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Resilience of Fisherman In Industry Development Ikan Asap Households In Bengkulu, Indonesia

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ABSTRACT: *One of the productive economic growth sectors that serves as the foundation for Bengkulu Province's coastal development program is the development of fishermen's businesses through the home industry. The goal of this study was to investigate the features of the Ikan Asap home industry as well as to examine the resilience of fishermen in the Ikan Asap home industry in Bengkulu Province. The descriptive analysis method is used in the investigation. From the last 5 (years), precisely from 2018 to 2022, the innovation has been tested using the publish or perish application. Then VOSviewer is used to visualize bibliographies or data sets in order to identify themes that still have research opportunities. The study's findings indicate the peculiarities of the Ikan Asap home industry for fishermen, both boat owners and crew members. The primary element in the Ikan Asap industry is fresh fish, but fish that are not sold fresh are occasionally used as raw materials. The equipment used is still basic and privately owned. Because the level of marine Ikan Asap production is relatively low, namely an average of 10 kg per production, capital availability is an impediment, and Ikan Asap production is sold to the market and collectors. On the market, sell. The level of resilience of fishermen in the growth of home industries for the production aspect is 17.13 in the weak category, 16.75 in the weak category, and 6.44 on average for capital or credit institutions. Category is lacking. In the medium group, the average level of resilience in terms of market institutions is 7.88. Fishermen in extension institutions have a medium level of resilience, with an average of 7.66.*

KEYWORDS*:* resilience, home industry development, ikan asap

INTRODUCTION

Indonesia is an archipelagic country with the largest land area in the world, with 17,504 islands, a water area of 6,400,000 km2 made up of 3,110,00 km2 of inland and archipelagic waters, 290,000 km2 of territorial waters, 270,000 km2 of additional zones, a 3,000,000 km2 Exclusive Economic Zone, and a continental shelf area of 2,800,000 km2 (Badan Keamanan Laut RI, 2022). Bengkulu is one of Indonesia's 34 provinces, with a coast length of 525 km, faces the Indian Ocean directly, with a variety of coastal characteristics, living, non-living, and artificial resources, as well as environmental resources (Hasan and Tawakal, 2018).

Because of this possibility, fisheries are a mainstay for coastal populations to work as catch fishermen. Capture fishery's overall production in 2021 is 68,070 tonnes of its sustainable potential. Economic value averages 68%, with non-economic fish accounting for 32%. 90% of total economic products are marketed externally, both regionally and for export, with the remainder consumed locally (BPS Provinsi Bengkulu, 2022). The fishing industry has the potential to boost the economy of the local community. However, the potential that every firm possesses will be accompanied by challenges ((Dinas Kelautan dan Perikanan Provinsi Bengkulu, 2022).

Uncertain weather, resulting in huge or high waves, is an issue for Bengkulu Province fisheries because the province confronts the Indian Ocean, which creates tremendous wave energy (Mase, 2017). Large waves can have an impact on fishermen's catch. The study's findings (Khalfianur, Niati, and Harahap, 2017) revealed that when sea waves were high, fish catches were limited or even non-existent since fishermen could not travel out to sea, however when sea waves were stable or normal, fish yields increased (high).

Fishermen in Bengkulu Province are still few, and aside from being influenced by waves, they also have simple and small fishing gear and boats (technology), so Bengkulu Province fishermen can only go out to sea for 1 (one) day and return home (Dinas Kelautan dan Perikanan Provinsi Bengkulu, 2022). According to research (Jyoti Kalita et al., 2015), the economic situations of fishermen are much more precarious, and they are not completely engaged in fishing. Fishermen respond less to current fishing techniques (Kalita et al., 2019).

Fishermen face a multitude of challenges, including agribusiness sociology, environmental conditions, and outdated technology (Hikmah and Nasution, 2018). According to the findings of the research (Lamadirisi, 2017), the community, which was originally made up of fishermen, grew by constructing kiosks selling Manado delicacies on the periphery of the beach, beach tourism spots that are popular with Manado residents. It is a driving force in the development of enterprises in coastal communities.

The development of fishing businesses through the home industry is one of the maritime economic sectors that can develop and be productively managed as a policy to accelerate the development of coastal communities. Coastal economic development has an effect on economic growth of 13.7% and the competitiveness of the maritime community has an influence of 14.4% with coastal economic development (Manik et al., 2019).

Mukomuko Regency in Bengkulu Province has a Ikan Asap home industry, which is a fishing business through home industry. According to interviews with the Mukomuko Regency Maritime Affairs and Fisheries Service, the Ikan Asap business has long been carried out by fishermen for generations; however, after being hit by Covid-19, the amount

of business production fluctuated depending on the availability of raw materials and public demand for smoked sea fish. As a result, in areas where fishing fleets are scarce, Ikan Asap production is not carried out on a daily basis. The availability of raw materials in the manufacturing process, as well as marketing and technological institutions, influences the Ikan Asap home sector. Thus, fishermen in Mukomuko Regency, Bengkulu Province, can be stated to be weak and have low resilience in absorbing technology, raw materials influenced by climate and weather, and gaining marketing and capital institutions. This resilience is inextricably linked to the performance of the Ikan Asap home sector, which necessitates the ability to develop by leveraging its unique resources and competencies. The goal of this study was to investigate the features of the Ikan Asap home industry as well as to examine the resilience of fishermen in the Ikan Asap home industry in Bengkulu Province.

RESEARCH METHOD

Mukomuko Regency was chosen as the research location due to the presence of Ikan Asap home enterprises in Teramang Jaya District, Kota Mukomuko District, and Ipuh District. Data sources and kinds employed include literature study data, primary data, and secondary data. Observation, interviews, and the distribution of questionnaires were used to collect primary data. Researchers gathered secondary data by searching for information in related references, journals, and articles. A total of 32 fishermen who built Ikan Asap home enterprises were identified as responders using the census approach. Census is a method of gathering data that involves taking all population statistics and investigating each element of the population one by one (Sugiyono, 2013). Descriptive analysis was used to analyze the data.

In order to demonstrate that the research that will be conducted is state of the art in comparison to previous research, the researcher conducts a novelty test using the publish or perish application to determine the number of similarities in research from the last 5 (years), namely from 2018 to 2022. The terms employed are fisherman, resiliency, and small coastal community industries. VOSviewer is also used to visualize a bibliography or a data collection including bibliographical fields (title, author, author, journal, and so on). Vos Viewer is used for bibliometric analysis, which includes searching for topics that still have research prospects, as well as searching for the most extensively used references in specific domains. Then came the VosViewer.

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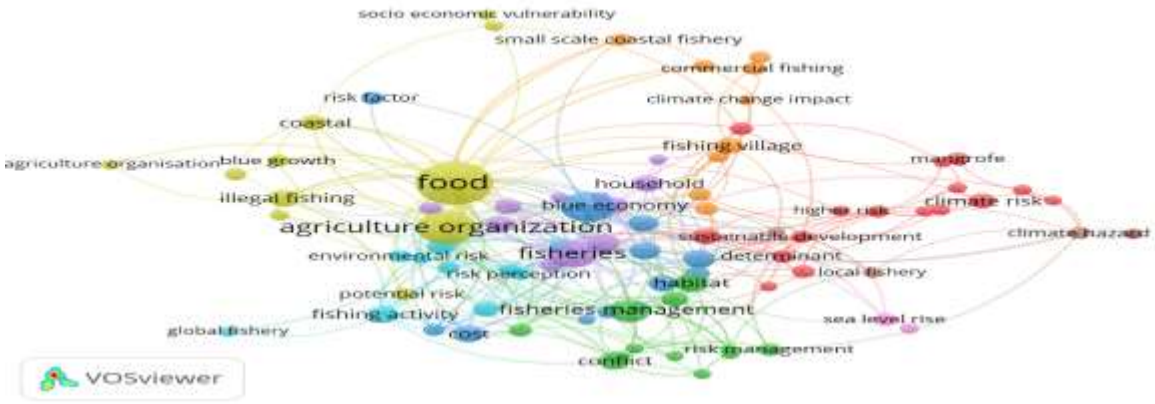

Figure 1. Network Visualization

The visualization of the topic network that has been analyzed results in resilience, fishermen, home industry, 62 related items, and 7 clusters meaning that in the topic there are 7 clusters with 7 colors namely yellow, purple, sea blue, sky blue, green, orange, and red, and 217 links. There are a total of 279 links. The findings of the research analysis are food in the thickest circle. In terms of study, this food is the most researched by researchers and is related to the research topic; yet, because this food is related to small-scale coastal fishing, its position is still minor, implying that little has been explored. So this research has the potential to continue.

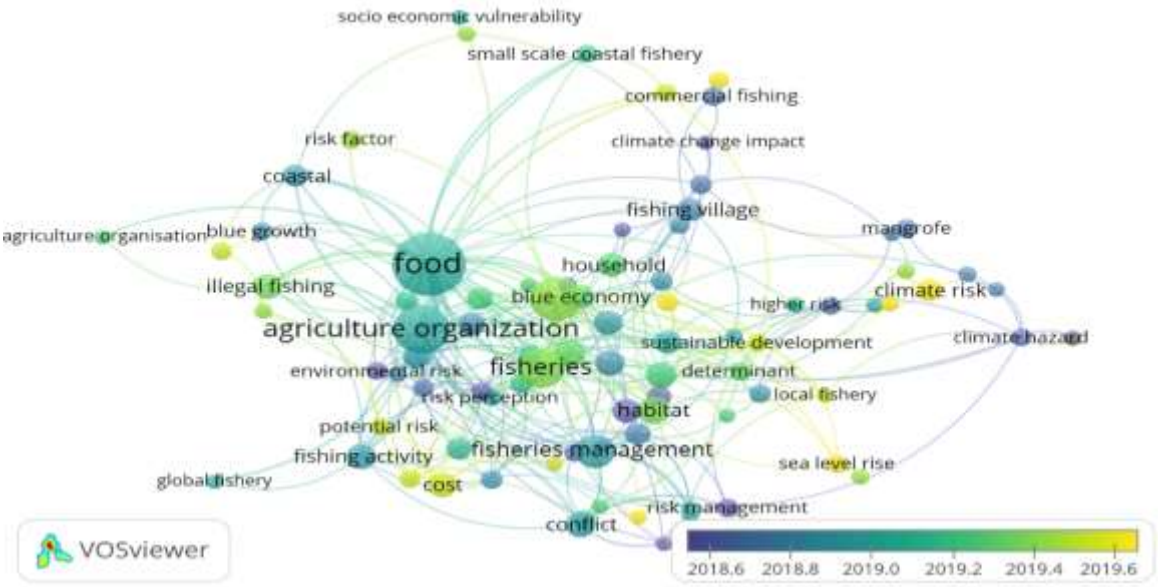

Figure 2. Overlay Visualization

There was research on the resilience of fishermen in the growth of home industries in 2018 and 2019, but no research on the vulnerability of fishermen to the hazards of developing home industries was discovered in 2020, 2021, or 2022. Because the most recent study was completed in 2019, this topic still has the potential to be examined because the most recent year analyzed was 2019.

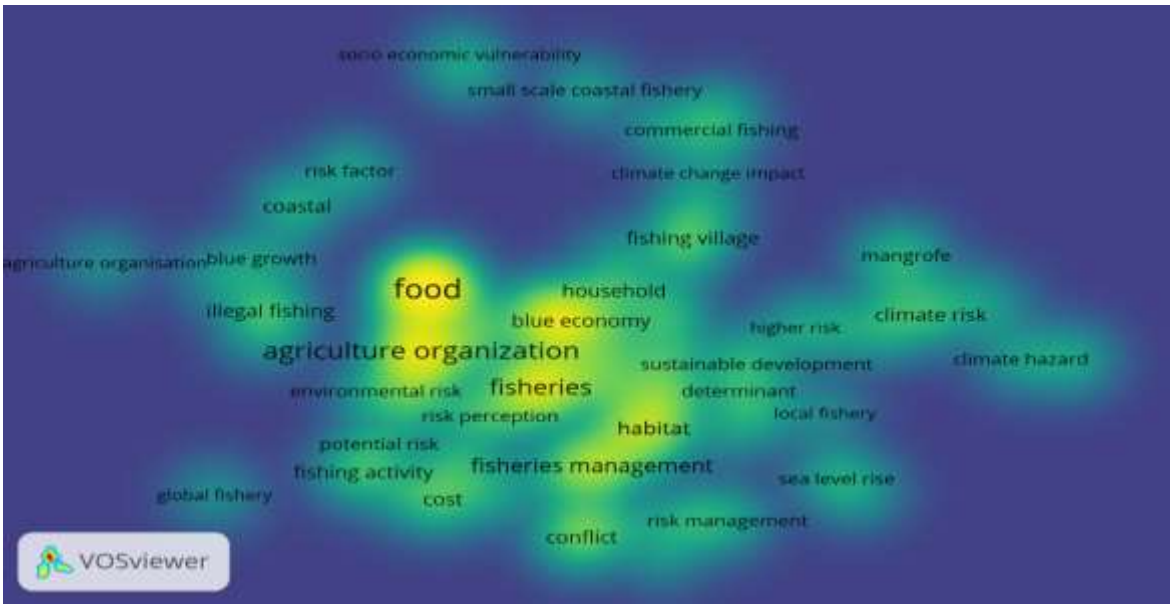

Figure 3. Density Visualization

Figure 3 above explains that the results of the density of visualization on the topic network that has been analyzed, namely the resilience of fishermen in the development of home industries, do the most research on the topic of food, the brighter the lights, the more people do research, the less the lights are blurred. So this research still has the chance to undertake research, because lights or circles with the theme of small- scale coastal fisheries are quite imprecise.

RESULTS AND DISCUSSION

Fishermen's Home Industry Characteristics in the Development of Ikan Asap Business in Bengkulu Province

Fishermen in Bengkulu Province have a strong commitment to coastal life, and any change in the structure of the marine sector frequently has a large negative influence on fishers in terms of local employment, and thus might impact fishermen's way of life. The physical and biological effects of climate change can have an impact on fisherman's jobs; some fishermen pursue home businesses to boost their household income.

Mukomuko Regency is a processing hub for marine Ikan Asap in Bengkulu Province. Ikan Asap business actors are women, namely 84.37% of whom are housewives with 12 years of expertise processing Ikan Asap. Another feature of fishermen in Bengkulu Province is that they have an average of four dependents. The Ikan Asap business is run with the intention of boost income or assisting the husband's income in fulfilling the needs of the family. The owner of a Ikan Asap business is a fisherman, both as a boat owner and as a crew member, whose livelihood is contingent on the proceeds of going to sea.

When compared to other processed fresh fish products, Ikan Asap is one of the simplest and least expensive traditional processed fresh fish items. In the Bengkulu Province Ikan Asap business. Fresh fish is the key ingredient in Ikan Asap. However, fish that cannot be sold fresh are occasionally used as raw materials for Ikan Asap. Due to the physical condition of the fish, which is readily damaged, the processing of Ikan Asap must be done as soon as feasible. In general, the equipment utilized in the production of Ikan Asap is simple and privately held. One of the challenges in the Ikan Asap home sector in Bengkulu Province is a lack of funding.

Based on information from fishermen, a Ikan Asap home sector could benefit the people of Bengkulu Province's economy. Markets and collectors purchase Ikan Asap manufacturing. However, because the production level of marine Ikan Asap is very low, namely an average of 10 kg per production, fishermen prefer to sell it directly to consumers who come to the Ikan Asap processing facility or sell it themselves at the market.

According to Malakar, Mishra, and Patwardhan (2018), another option for livelihood diversification is to alter their fishing tactics and the usage of different types of nets. According to Coulthard (2008), Dhoniveru fishermen in the South Indian Lagoon diversify their fishing techniques into sirutholli (capturing small or poor-scale fish), i.e. techniques that use smaller sizes of unregulated gears. Surprisingly, this method allows fishermen to diversify their harvest and lessen their reliance on a single type of marine catch to increase productivity and profits.

According to Carvalho (2012), this type of economic maturation needs the operation of an intricately interconnected network of industries, businesses, and services, all of which rely on input flows from suppliers and downstream industries to source their products. Manufacturing of processed seafood is vital to fisheries and aquaculture, and the strengthening and growth of these downstream industries will have a greater positive impact on employment levels in small coastal communities. While industrial relations between fisheries, aquaculture, and marine tourism overlap (Bertrand et al., 2020).

To ensure direct benefits for the fisheries sector while also promoting growth opportunities for aquaculture and marine tourism, private and public investment should be placed in the main upstream and downstream industries that support both industries concurrently, facilitating growth of each sector and potentially leading to increased local employment for local communities (Morrissey and O'Donoghue, 2013).

The creation of a new marine industry in small coastal communities must also be considered in terms of locally available skills. More importantly, local skills must be developed alongside policy incentives that adapt to the changing nature of work and repetitive work that is increasingly unique to the area (Friess et al., 2019). Obstacles in the manufacturing process One of these is a shortage of production equipment, which can impede to the processed fish production process. Furthermore, infrastructure and amenities include good road access, adequate equipment, an electrical network, clean water supply, and integrated waste management, as well as telecommunications networks in the form of mobile phones and expedition services. The value of fishermen's production of goods and services required for the fishing business (fisherman's position as a producer) and fishermen's household consumption (fisherman's position as a consumer) is used to calculate the fishermen's exchange rate (Denton and Harris, 2021).

Fishermen's Resilience in the Development of the Ikan Asap Home Industry in Bengkulu Province

The resilience of fishermen in the development of Ikan Asap home industries is a measure of the ability of fishermen to create and influence home industries, minimize and eliminate impacts that are detrimental to home industries. In this study the resilience of fishermen in the development of Ikan Asap home industries in Bengkulu Province is seen from the aspects of production, technology and institutions. Aspects of Ikan Asap production can be seen in table 1:

Table 1: Production Aspects of Ikan Asap in the Home Industry

No	Category (score)	Total (people)	Percentage (%)
1	Excellent (22 Respondent's Score 26)	3	9,37
2	Moderate (19 out of 22 responses)	7	21,87
3	Weak (15 respondent score 19)	22	68,76
Total		32	100
Average		**17,13 (Weak)**	

Results of Primary Data Analysis, 2023

According to the study's findings, the resilience of domestic industries for the production aspect averaged 17.13 in the weak category. Fishermen developing Ikan Asap home industries continue to have difficulty in obtaining fresh fish raw materials, and the number

of raw materials obtained for processing Ikan Asap is also insufficient. This is due to the fact that it is limited by the weather; when the weather is not favorable, big sea waves catch just a few. Then, because the number of fish sold is little or non-existent at times, the price of fresh fish is high.

According to Legg (2014), production risk is particularly important in fisheries, and input limitations are frequently part of the management system. When regulators limit the use of inputs by limiting factors such as vessel size and gear type to limit fishing effort, or by subsidizing inputs (e.g., capital and fuel) to support fishermen's incomes, they have the potential to affect not only harvest levels, but also risks production (Kroetz, Sanchirico, and Lew, 2015). Production risk exists for all ship groups, but the impacts of various inputs vary by ship group. Capital, for instance, reduces production risk for groups of marine vessels like trawlers while increasing it for coastal fisheries. This distinction is significant because it shows that larger vessels' ability to go to where the fish are, as well as their ability to withstand unfavorable weather conditions, minimizes production risk (Asche et al., 2020). Table 2 also depicts the technological features of Ikan Asap:

Table 2: Technological Aspects of the Home-Ikan Asap Industry

No	Category (score)	Total (people)	Percentage (%)
1	Excellent (22 Respondent's Score 26)	1	3,125
2	Moderate (19 out of 22 responses)	3	9,375
3	Weak (15 respondent score 19)	28	87,5
Total		32	100
Average		**16,75 (Weak)**	

Results of Primary Data Analysis, 2023

One of the challenges that fishermen confront in developing Ikan Asap home enterprises in Bengkulu Province is technological. The technology aspect averages 16.75 in the weak category in an endeavor to develop the Ikan Asap home industry. As many as 87.5% of fishermen make no efforts to improve their business, particularly in terms of technological innovation in fishing and processing technologies. From a technological standpoint, fishermen's resilience in the development of Ikan Asap home enterprises remains low. Due to a lack of information, knowledge, and capital for the development of marine Ikan Asap household industries, both in raw materials, processing, and marketing, fishermen continue to use Ikan Asap.

According to research by Hendratmoko et al (2019), most fishermen still employ fish processing procedures that they have used for generations or traditionally. As many as 61 out of 109 respondents (55.96%) still use processing skills passed down from generation to

generation. There are just 20 respondents (18.35%) who have used fish processing procedures learned from therapy or books.

The usage of inputs can be influenced by fishers' risk preferences and whether these inputs reduce or increase production risk. Understanding production risk is thus a critical component of understanding fishing behavior. When fishers are risk averse, for example, production risk becomes a cost since some factor inputs may be used less intensely and others may be overused compared to risk neutral fishers. This is significant because the majority of fishermen appear to be risk averse (Smith and Wilen, 2005). While risk refers to exposure to external hazards over which people have no or limited control, vulnerability refers to the ability to handle such risks without experiencing a negative or socially unacceptable loss of well-being (Chambers, 2006).

Capital institutions, marketing institutions, and extension institutions (government) have the highest level of resilience in this study. Table 3 shows fishermen's access to cash or capital aid or credit (loans), markets, and counseling in the growth of Ikan Asap home industries.

Table 3 Shows the Institutional Aspects of the Ikan Asap Home Industry

No	Category (score)	Total (people)	Percentage (%)
A. Financial Institution			
1	Excellent (8 < Respondent's Score ≤ 10)	3	9,375
2	Moderate (7 < Respondent's Score ≤ 8)	13	40,625
3	Weak (5 < Respondent's Score ≤ 7)	16	50
Total		**32**	**100**
Average		**6,44 (Weak)**	
B. The Marketing Institute			
1	Excellent (8 < Respondent's Score ≤ 10)	5	15,63
2	Moderate (7 < Respondent's Score ≤ 8)	15	46,87
3	Weak (5 < Respondent's Score ≤ 7)	12	37,5
Total		**32**	**100**
Average		**7,88 (Moderate)**	
C.Governmental Extension Institution			
1	Excellent (8 < Respondent's Score ≤ 10)	1	3,13
2	Moderate (7 < Respondent's Score ≤ 8)	17	53,12
3	Weak (5 < Respondent's Score ≤ 7)	14	43,75
Total		**32**	**100**
Average		**7,66 (Moderate)**	

Results of Primary Data Analysis, 2023

The ability of fishermen to acquire capital assistance and loans from financial institutions (banks) is defined as their level of resilience to capital or credit institutions. Table 3 shows that fishermen's ability to receive capital help or loans is inadequate, with an average of 6.44.

Even though the Ikan Asap home sector desperately requires cash, as many as 50% of fishermen say that they have not used capital assistance or loans. Instead, fishermen use their own capital gained from the sale of previously saved fresh and Ikan Asap (savings). This occurs regularly; most fishermen are still strong and do not want to be troubled with dealing with banks or other financial organizations; also, they are worried about not being able to repay the loan within the specified time frame.

According to Hendratmoko et al. (2019), 54.13% of fish processors in Cilacap Regency claimed to not use loans, although the fact they needed additional funds to maintain their business. This is because the payback duration is between 1-3 years, and the relatively high-interest rate (12% per year) leads loan borrowers to believe that this assistance has not been able to fully assist and alleviate their load.

The level of resilience in terms of market institutions is medium; fishermen do not make effective use of marketing institutions, as evidenced by an average of 7.88 in the medium category. Access to information on the demand and supply of marine Ikan Asap products is known to have started on its own. The quantity of Ikan Asap produced is determined by the quantity of raw materials collected. According to Table 2, 37.5% of Ikan Asap home industries are still in the weak group. Fishermen's market resilience is weakened due to a lack of information usage and understanding about market institutions. To gather information on marketing agencies, fishermen should seek good information from consumers, other Ikan Asap processors, and market observations. According to Anisa (2017), purchasers account for up to 70% of demand. Product demand is only 30% excluding direct consumer information.

Not all hazards are treated because the expense of the management process is too high and the impact is too minimal (Retna Maharani, 2018). Fishermen's exchange rates are influenced by their ability to increase income from both fisheries and non-fisheries (Riani et al., 2017). Due to relatively low business income, the majority of traditional fishermen in Sambas Regency have been unable to meet their basic needs (food, clothing, and shelter) when measured by the fishermen's exchange rate. The risks associated with the capture fisheries business that causes a decrease in business income in Sambas Regency can be divided into three categories: high risk (difficult to predict weather and climate, long low tide times in fishing areas, and damage to fishing gear), medium risk (low selling prices and a decrease in the number of fish), and low risk (catching technology that is still simple and high operational costs) (Nugraha, 2021). Capture fisheries confront several of dangers and uncertainties. Mullon (Freon and Cury, 2005) highlights this risk and uncertainty, which is influenced by external factors (changes in environmental conditions, demand, and technical developments) as well as the uncertainty of economic and market determinants.

The role of the extension worker is primarily to assist fishermen in raising the quantity and quality of production so that farmers can profit. However, the results of this study revealed that the level of resilience of fishermen at extension institutes remained in the medium group, with an average of 7.66. Fishermen, who account for 53.12% of the Ikan Asap household business in Mukomuko Regency, Bengkulu Province, report that there is still very little counseling and government help available for Ikan Asap household industry activities. It is still in the intermediate category when it comes to improving the quality of producing outputs. Extension agents, according to Ismail 2020, have a significant role in the development of farmer and fishermen groups, particularly in encouraging, teaching, guiding, directing, and driving group activities so that groups can achieve their goals effectively.

CONCLUSION

The author studied fishermen's resilience in the growth of Ikan Asap home enterprises in Bengkulu Province. The following are the conclusions:

Characteristics of the fishermen's home industry in the growth of the Ikan Asap business in Bengkulu Province, for Ikan Asap business owners who work as fishermen, both fishermen who own boats and crew members whose income is uncertain and is dependent on the revenues from going to sea. Fresh fish is the key ingredient in Ikan Asap. However, fish that do not sell well fresh are occasionally used as source materials for Ikan Asap. The equipment used in the Ikan Asap process is straightforward and privately owned. One of the challenges in the Ikan Asap home sector in Bengkulu Province is a lack of funding. Markets and collectors purchase Ikan Asap manufacturing. However, the production level of marine Ikan Asap is rather low, with an average production of 10 kg. As a result, fishermen prefer to sell it directly to clients who visit the Ikan Asap processing facility or sell it themselves at the market.

Fishers' resilience in the growth of home industries for the production aspect, with an average of 17.13 in the weak category, and an average of 16.75 in the technological aspect, also in the weak category. As many as 87.5% of fishermen make no effort to develop their businesses, particularly in terms of technological innovation in fishing and processing technologies. The level of resilience of fishermen to capital or credit institutions is in the weak category, with an average of 6.44. Fifty percent of fishermen say they have not taken advantage of capital help or loans. In the medium category, the average level of resilience in market institutions is 7.88 in the medium category, and the average level of resilience in extension institutions is 7.66 in the medium category.

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