fish (4513 tons), Tuna fish (2210 tons), Tongkol fish (4807 tons), Layang fish (8131 tons), squid (308 tons) and small crabs (72.40 tons) during 2021.
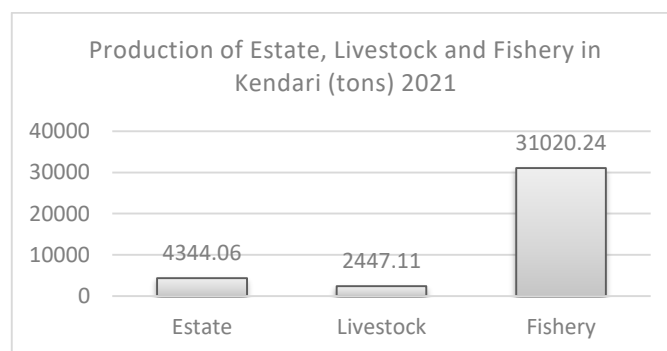


**Figure 2. Production of Estate, Livestock and Fishery in Kendari (tons) 2021**

The survey location was chosen in the two sub-districts of Abeli and Nambo because in these two areas there are villages with fish landing docks as traditional fish landing sites. The fishing gear used by fishermen in this area are longlines, hand lines, gill nets, sero, bubu and began floating. Thus, the role of business in various villages in Kendari Bay is very important in providing employment for the surrounding community, (Zulham et al., 2017). However, during the COVID-

19 pandemic, the number of fish caught was reduced. Therefore, this study was conducted to find out how the pandemic had an impact on fishermen from an economic perspective and to examine the financial constraints faced by fishermen's household to survive during the pandemic.

This study aimed to determine the impact of COVID-19 on fishermen on the Kendari Bay coast from an economic perspective. This research is important because it can provide an overview of the extent of the impact faced by fishermen as one of the economic actors, provide an overview of whether the COVID-19 pandemic is indeed a threat or whether, instead, other factors affect fishermen's income, and reveal economic constraints that hinder fishermen from improving the economy. In addition, this research is expected to add to knowledge, provide benefits to society, and inspire further study.

## Method

This research is descriptive by using quantitative and qualitative methods in data analysis. The number of samples involved in the study were 50 respondents consisting of fishermen in Nambo and Abeli Districts. Samples were taken from Petoaha and Talia villages because there is a fish landing pier that serves as a landing place for traditional fishing fleets. Determining the number of samples was carried out using the purposive sampling method for 50 small-scale fishermen who were fishing bases at that location because they were considered to have met the requirements of purposive sampling to obtain the information and data needed. The data collection method is through surveys, observations, and direct interviews with fishermen at the research location. While sampling using purposive sampling method, (Palys, 2008). The data processing is carried out by utilizing panel data regression to see the effect of the COVID-19 pandemic on fishermen's income. The variables involved are fishermen's income, fishing frequency, fish price, number of catches, borrowing (debt) as a dummy variable. Determination of variables is based on literature and literature studies where income is measured by the total of salary or profit received by fishermen for a month. The frequency of fishing is a variable of the number of fishermen going to sea in one month. The total of fish caught is calculated in kilograms per month. The price of fish in question is the average price of fish caught per kg. While the loan or debt variable is a dummy variable which is categorized as 1 if you make a loan during the pandemic and 0 if you don't make a loan during the covid-19 pandemic.

The variable frequency of fishing was adopted from previous research conducted by Yuliana & Budhi, (2019) the effect of the variable price of fish on fishermen's income has been studied by Ridha, (2017) and Tibrani, (2021). Studies on the characteristics of fishermen on fisherman income have been conducted by Rahim et al., (2018) studies of fish catches have been studied by Sutono Hs et al., (2021) and Sofyan R. Indara, Irwan Bempah, (2017) Studies on survival strategies during a

pandemic have been studied by Kholis, Muhamad Natsir Fraternesi & Wahidin, (2022), Hamzah & Nurdin, (2021) and Rahmawati et al., (2022) who became the inspiration for this research. The research gap is found in the dummy variable of loans or debts which is carried out as an indicator of fishermen in maintaining life during the pandemic and assessing the financial constraints experienced by fishermen's families due to lack of access to financing or capital. The flow of thinking in this research can be seen in the following chart:
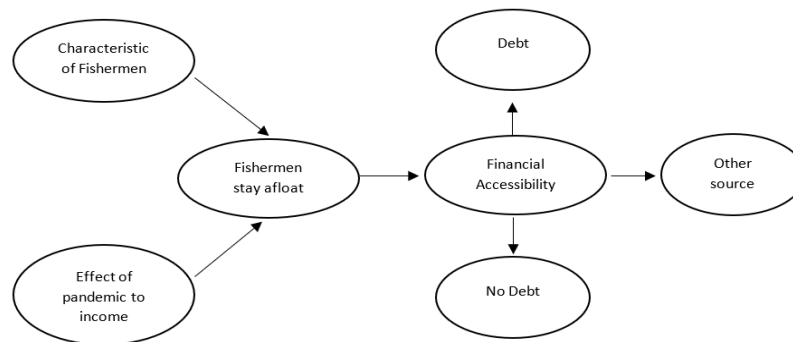


**Figure 3. Conceptual framework of this research**

The analysis of how fishermen survive during the pandemic begins by looking at the characteristics of fishermen on the Kendari bay coast and assessing the impact of the pandemic on fishermen's income through the specified variables. After seeing how the impact is, it is found that the economic constraint in fishermen's households is access to financing or capital that forces people to borrow or sell assets.

$$Y = \beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + \mu \qquad\qquad 1$$

Where Y = fishermen's income is measured by the total of salary or profit received by fishermen for a month; X1 = frequency of fishing is a variable of the number of fishermen going to sea in one month; X2 = While the loan or debt variable is a dummy variable which is categorized as 1 if you make a loan during the pandemic and 0 if you don't make a loan during the covid-19 pandemic; X3 = The total of fish caught is calculated in kilograms per month; X4 = The price of fish in question is the average price of fish caught per kg; $\beta_0$ = Constant or Intercept; $\beta_1$, $\beta_2$, $\beta_3$ $\beta_4$ $\beta_5$ $\beta_6$ $\beta_7$ = Regression Coefficient; and μ = Error Term.

## Results and Discussion

### Characteristics of Small-Scale Fishermen in Kendari Bay

The survey results in two locations, namely Abeli sub-district (Talia village) and Nambo sub-district (Petoaha village) showed that most fishermen respondents were aged 31 to 40 years. However, there were also young fishermen aged 15-20 years who were still of school age and older fishermen over 50 years old. This is followed by looking at the last education completed by fishermen. The results show that 25 percent of fishermen only graduated from elementary school,

19 percent graduated from junior high school and 6 percent had attended high school. These data indicate that the average fishermen who work in the two survey locations are still in the young category and have not completed 12 years of compulsory basic education.
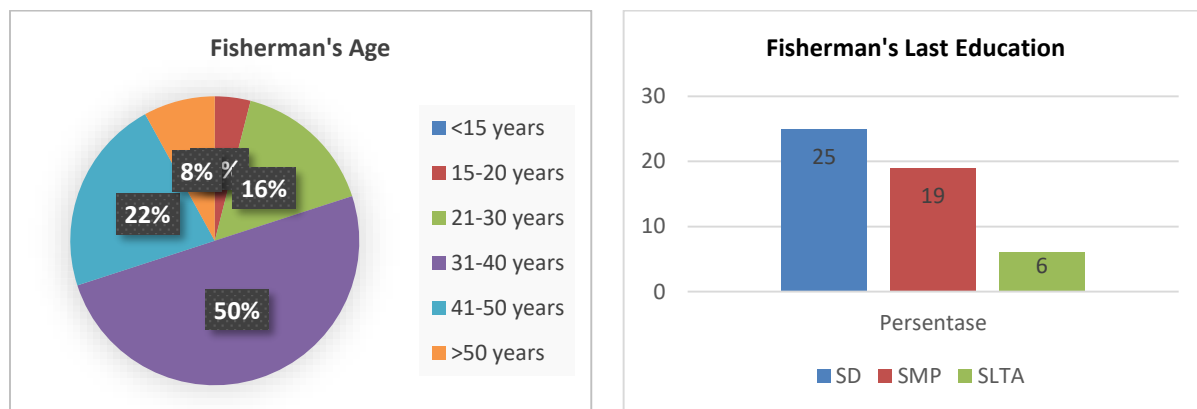


**Figure 4. Fisherman's Age and Fisherman's Last Education, primary data**

Figure 4 explain the average fisherman on the Kendari bay coast has been in this profession for a dozen to tens of years. They have been in this profession from a young age, so they have 10 to 30 years of fishing experience, some even exceed 30 years. However, there are also some beginners or those who have been fishermen for less than 5 years. This is in line with the level of education that they complete is only at the elementary school level, so many have started fishing activities since they were in elementary school, following their parents and other family members until they are able to go to sea on their own. If seen from the area of origin of fishermen, the majority come from outside the city of Kendari and even outside the province of Southeast Sulawesi where they are immigrants from Selayar or Makassar. They are also the ones who live and spread to various coastal areas to carry out fishing activities or activities. It can be said that this profession has become a legacy and is hereditary from generation to generation who loves marine life and is in accordance with the habits of the Bajo or Bugis tribes.
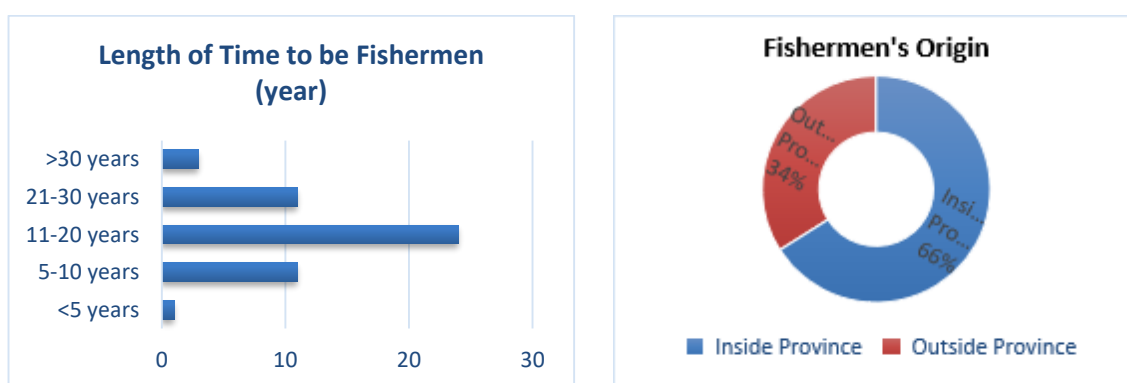


**Figure 5. Length of time to be Fishermen and Fishermen's origin**

This study further examines the frequency with which fishermen go to sea before and during the pandemic. The results show that there are differences in the frequency of fishing for fishermen before and during the pandemic. Figure 6 shows before the pandemic is marked by a blue line on

the graph and after the pandemic is marked by an orange line that shows the frequency of fishing for the same individual fisherman. For example, fishermen in groups usually go to sea 5 times a month before the pandemic is reduced to only 3 times. However, individual fishermen who look for fish, crustaceans, and small shrimp every day experience an increase in frequency during the pandemic. At first, they went to sea only 11 times before the pandemic could increase to 15 times after the pandemic in a month. This was done because the local community's need for side dishes increased due to restrictions on activities during PPKM. So that the frequency of going to sea has changed, but there is an increased and there is a decreased in accordance with the way to go to sea, in groups (joining motorboats) or alone (using spears).
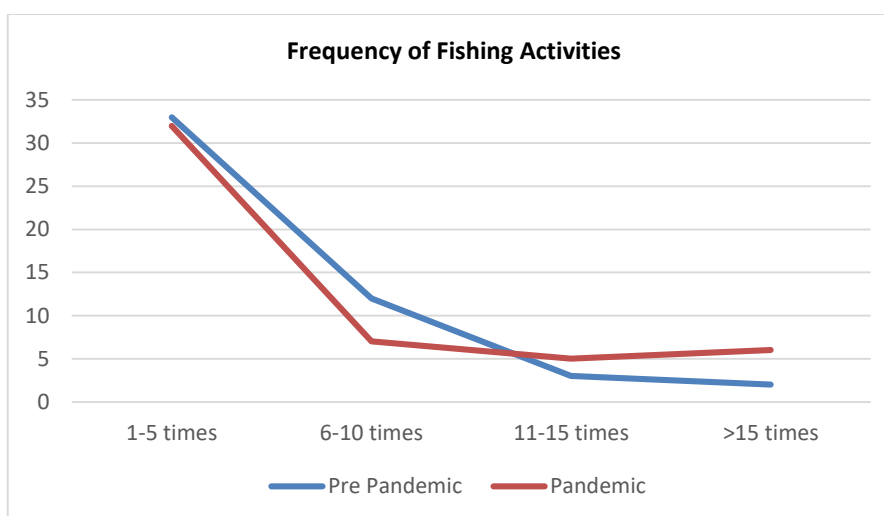


**Figure 6. Frequency of Fishing Activities**

## Pandemic Effect on Fishermen's Income

To see the impact of the pandemic on fishermen's income, there are variables that are used such as the frequency of fishermen going to sea in a month, the number of fish caught in kilograms, the price of fish in rupiah and a dummy loan variable that shows whether fishermen make loans during the COVID-19 pandemic. The results are shown in the following Table.

**Table 1. Result of Regression**

| Variable | Coefficient |
| --- | --- |
| Cons | 788586.1 (3.506)*** |
| X1 | 66724.34 (2.029)** |
| X2 | -19524.13 (-0.209) |
| X3 | 654.710 (1.581) |
| X4 | 16.240 (5.932)*** |

Source: primary data processed

Table 1 it can be seen that the factors that have a significant impact on fishermen's income are the frequency of fishing and the price of fish while loans and the number of catches are not significant in this model. The value of R square shows a 54.26% change in the dependent variable, namely fishermen's income, which can be explained by the independent variable consisting of fishing frequency, number of catches and fish prices. Meanwhile, 45.74% is explained by other variables that are not discussed in this model. The variable frequency of fishing and the price of fish have a significant impact on fishermen's income. This is indicated by changes in the frequency of fishing experienced by fishermen before and during the COVID-19 pandemic period. These changes can increase and decrease for each fisherman but this also affects the rise and fall of fishermen's income. Regarding fish prices, which have increased, it has also affected the fluctuations in fishermen's income, which did occur during the pandemic, either because of the lack of demand or restrictions on activities. However, this does not have a significant impact on fishermen because the first few things are, the impact of activity restrictions (PPKM) which is enforced in almost all parts of Indonesia, does not close their access to the sea and the two main factors that are feared by fishermen are weather uncertainty and the high cost ship fuel prices.

This model also involves a dummy variable, namely loans made by households. This is related to the fishermen's decision to borrow or not during the pandemic. Although many made loans, this was also not significant because some fishermen had made loans before the pandemic and some extended their debts again after the pandemic hit. It can be said that the COVID-19 pandemic does have an impact on Kendari Bay coastal fishermen, but it does not necessarily reduce the productivity of their catches and fishermen's income. Because this has long been experienced by fishing communities who live in simplicity. They survive by making ends meet, increasing debt, selling assets because they realize that fishing is a profession that is vulnerable to poverty because it is full of uncertainty.

### Financial Constraints Faced by Fishermen

To examine more deeply about how to survive the fishing community during a pandemic, this study also examines the financial or economic side of the community. The results of the study show that fishing communities are accustomed to meeting their daily needs with the catch on that day and holding non-urgent needs and sometimes even not having savings. The management of household finances is also temporary for one point in time. So, the fishermen's income is only enough to meet today's needs, while for tomorrow, fishermen must look for income again. Living habits like this form a culture that is attached to the daily activities of fishermen. This causes slow changes in the economic conditions of fishermen's households. After further review, there are several things that fishermen do to survive during the covid-19 pandemic. These decisions are reflected in the following diagram.
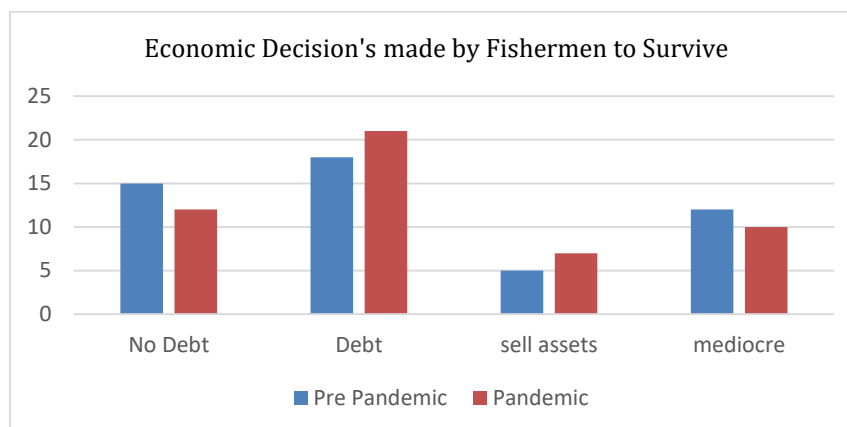
**Figure 7. Economic Decisions made by Fisherman to Survive**

The decisions chosen by fishing households during the COVID-19 pandemic are not much different from the days before the pandemic. Where fishing communities tend to suffice everything for their needs. So whatever resources are available, maximize them so that they are sufficient for all family members. This relates to the subsistence lifestyle, where fishermen go to sea for their own consumption. The next decision is to borrow or borrow. Some fishermen are also looking for solutions by borrowing from other people, middlemen and village savings and loan institutions. Not many have been able to access financing from the Bank because the majority of these loans are consumptive in nature, lack of administrative completeness documents and cannot fulfill other requirements such as collateral.

The next decision option is to sell the asset. Mothers in fishing households are accustomed to saving in the form of gold or precious metals, they also have vehicles in the form of small boats and motorbikes which can then be sold at any time if they need money. This has become a forced choice for fishing households to release assets in order to meet their daily needs. As for some of the fishing communities who claimed not to have borrowed, it turned out that they were looking for additional work by opening a shop, becoming factory workers and farming or managing other people's gardens. Among the decisions taken by fishermen's households in meeting their daily needs, it is indicated that members of the fishermen's household have the desire to become entrepreneurs but are constrained by difficulty in accessing finance or financing.

The findings in this study are supported by previous research, where a review of the results showed that the Covid-19 pandemic impacted small-scale fishermen. Hamzah & Nurdin, (2021) found variables that directly and indirectly affected fishermen's income during the covid-19 pandemic. In line with this, Kholis, Muhamad Natsir Fraternesi & Wahidin, (2022) predicted the trend of the impact of the Covid-19 pandemic on fishermen's income. Meanwhile, Tibrani, (2021) analyzes the profile and characteristics of coastal fishermen. If previous research used trend analysis for predictions, comparative case studies, and survival strategies seen from the production side, the fish production side, distribution, and income, As a result, the current study complements

the quantitative and qualitative studies by examining the economic constraints faced by small-scale fishermen in order to survive the Covid-19 pandemic.

## Conclusion

Based on the results of the study, it can be concluded that small-scale fishermen who live on the coast of Kendari Bay, especially in Petoaha and Talia Villages are dominated by young workers who are still in their productive age and have not completed basic compulsory education. The COVID-19 pandemic has not significantly impacted fishermen's income where the biggest impact comes from weather factors and the high cost of boat fuel. Meanwhile, fish prices and fishing frequency have a significant impact on fishermen's income. The fishermen's survival strategy during the covid-19 pandemic can be seen from the decision to borrow, sell assets and make enough. Some who do not borrow survive by opening their own business. However, these businesses face obstacles in the form of difficulty in accessing capital and financing. To start a business, this can happen due to limited information, not having collateral, rigid document requirements, and cumbersome bureaucracy. The implication of this research is that the government increases access to finance for fishermen's families to be able to start other businesses besides going to sea to improve their standard of living which is full of uncertainty.

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