Fisheries Journal, 15 (1), 420-434 (2025)
http://doi.org/10.29303/jp.v15i1.1421

SOCIAL RESILIENCE OF SMALL SCALE FISHERMAN HOUSEHOLDS AND ITS INFLUENCING FACTORS IN BENGKULU CITY

Ketahanan Sosial Rumah Tangga Nelayan Skala Kecil dan Faktor-faktor yang Mempengaruhinya di Kota Bengkulu

Pebi Fitria[1*], Indra Cahyadinata[1], Gita Mulyasari[1], Eka Nurjati[2]

[1]Agribusiness Study Program, Faculty of Agriculture, University of Bengkulu, [2]National Research and Innovation Agency

WR. Supratman street, Kandang Limun, Bengkulu, 38371, Indonesia

*Coresponding author: febifitria2003@gmail.com

(Received February 3rd 2025; Accepted February 28th 2025)

ABSTRACT

Small-scale fishers in Bengkulu City play an important role in the production of capture fisheries, but many still live in poverty and face social challenges that threaten their welfare. This study aims to analyze the social resilience of small-scale fisher households and the factors that influence the social resilience of small-scale fisher households in Bengkulu City. The social resilience index of small-scale fisher households is based on four criteria, namely health, education, social capital and housing. The research location was chosen purposively, with a sample of 100 people selected using the accidental sampling method. The results showed that the social resilience index of small-scale fisher households in Bengkulu City was 66.65% because the index >50% was included in the socially resilient category with 89 households with socially resilient status. The dimensions of housing and health showed good results, while social capital and education needed to be improved. Factors that significantly influence the social resilience of small-scale fisher households in Bengkulu City are formal education, fisher income, and participation in fisher institutions. Policy implications include improving access and quality of education through training and improved facilities, as well as strengthening social capital through gotong royong and public space management. These efforts are important to sustainably improve the social resilience of fishermen.

Keywords: Binary Logistic Regression, Small Scale Fishermen, Social Capital, Social Resilience

ABSTRAK

Nelayan skala kecil di Kota Bengkulu berperan penting dalam produksi perikanan tangkap, namun banyak yang masih hidup dalam kemiskinan dan menghadapi tantangan sosial yang mengancam kesejahteraan hidup. Penelitian ini bertujuan untuk menganalisis ketahanan sosial rumah tangga nelayan skala kecil dan fakor-faktor yang mempengaruhi ketahanan sosial rumah

tangga nelayan skala kecil di Kota Bengkulu. Indeks ketahanan sosial rumah tangga nelayan skala kecil didasarkan empat kriteria yakni kesehatan, pendidikan, modal sosial dan pemukiman. Penentuan lokasi penelitian dipilih secara sengaja (*purposive*), dengan sampel 100 orang yang dipilih menggunakan metode *accidental sampling*. Hasil penelitian menunjukkan indeks ketahanan sosial rumah tangga nelayan skala kecil di Kota Bengkulu sebesar 66,65% karena indeks >50% termasuk kategori tahan sosial dengan 89 rumah tangga berstatus tahan sosial. Dimensi pemukiman dan kesehatan menunjukkan hasil yang baik, sementara modal sosial dan pendidikan perlu ditingkatkan. Faktor-faktor yang berpengaruh signifikan terhadap ketahanan sosial rumah tangga nelayan skala kecil di Kota Bengkulu yaitu pendidikan formal, pendapatan nelayan, dan keikutsertaan dalam kelembagaan nelayan. Implikasi kebijakannya meliputi perbaikan akses dan kualitas pendidikan melalui pelatihan dan peningkatan fasilitas, serta penguatan modal sosial melalui gotong royong dan pengelolaan ruang publik. Upaya ini penting untuk meningkatkan ketahanan sosial nelayan secara berkelanjutan.

Kata Kunci: Ketahanan Sosial, Modal Sosial, Nelayan Skala Kecil, Regresi Logistik Biner

INTRODUCTION

Bengkulu City as the capital of Bengkulu Province, is located on the West coast of Sumatra Island and directly faces the Indian Ocean. This geographical location gives Bengkulu City a large potential for capture fisheries compared to other districts/cities, with a total production reaching 41,919 tons in 2022 (BPS Bengkulu, 2024b). Currently, capture fisheries are still the main contributor to the total fisheries production of Bengkulu City. Although this sub-sector contributes greatly to the GRDP of Bengkulu City, unfortunately many people who work in this economy, especially small-scale fishermen, are still below the poverty line (Mulyasari & Arianti, 2015). In general, Bengkulu Province is in second place as the poorest province on Sumatra Island after Aceh Province. According to data from the Central Statistics Agency (BPS Bengkulu, 2024a) in March, 13.56% of the population of Bengkulu Province, 281.36 people, are poor.

The lives of small-scale fishermen in Bengkulu City have long been relatively less prosperous. The problems faced by small-scale fishermen are increasingly complex, including not only poverty but also inequality between large and small fishermen. Low quality of education, especially for fishermen's children, hinders social mobility and future employment opportunities. Fishermen's households also face social issues such as poverty, mental health, and social limitations that impact their social stability. Family health and welfare are major challenges that can affect overall social resilience.

Small-scale fishermen in Bengkulu City face various serious challenges that affect their social and economic resilience. The main problems include conflicts that have been going on for years with modern fishermen or large vessels that use illegal fishing gear such as trawls (tiger trawls) widely used by fishermen in Kampung Melayu District (Carminanda, 2021), this damages the coral reef ecosystem and reduces the catch of small fishermen. Conflicts between traditional and modern fishermen often occur due to the struggle for fishery resources and violations of fishing routes, which are also similar to the findings (Kusnadi, 2002) regarding similar conflicts on the North Coast of East Java. In addition, the difficulty of marketing the catch with low economic value due to the lack of government attention causes fish to often be wasted and fishermen's incomes are unstable. Unpredictable weather fluctuations also hamper fishing activities, making fishermen's incomes very uncertain, especially during the storm season. This instability requires attention and solutions from the government and communities to improve the welfare of small-scale fishermen.

Social resilience is needed to overcome various challenges such as conflict, differences in political and social interests, price fluctuations, and climate change that affect the income

and welfare of small-scale fishermen. Social resilience helps fishing households adapt and survive current and future economic challenges and environmental changes (Cahyaningtyas et al., 2016).

Social resilience is the ability to face threats and challenges by turning them into beneficial opportunities (Nuryana, 2002). Social resilience also includes the ability of a household or community to survive and adapt to various existing social pressures. In small-scale fishing households, social resilience is measured through four main dimensions: health, education, social capital, and settlement (Purwanti et al., 2024). Factors that influence social resilience include age, formal education, experience as a fisherman, income, fishermen's perceptions of social resilience, and participation in fishing institutions. Household income affects social resilience (Susanti, 2019), while education has a significant relationship with social resilience (Mutisya et al., 2016). Strong social resilience allows fishermen households to work peacefully to meet their daily needs (Ramadhan et al., 2017). This study aims to analyze: 1) Social resilience of small-scale fishermen households in Bengkulu City; 2) Factors influencing the social resilience of small-scale fishermen households in Bengkulu City.

METHODS

Location and Time of Research

The research location was chosen purposively, namely in Bengkulu City, Bengkulu Province (Figure 1), considering that Bengkulu City is the largest capture fisheries producing area in Bengkulu Province of 41,919 tons, followed by Mukomuko Regency, Kaur, North Bengkulu, South Bengkulu, Central Bengkulu and Seluma (BPS Bengkulu, 2024b) so that Bengkulu City is worthy of being chosen as a research location with the criteria of small-scale fishermen having a ship weight of 1-10 GT and one day fishing activities. This research was conducted in August 2024.

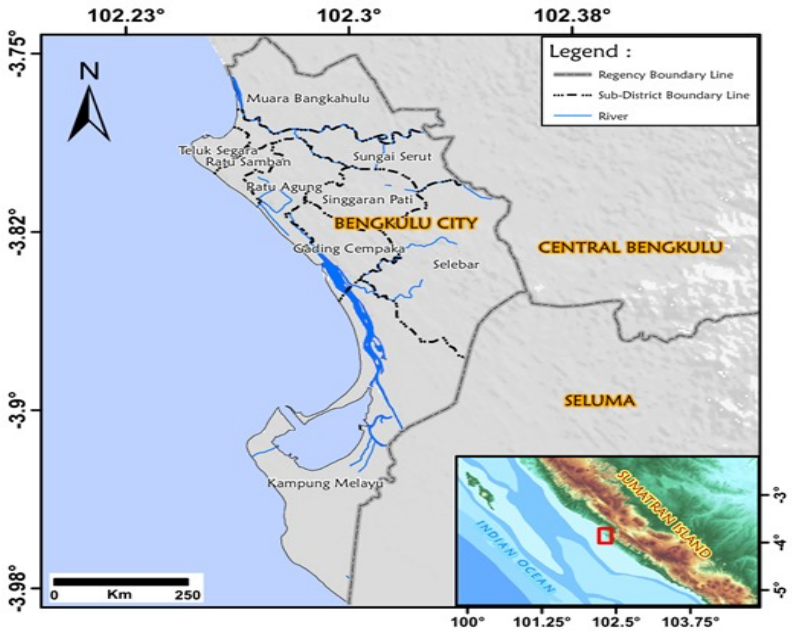

Figure 1. Map of Bengkulu City Area 2024.
Source: Mulyasari et al., 2024.

Method of Determining and Sampling Respondents

The respondents in this study were small-scale fishermen who carried out fishing activities in one day (one day fishing). Respondents were taken using the accidental sampling

technique (Sugiyono, 2018). The number of respondents was determined using the Moe formula at an error rate of 10% with an unknown total population (Arikunto, 2013).

$$n = \frac{1{,}96^2}{4(10\%)^2} = 96{,}04 \approx \text{rounded up } 100$$

The results of the calculations that have been carried out, the number of samples in the study of social resilience of small-scale fishermen's households and the factors that influence it in Bengkulu City is 100 fishermen. Small-scale fishermen with the criteria of having a ship weight of 1-10 GT and one-day fishing activities.

Data Collection Methods

The data used in this study include primary data and secondary data. Primary data were obtained directly from respondents through interviews using questionnaires containing questions about the characteristics of respondents, characteristics of capture fisheries businesses, and indicators of dimensions of social resilience. Secondary data comes from literature reviews and literature citations related to the study. These secondary data sources include the Central Statistics Agency (BPS), journals, books, and various other literature.

Data Analysis

1. Social Resilience of Small-Scale Fishermen's Households

The analysis of social resilience uses dimensions and 38 indicators to measure the social resilience of small-scale fishermen's households. Further explanation can be seen in Table 1.

Table 1. Dimensions and Indicators of Social Resilience

No.	Dimension and Scale	Indicators
1.	**HEALTH (Ordinal)**	a. Distance to Health Facilities < 30 Minutes b. Availability of Midwives c. Availability of Doctors d. Availability of Other Health Services e. Access to Poskesdes, Polindes and Posyandu f. Posyandu Activities g. BPJS Membership
2.	**EDUCATION (Ordinal)**	a. Access to SD/MI b. Access to SMP/MTS c. Access to SMU/SMK d. Literacy Eradication Program e. Availability of PAUD f. Availability of PKBM/ABC Package g. Availability of Skills Center/Course h. Community Reading Park or Village Library
3.	**SOCIAL CAPITAL (Ordinal)**	a. Mutual Cooperation Activities b. Existence of Free Open Public Spaces c. Sports Facilities or Fields d. Sports Activity Groups e. Tribal/Ethnic Diversity f. Language Diversity g. Religious Diversity h. Poskamling Maintenance Activities

No.	Dimension and Scale	Indicators
		i. Community Participation in Holding Siskamling j. Crime Rate k. Conflict Rate
		l. Conflict Resolution m. Availability of Special Schools (SLB) n. Existence of People with Social Welfare Problems (PMKS) o. Suicide Population (times/year)
4.	**SETTLEMENT (Ordinal)**	a. Access to Drinking Water Sources b. Access to Bathing and Washing Water c. Access to Toilets d. Availability of Waste Disposal e. Access to Electricity f. Access to Telephone Networks g. Access to Local, National and Foreign Television Broadcasts h. Access to Internet for Residents

Source: Village Development Index (IDM), 2016.

Assessment score scale between 0 to 3
Calculation of social resilience index using index % formula:
Maximum Score = Highest score x Number of indicators
= 3 x 38 indicators = 114 scores

$$\text{Social Resilience Index (IKS)} = \frac{\text{Overall Dimension Score Value}}{\text{Maximum Score (114)}} \text{ x } 100\ \%$$

Determination of the social resilience status of small-scale fishing households from 4 dimensions will be scored using the Guttman scale approach method (Sugiyono, 2012) and also based on previous research (Sudiansyah et al., 2023). The criteria for assessing social resilience can be seen in Table 2.

Table 2. Social Resilience Assessment Criteria

Interval (%)	Criteria
> 50	Social Resilience
≤ 50	Not Social Resilience

Source: Guttman Scale Approach Analysis (Sugiyono, 2012).

2. Factors Affecting Social Resilience

Analysis of factors affecting social resilience using a binary logistic regression model. The dependent variable is the social resilience of small-scale fishermen's households and the independent variables from previous studies are age and formal education (Efani et al., 2012), experience as fishermen (Purwanti, 2010), fishermen's income (Devanda et al., 2020), fishermen's perceptions of social resilience (Savitri et al., 2022) and participation in fishermen's institutions (Wahyono, 2016). The equation model formula is as follows:

$$\text{In}\left[\frac{\pi(x)}{1-\pi(x)}\right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Description:
π (x) = Probability of successful social resilience of small-scale fishermen households
1 = Social Resilience
0 = Not Social Resilience
β0 = Constant
β1- β6 = Regression coefficient of each independent variable
X1 = Age (years)
X2 = Formal education of fishermen (years)
X3 = Experience as a fisherman (years)
X4 = Fishermen's income (Rp/month)
X5 = Participation of fishermen's institutions (1= Yes, 0= No)
e = Standard error

Statistical tests used such as multicollinearity test, Goodness of Fit test, coefficient of determination (R^2), F test, t test (Wald test).

RESULTS

1. Characteristics of Small-Scale Fishermen Respondents

The characteristics of small-scale fisherman respondents used in this study are classified based on age, formal education, experience as a fisherman, number of family dependents and fisherman's income. The characteristics of each fisherman are different and are very important to describe the profile of the respondents so that researchers can understand the background and analyze the research results in more depth. The characteristics of the respondents can be seen in Table 3.

Table 3. Characteristics of Small-Scale Fisherman Respondents

	Total	Interval	Average
Age (Years)			
26 – 39	26	26 - 69	46.30
40 – 54	51		
55 - 69	23		
Formal Education (Years)			
1 - 6 (Elementary School)	50	5 -12	8.08
7 - 9 (Junior High School)	27		
10 - 12 (Senior High School)	23		
Experience as Fisherman (Years)			
2 – 18	51	2 - 50	21.09
19 – 34	30		
35 – 50	19		
Number of Family Dependents (Persons)			
0 – 1	11	1 - 5	2.95
2 – 3	55		
4 – 5	34		
Fisherman Income (IDR/month)			
1,500,000 - 2,666,666	68	1,500,000 – 5,000,000	2,396,000
2,666,667 - 3,833,333	24		
3,833,334 - 5,000,000	8		
Fisherman Institutional Participation			
Yes	60		
No	40		

Source: Processed Primary Data, 2025

2. Social Resilience of Small-Scale Fishermen's Households in Bengkulu City

The analysis calculation consists of four dimensions and 38 indicators used in measuring the social resilience of small-scale fishermen's households in Bengkulu City. The results of the percentage distribution of households based on the social resilience status of small-scale fishermen's households in Bengkulu City can be seen in Figure 2.

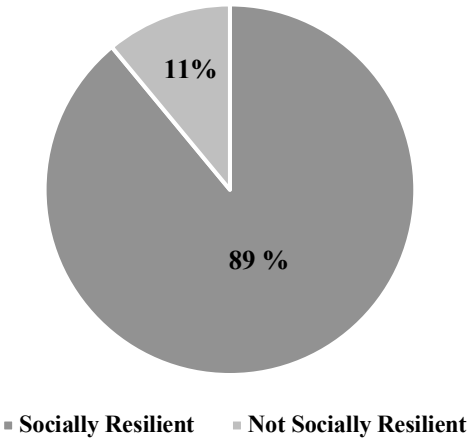

Figure 2. Percentage of the Number of Households Based on The Social Resilience Status of Small-Scale Fishermen Households in Bengkulu City

The assessment of indicators in the social resilience dimension including health, education, social capital, and housing provides an overview of the contribution of each indicator to the level of social resilience of small-scale fishermen households in Bengkulu City. A more detailed explanation can be seen in Table 4.

Table 4. Results of the Assessment of Social Resilience Dimension Indicators

No	Indicators	Average Score
	Health Dimensions	
1.	Distance to Health Facilities < 30 Minutes	2.92
2.	Availability of Midwives	2.1
3.	Availability of Doctors	1.58
4.	Availability of Other Health Services	1.34
5.	Access to Poskesdes, Polindes and Posyandu	2.93
6.	Posyandu Activities	2.91
7.	BPJS Membership	2.71
Health Index (%)		78.52
	Education Dimensions	
1.	Access to SD/MI	2.92
2.	Access to SMP/MTS	2.53
3.	Access to SMU/SMK	2.54
4.	Literacy Eradication Program	0.52
5.	Availability of PAUD	2.92
6.	Availability of PKBM/ABC Package	1.48
7.	Availability of Skills Center/Course	0.86
8.	Community Reading Park or Village Library	0.5
Education Index (%)		59.46

Social Capital Dimensions		
1.	Mutual Cooperation Activities	2.31
2.	Existence of Free Open Public Spaces	1.14
3.	Sports Facilities or Fields	0.72
4.	Sports Activity Groups	0.78
5.	Tribal/Ethnic Diversity	1.82
6.	Language Diversity	1.43
7.	Religious Diversity	1.99
8.	Poskamling Maintenance Activities	2.09
9.	Community Participation in Holding Siskamling	2.01
10.	Crime Rate	2.3
11.	Conflict Rate	2.07
12.	Conflict Resolution	1.84
13.	Availability of Special Schools (SLB)	2.11
14.	Existence of People with Social Welfare Problems (PMKS)	1.78
15.	Suicide Population (times/year)	0.34
Social Capital Index (%)		54.96
Settlement Dimensions		
1.	Access to Drinking Water Sources	2.47
2.	Access to Bathing and Washing Water	2.9
3.	Access to Toilets	2.59
4.	Availability of Waste Disposal	1.87
5.	Access to Electricity	2.97
6.	Access to Telephone Networks	2.39
7.	Access to Local, National and Foreign Television Broadcasts	2.56
8.	Access to Internet for Residents	2.74
Settlement Index (%)		85.38
% Social Resilience Index		**66.65**

Source: Processed Primary Data, 2025

The results of the calculation of the social resilience index value of small-scale fishermen's households in Bengkulu City from each dimension produced a "Social Resilience" status greater than the index value of 50% as seen in Figure 3.

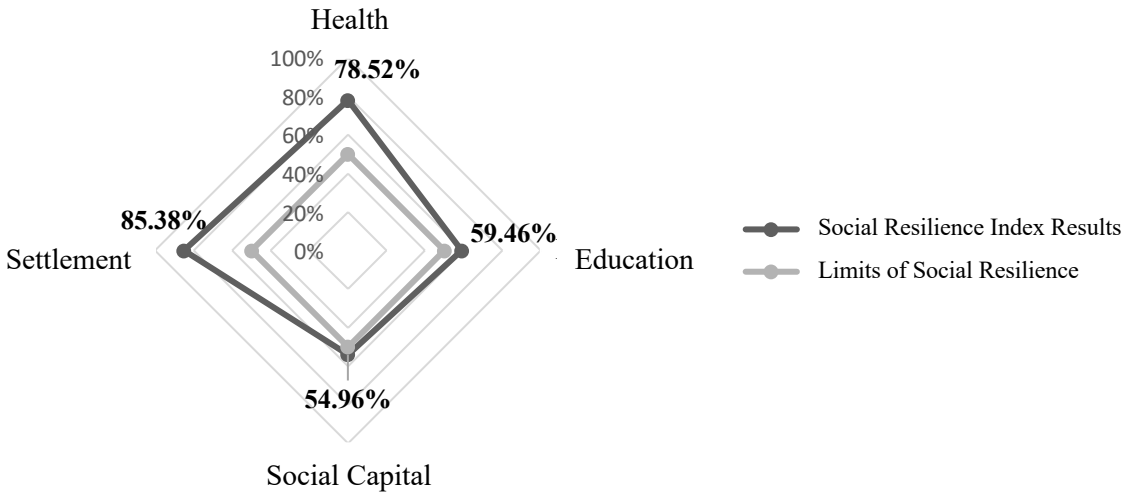

Figure 3. Diagram of the Social Resilience Dimension Index of Small-Scale Fishing Households in Bengkulu City

3. Factors Affecting the Social Resilience of Small-Scale Fishermen Households in Bengkulu City

Statistical Analysis Testing of Logistic Regression

The social resilience of small-scale fishermen households was analyzed using a binary logistic regression model. The regression model did not show symptoms of multicollinearity. The results of the analysis include statistical tests such as the coefficient of determination (R^2), Goodness of Fit test, F test, t test (Wald test), which can be seen in Table 5.

Table 5. Results of Binary Logistic Regression Analysis of Social Resilience of Small-Scale Fishermen Households in Bengkulu City

Variable	Coefficient	Wald	Sig.	Exp(B)
Age (X1)	0.077	1.260	0.262	1.080
Formal Education (X2)	0.795	4.157	0.041*	2.215
Experience as a Fisherman (X3)	0.040	0.348	0.555	1.041
Fisherman's Income (X4)	0.000	4.629	0.031*	1.000
Participation in Fishermen's Institutions (X5)	3.086	5.281	0.022*	21.882
Constant	-18.596	7.120	0.008	0.000
Number of Observations				100
Nagelkerke's R Square (R^2)				0.636
Omnibus Test of Model Coefficients (F test)				0.000
Hosmer and Lemeshow Test (gof test)				1.000

Description: * = Significance 5% (α = 0.05)
Source: Processed Primary Data, 2025

The results of the logistic regression analysis are based on Table 5, so the following binary logistic regression equation model is obtained:

$$\text{In}\left[\frac{\pi(x)}{1-\pi(x)}\right] = {}_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

$$= -18.596 + 077X_1 + 795X_2 + 040X_3 + 000X_4 + 3.086X_5 + e$$

DISCUSSION

1. Characteristics of Small-Scale Fishermen Respondents

The results of the study in Table 3 show that small-scale fishermen in Bengkulu City have an average age of 46 years, indicating that most of them are in their productive age. According to Maryam (2015), the age of 15-65 years is the ideal productive range for fishermen. Fishermen in their productive age tend to be stronger and able to implement innovations, while fishermen outside this range have monotonous physical abilities and find it difficult to implement the latest innovations even though they have a lot of experience, facing higher health and safety risks. Therefore, fishermen under 15 years and over 65 years should not go to sea.

The level of formal education greatly influences a person's search for information and thinking patterns. Small-scale fishermen in Bengkulu City have an average formal education of 8 years, equivalent to junior high school, indicating their low level of education. This has an impact on the ability of fishermen to adopt knowledge and technology to increase the productivity of fisheries businesses. The low level of formal education is caused by the priority of fishermen's families who prefer to go to sea rather than continue their education, as well as the influence of the environment and lifestyle of their parents. Although fishing ability is more influenced by experience, Hanun (2018) stated that higher education tends to increase insight and acceptance of innovation.

Experience is a measure of the length of time or work period that a person has spent in a job (Ilham, 2022). The results of Table 3 show that the average experience as a fisherman in Bengkulu City is 21 years, indicating that most fishermen have quite a long experience at sea. This experience affects the management of fishing businesses and increases income. According to Foster (2015) in Dahen (2016), experience is a determining factor in a person's skills. The longer the experience of a fisherman at sea, the better the impact on the fishermen's catch.

The number of dependents of a small fishing family has an average of 3 people who are included in the category of small family dependents (1-3) people according to BPS (Triyono et al., 2022). The size of this dependent affects the family's economy, because the more dependents, the greater the expenditure for living expenses. With three dependents, fishermen as heads of families tend to be more careful in allocating funds and this can affect their motivation in carrying out fishing efforts, because they have to meet the needs of themselves and three dependents.

Juliani & Aswitari (2021) stated that fishermen's income comes from the sale of monthly catches. The average income of small fishermen in Bengkulu City is IDR 2,396,000 per month, slightly below the 2024 Bengkulu UMP of IDR 2,507,079, thus affecting welfare in meeting living needs. This low income is caused by bad weather, limited capital, use of traditional tools, dominance of large ships, low education and skills, as well as limited access to credit and fluctuations in fish prices.

Participation in fishermen's institutions in Table 3 shows that data in the field, as many as 60 of the respondents have actively participated in fishermen's organizations. This means that small-scale fishermen who participate in organizations have a greater opportunity to adapt to changes, challenges, conflicts compared to fishermen who do not participate. Thus, this organization can be a forum for fishermen to receive information, exchange opinions and help each other to face the impact of social challenges.

2. Social Resilience of Small-Scale Fishermen's Households in Bengkulu City

The results of this study measure the social resilience of small-scale fishermen's households in Bengkulu City based on four main dimensions, namely health, education, social capital, and housing, with 38 indicators. Based on Figure 2, it shows that out of 100 households, only 89% of fishermen's households are ready to face social challenges, with a social resilience index of 66.65%, obtained from the calculation of the index 75.98/114 x 100% = 66.65%. This is included in the "Social Resilience" category, which shows that most fishermen's households in Bengkulu City are able to survive social vulnerability. These results are in line with previous research by Purwanti et al. (2024) which also found strong social resilience of fishermen's households in Prigi Bay.

The contribution of each dimension provides an overview of the strengths and weaknesses in the aspect of social resilience of small-scale fishermen. Based on the results in Table 4. The health dimension has an index of 78.52%, which means that access to health services is relatively good. The indicator with the highest score is the distance to health infrastructure with a score of 2.92, indicating that the majority of fishermen can access health facilities in less than 30 minutes. BPJS membership is also quite high with a score of 2.71, which means that most fishermen's households have access to health insurance. Access to health posts, health posts, and integrated health posts with a score of 2.93 indicates that the availability of these facilities is adequate. However, the availability of doctors is still low with a score of 1.58, indicating limited medical personnel in coastal areas and the availability of other health services such as pharmacies, clinics, and nurses that are lacking around coastal areas. Therefore, efforts are needed to improve the quality and accessibility of health services in coastal communities. Research by Ramadhan et al. (2017) emphasized that access to quality health services is very important to support social stability and the welfare of fishermen's

households. Therefore, strategic policies are needed to improve the dimensions of health and education in order to strengthen the social resilience of fishermen's households in a sustainable manner.

The education dimension has the second lowest index of 59.46% after the social capital dimension, indicating that access to education still requires improvement and special attention. Although access to elementary school/Islamic elementary school with a score of 2.92 is higher, access to junior high school with a score of 2.53 and senior high school with a score of 2.54 is lower. This shows that most fishermen's children drop out of school after elementary or junior high school, which hinders their social mobility. Some coastal areas still lack high schools or skills training centers that can improve the capacity of fishermen's children, the literacy eradication program is still low with a score of 0.52, indicating that there are still people who are not literate. The availability of community reading parks and village libraries is also very low with a score of 0.50, which can have an impact on the low literacy culture among fishing communities, the low availability of skills centers/courses that can support the ability of fishing households to manage fishing activities, access to advanced education facilities such as the availability of PKBM/ABC Packages. This has the potential to limit the development of human resources for small-scale fishermen, as stated by Mutisya et al. (2016) who stated that education is positively correlated with social resilience.

The social capital dimension has an index of 54.96%, making it the dimension with the lowest score that affects the social resilience of small-scale fishermen in Bengkulu City. The indicators with the highest scores in this dimension are mutual cooperation activities with a score of 2.31 and security post maintenance activities with a score of 2.09, which shows that the spirit of togetherness and solidarity is still quite strong among fishermen in maintaining environmental security. However, the existence of open public spaces with a score of 1.14 and sports facilities with a score of 0.72 are still very low. This means that there is a lack of social facilities for the fishing community so that fishermen have a place to gather, discuss, and strengthen social ties. In addition, low participation in social activities can have an impact on minimal social support, especially in dealing with problems. The level of conflict with a score of 2.07 and conflict resolution with a score of 1.84 indicate that there are still social tensions that need to be managed better, such as conflicts that occur between fellow fishermen in the use of fishing gear. Rakhmanda et al. (2018) stated that fishermen with strong organizational communities are more resilient in facing social and environmental challenges. Therefore, strengthening fishermen's organizations and public facilities is needed to increase social capital.

The settlement dimension has the highest index of 85.38%, indicating that the majority of fishermen's households have good access to basic facilities and infrastructure. Access to electricity with a score of 2.97, bathing and washing water with a score of 2.90 gets the highest score, which means that basic infrastructure in coastal areas is very adequate. Almost all small fishermen's households in this study have electricity connections because this coastal area is included in the Bengkulu City area. The source of clean water for washing and bathing, many fishermen use their own wells made near their homes. However, the availability of waste disposal with a score of 1.87 is still relatively low, this has the potential to cause environmental problems, many fishermen still throw waste directly into the sea because there are few waste disposal sites that can have an impact on damage to the marine ecosystem and public health.

Efforts are needed to improve the social resilience of small-scale fishermen's households in Bengkulu City. The social resilience index of fishermen's households in Bengkulu City can be said to be strong or socially resilient with a value of 66.65% supported by various main factors that contribute to each other. Of the four dimensions seen in Figure 3, one of the main pillars is the settlement and health dimensions which show very good conditions of social resilience with the highest index value of the settlement dimension of 85.38%, followed by the

health dimension of 78.52%. The suitability of settlement conditions also supports the stability of the lives of small-scale fishermen's households, marked by adequate access to basic infrastructure such as electricity, community internet, sanitation and good clean water for fishermen. This shows that the physical condition of the fishermen's residence supports their social resilience. Meanwhile, the social capital dimension of 54.96% is the weakest, the social capital dimension shows that although there is participation in community activities, there is still room to strengthen social networks and solidarity among fishermen. This is important to improve overall social resilience. Social relations between fishermen and participation in social activities still need to be strengthened again. The existence of free open public spaces, the availability of sports facilities such as volleyball and basketball courts, sports activities and handling of social conflicts still require attention to strengthen interactions and social networks among fishermen's households is very important to ensure the sustainability of the social resilience of small-scale fishermen's households in Bengkulu City in the future.

3. Factors Affecting the Social Resilience of Small-Scale Fishermen Households in Bengkulu City

The results of the study in Table 5 show that the R Square value in the binary logistic regression analysis is 0.636, which means that the social resilience of small-scale fishermen households in Bengkulu City can be explained by the independent variable by 63.6% and the remaining 36.4% is explained by other variables outside the model. The model feasibility test uses the Goodness of Fit test on the Hosmer and Lemeshow Test to see the suitability or FIT of the model. Hypothesis H0 is accepted, then the FIT model if (p value> 0.05). The results of Table 6 obtained a sig. value of 1,000> 0.05. Then H0 is accepted (FIT Model) meaning that the binary logistic regression model is suitable for further analysis, because there is no significant difference between the predicted classification and the observed classification so that this model can be considered accurate for analyzing the relationship between variables.

The F test examines the effect of independent variables simultaneously on the dependent variable by looking at the significance value of the Omnibus Test of Model Coeffictions table. If sig. <0.05. Then accept H_1, hypothesis H_1: Independent variables simultaneously affect the dependent variable. The results of Table 5 show a p value (sig) of 0.000. So, the sig value. 0.000 <0.05, then H_0 is rejected and H_1 is accepted, meaning that independent variables simultaneously have a significant effect on the dependent variable. The results of binary logistic regression to determine the factors that influence the social resilience of small-scale fishing households can be seen from the significance value of each variable which shows that the significance value of age (X1) is 0.262> α = 0.05. So the hypothesis H_0 is accepted and H_1 is rejected. This means that the age variable does not have a significant effect on the social resilience of small-scale fishing households. This means that all ages of fishermen are included in the productive age with the ability to work is considered the same for catching fish.

Formal education (X2) shows a significance value of 0.041 <α=0.05. This means that the hypothesis H_0 is rejected and H_1 is accepted. The results of the analysis show that the formal education variable has a significant positive effect on the social resilience of small-scale fishing households. This means that the higher the level of formal education in the household, the greater its social resilience. Formal education can increase the knowledge and skills of fishermen where higher education makes it easier for fishermen to accept innovation and apply ideas, adapt to change, enable fishermen to utilize technology and make better decisions in facing challenges and increase household social resilience. This is in line with research by Valentina & Elsera (2023) that high knowledge can be obtained through formal education and informal education such as counseling and training. Thus, it can improve organizational function and open access to information for fishing households.

Experience as a fisherman (X3) shows a significance value of 0.555>α=0.05. So the hypothesis H_0 is accepted and H_1 is rejected. This means that experience as a fisherman does not have a significant effect on the social resilience of small-scale fishing households. This means that the experience of fishermen in fishing, whether it is a low experience of 2 years or 50 years, does not determine the social resilience of the fishermen's household itself. This means that small-scale fishermen who have little experience do not necessarily have a low desire to adapt to social change, challenges, conflicts, and vice versa with fishermen who have longer experience. This depends on the knowledge possessed by small-scale fishermen in overcoming social challenges. This is in line with the research of Husni & Nursan (2023) that the experience factor of fishermen does not have a significant effect on income. Fishing activities are related to production costs, the amount of catch, the price of fish which will determine the income of fishermen's families.

Income is one of the material resources owned by households. To meet daily needs, fishermen use this income to fulfill their consumption activities. The amount of income affects purchasing power and the number of products that can be purchased and consumed (Irawati, 2019). Based on the results of the regression analysis, income has a significance value of 0.031 <α = 0.05. So the hypothesis H_0 is rejected and H_1 is accepted, meaning that there is a significant positive effect between income and the social resilience of small-scale fishing households in Bengkulu City. This explains that higher income will increase social resilience. A stable income is able to meet basic needs, access resources, and improve family welfare. This is very important for small-scale fishermen who are vulnerable to poverty. In line with the research of Husni & Nursan (2023) Increasing income has a significant effect on households for higher social resilience.

Participation in fishing institutions can be seen from the results of the regression test in Table 5 which shows a significance value of 0.022 <α = 0.05. Hypothesis H_0 is rejected and H_1 is accepted. This means that participation in fishermen's institutions has a significant positive effect on the social resilience of small-scale fishermen's households. This means that the more active the participation in institutions, the higher the level of social resilience of the household. In this study, such as the Camar Laut, Lautan Biru, KUB Malabero Indah, Aryoma, Karya Samudera fishermen groups, the majority of fishermen follow these institutions, institutions have an important role in empowering fishing communities. Institutions are a forum for increasing information capacity, independence, fishermen's welfare and strengthening social networks with fellow fishermen and the government. This can provide important social support for fishermen's social resilience. Research by Rakhmanda et al. (2018) institutions can increase fishermen's resilience in facing challenges and impacts of social & environmental change.

CONCLUSION

The results of the study showed that the social resilience index of small-scale fishermen's households in Bengkulu City reached 66.65%, including the social resilience category with 89 households out of 100 having social resilience status. Significant factors influencing this social resilience include formal education, fishermen's income, and participation in fishermen's institutions.

ACKNOWLEDGEMENT

The author would like to thank all parties involved in carrying out this research, so that the implementation of the research and completion of this article can run smoothly as expected.

REFERENCES

Badan Pusat Statistik Provinsi Bengkulu. (2024a). *Persentase Penduduk Miskin Maret 2024 di Provinsi Bengkulu*. 7 Juli 2024.

https://bengkulu.bps.go.id/id/pressrelease/2024/07/01/883/persentase-penduduk-miskin-maret-2024-turun-menjadi-13-56-persen.htm

Badan Pusat Statistik Provinsi Bengkulu. (2024b). *Produksi dan Nilai Produksi Perikanan Tangkap di Laut Menurut Provinsi dan Komoditas Utama, 2022*. 7 Juli 2024. https://www.bps.go.id/id/statisticstable/3/ZEdwWFFXUmFSSFJoVXpobGJURTJUek5WVTBwVFVUMDkjMw==/produksi-dan-nilai-produksi-perikanan-tangkap-di-laut-menurut-provinsi-dan-komoditas-utama.html?year=2021

Cahyaningtyas, A , Tenrisana, A, & T. D. (2016). *Pembangunan Ketahanan Keluarga*. Dinas pemberdayaan perempuan Pembangunan dan Perlindungan Anak.

Carminanda. (2021). *Mencari Solusi Konflik Nelayan di Bengkulu*. 23 Juli 2024. https://www.antaranews.com/berita/2015184/mencari-solusi-konflik-nelayan-di-bengkulu

Dahen, L. D. (2016). Analisis Pendapatan Nelayan Pemilik Payang di Kecamatan Koto Tangah Kota Padang. *Economica: Jurnal Program Studi Pendidikan Ekonomi STKIP PGRI Sumatera Barat*, *5*(1), 46–53. https://doi.org/10.22202/economica.2016.v5.i1.891

Devanda, F., Prasmatiwi, F. E., & Nurmayasari, I. (2020). Ketahanan Pangan Rumah Tangga Nelayan Tradisional Di Kelurahan Pasarmadang Kecamatan Kotaagung Kabupaten Tanggamus. *Jurnal Ilmu-Ilmu Agribisnis*, *8*(4), 681. https://doi.org/10.23960/jiia.v8i4.4714

Efani, A., Soemarno, S., Muhammad, S., & Primyastanto, M. (2012). Kajian Ekonomi Rumah Tangga Nelayan Payang di Selat Madura, Jawa Timur. *Jurnal WACANA*, *15*(2).

Hanun, N. (2018). Pengaruh Pendapatan, Jumlah Tanggungan Keluarga Dan Pendidikan Terhadap Pola Konsumsi Rumah Tangga Nelayan Di Desa Seuneubok Rambong Aceh Timur. *Jurnal Samudra Ekonomika*, *2*(1), 75–84.

Husni, S., & Nursan, M. (2023). Studi Sosial Ekonomi Perikanan Tangkap Skala Kecil di Kabupaten Sumbawa Barat. *AGROTEKSOS*, *33*(1), 209–218.

Ilham, M. (2022). Peran Pengalaman Kerja Dalam Meningkatkan Kinerja Karyawan: Suatu Tinjauan Teoritis Dan Empiris. *Jmm Unram - Master of Management Journal*, *11*(1), 13–20. https://doi.org/10.29303/jmm.v11i1.695

Juliani, N. K., & Aswitari, L. P. (2021). Faktor-Faktor tang Mempengaruhi Pendapatan Nelayan di Denpasar Selatan. *Jurnal Sosial Ekonomi Kelautan Dan Perikanan*, *27*(2), 58–66.

Kusnadi, M. A. (2002). *Konflik Sosial Nelayan: Kemiskinan Dan Perebutan Sumber Daya Perikanan*. Yogyakarta. LKIS Pelangi Aksara.

Mulyasari, G., & Arianti, N. N. (2015). Pola-pola Komunikasi Nelayan Dalam Mewujudkan Ketahanan Pangan Rumah Tangga Nelayan di Kota Bengkulu (Kasus pada Nelayan Kapal Kecil). *Jurnal AGRISEP*, *14*(1), 53–65. https://doi.org/10.31186/jagrisep.14.1.53-65

Mutisya, M., Ngware, M. W., Kabiru, C. W., & Kandala, N. bakwin. (2016). The Effect Of Education On Household Food Security In Two Informal Urban Settlements In Kenya: A Longitudinal Analysis. *Food Security*, *8*(4), 743–756. https://doi.org/10.1007/s12571-016-0589-3

Nuryana, M. (2002). *Membangun Konsepsi dan Strategi Ketahanan Sosial Masyarakat*. Pusbangtansosmas.

Purwanti, P., Intyas, C. A., Sofiati, D., & Fattah, M. (2024). Indeks Ketahanan Sosial Rumah Tangga Nelayan Skala Kecil (Studi Kasus di Teluk Prigi Kabupaten Trenggalek). *Jurnal Agrimanex: Agribusiness, Rural Management, and Development Extension*, *4*(2), 195–210. https://doi.org/10.35706/agrimanex.v4i2.11085

Rakhmanda, A., . S., & Supardi Djasmani, S. (2018). Peran Kelompok Nelayan Dalam Perkembangan Perikanan Di Pantai Sadeng Kabupaten Gunungkidul. *Sodality: Jurnal Sosiologi Pedesaan*, *6*(2). https://doi.org/10.22500/sodality.v6i2.23225

Ramadhan, A., Yuliati, C., & Koeshendrajana, S. (2017). Indeks Sosial Ekonomi Rumah Tangga Nelayan Indonesia. *Jurnal Sosial Ekonomi Kelautan Dan Perikanan*, *12*(2), 235. https://doi.org/10.15578/jsekp.v12i2.6497

Savitri E.I, Wiranto S, & L. E. (2022). Peran Panglima Laot Dalam Meningkatkan Ketahanan Sosial Masyarakat Pesisir Aceh. *Jurnal Education and Development Institut Tapanuli Selatan*, *10 (2)*(2), 46–53. http://journal.ipts.ac.id

Sudiansyah, K., Asriani, P. S., & Sriyoto, S. (2023). Analisis Faktor-Faktor Yang Mempengaruhi Ketahanan Pangan Rumah Tangga Petani Padi Kelurahan Panorama Kota Bengkulu. *Jurnal Agristan*, *5*(2), 228–240. https://doi.org/10.37058/agristan.v5i2.7749

Sugiyono. (2012). *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung : Alfabeta.

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif Dan R&D* (Cet.1). Bandung : Alfabeta.

Susanti, A. F. (2019). Hubungan Pendapatan dan Status Ketahanan Pangan Rumah Tangga di Wilayah Pesisir di Kecamatan Sidoarjo Kabupaten Sidoarjo (Studi Penelitian di Dusun Kalikajang Kelurahan Gebang). *Amerta Nutrition*, *3*(2), 100–106. https://doi.org/10.2473/amnt.v3i2.2019.100-106

Triyono, A., Corrina, F., Saputri, E., & Rahayu, T. (2022). Pengaruh Jumlah Tanggungan Keluarga dan Pendapatan Terhadap Tingkat Pendidikan Anak Pada Desa Rejosari Kecamatan Lirik Kabupaten Indragiri Hulu. *J-MAS (Jurnal Manajemen Dan Sains)*, *7*(1), 108. https://doi.org/10.33087/jmas.v7i1.388

Valentina, A., & Elsera, M. (2023). Analisis Ketahanan Sosial Masyarakat "Nusantara" Dalam Pembangunan Ibukota Negara. *Jurnal Sosiologi Andalas*, *9*(1), 39–52.

Wahyono, A. (2016). Ketahanan Sosial Nelayan: Upaya Merumuskan Indikator Kerentanan (Vulnerability) Terkait Dengan Bencana Perubahan Iklim. *Jurnal Masyarakat Indonesia*, *42*(2), 185–199.