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Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399  
<https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 269 AJMESC, Volume 03 Issue  
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Commons Attribution-ShareAlike 4.0 International License. CoryFacr ysis f rman Sus  
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Berma 5 1,2,3,4 Agribusiness Study Program at Malikussaleh University, Lhokseumawe,  
Aceh 5, Faculty of Economics and Management, University of Kebangsaan Malaysia  
Correspondence email : adhiana@unimal.ac.id Abstract Bireuen Regency is one of the  
districts that has great potential in the field of fisheries.

Most fishermen still live in limitations and poverty, and this situation can be seen from  
the level of their survival which can be measured from the economic, social, natural  
environment and reduced vulnerability. This study aims to identify economic, social,  
environmental aspects and reduce vulnerability to the survival of fishermen in Bireuen  
Regency using the Confirmatory Factor Analysis (CFA) method. This research location  
was conducted in Bireuen Regency, namely in Peudada and Jangka Districts.

The selection of these two sub-districts was carried out by purposive sampling because  
these sub-districts are the largest capture fisheries production centers in Bireuen  
Regency. The population is all fishermen in the two sub-districts. The number of samples  
was 124 fishermen using the Accidental Sampling technique method. Based on the  
analysis it was found that the most dominant latent variable for survival can be seen  
from the economic aspect is the increase in the sale of catches, the social aspect is the  
participation of fishermen in knowledge-building activities, the surrounding natural  
aspect is planting mangrove trees around the beach, and the reduced vulnerability  
aspect is the availability of opportunities Keywords : fishhermen , loading factor ,

fisherman's survival 1.

INTRODUCTION Bireuen Regency is a strategic district in Aceh Province because of its position as a link between several districts/cities in Aceh. With these various advantages, if utilized optimally, it will greatly affect economic growth and the welfare of society.

One of them is Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 270 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

the marine potential which is very promising, but this does not guarantee the creation of sustainable fishermen's lives which can be measured from economic, social, environmental aspects and reduced vulnerability. One of them can be seen from the high number of poor people in Bireuen Regency, namely 63,020 people or 13.25% of the total population (BPS, 2022). The number of fishermen in Bireuen Regency reached 9,432 people and of that number there were 5,767 people who had permanent jobs as fishermen and 901 people were only side workers and 1,103 people were owner fishermen (BPS, 2021) and (Aceh Maritime Affairs and Fisheries Service, 2019) . A fishing village is a social, economic, ecological and cultural entity, and there is a boundary between land and sea in which there is a group of people with a pattern of life and behavior and certain characteristics.

Fishermen are a community that lives in coastal areas with the main livelihood of utilizing various natural resources found in the sea in the form of fish, shrimp, seaweed, shellfish, coral reefs and other marine wealth products (Muflikhati et al., 2010) . Fishing communities have special characteristics that distinguish them from other communities, apart from that fishermen are synonymous with poverty, a large number of family members and low education (Iryana, 2020) . To get a better life they are always faced with various obstacles. The sustainability of fishermen's lives is the results and benefits that the community wants in their lives.

To see the results of preserving life, this can be done through a sustainable living framework approach, where this approach seeks to understand the various benefits of life in accordance with the strategies, motivations, choices and factors that affect life so that it can be achieved optimally. This achievement relates to people's priorities and motivations in life which they set according to their view of their living conditions, because life achievements can only be understood through the size of the community itself (Salvestrin, 2016).

The life sustainability approach is to increase income and welfare, reduce vulnerability,

create better food security, use natural resources in a sustainable manner (Serrat, 2008) and (DFID, 2014). Community life can be said to be sustainable if it is able to overcome and deal with various forms of vulnerability. But in reality until now many people who live in the area Coastal areas have not been able to overcome and face various forms of vulnerability, so they are still trapped in poverty so that their level of survival is still inadequate (Widodo, 2011).

However, understanding that each individual and family has varying levels of survival is very important, because their living needs and participation in development programs are often influenced by motivational factors, and aspirations for a life that they consider to be ideal. He also argues that the measure of welfare or poverty alleviation in general is just an Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 271 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. increase in income.

In addition, there is also a relationship between the poverty of a household and various vulnerability factors. (Kumala et al., 2013) explains the relationship between the poverty status of a household and vulnerability in Java (2008-2010) which shows that there is a similar pattern, that is, if a household is poor, it has a tendency to become vulnerable thereby affecting survival. they. Furthermore (Salvestrin, 2016), (Farrington, 2001), and (Sati & Vangchhia, 2017) illustrate that there are three dimensions of a sustainable life framework to achieve life sustainability, which include life assets, vulnerabilities and life strategies.

With the availability of life assets, individuals and households can develop their capacity to overcome various challenges. There are five categories of living assets that are expanded in scope, namely human assets, financial assets, social, physical, and personal, for example: emotional, motivational, self-confidence, and religious beliefs. Where the sustainability of fishermen's lives originates from the relationship between life assets, strategies carried out by fishermen and the vulnerability factors faced by fishermen in maintaining their lives.

Previous research (Adhiana & Suryadi, 2017) also examined Confirmatory Factor Analysis (CFA) on the vulnerability factors of post-tsunami fishermen in Aceh using a sustainable life framework. In addition (Adhiana et al., 2019) has also researched the factors of survival of farmers using CFA. In addition (Nahriyah, 2015) also used CFA to research environmental health risks in the South Sulawesi Islands. CFA is a method used to identify indicators that can accurately measure assessment variables.

According to (Rungie, 2013) , CFA is used to test unidimensional, validity and reliability construct measurement models (latent variables) that cannot be measured directly (Carrasco, 2010) . Based on previous studies, the average was carried out qualitatively, while the difference with this study is that it uses a sustainable life framework approach by limiting it to one dimension, namely the fisherman's survival factor using the Confirmatory Factor Analysis (CFA) method quantitatively . This CFA is also a way to test how well the indicator variable represents a construct. The CFA model is used to test the measurement model (Hair et al., 2010) .

the use of CFA is to find out whether these indicators can explain the existence of a construct (Kenny & Brown, 2007) and (Santoso, 2011) . The advantage of CFA is its degree of flexibility when applied to a more complex hypothetical model. The CFA results can provide strong evidence of the convergent and discriminant validity of the theory constructs. Convergent validity is demonstrated by evidence that different indicators from the same construct are closely related to each other. Discriminant validity is demonstrated by evidence that indicators from a different construct are not (Brown, 2007) . As for this Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 272 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

study, the sustainability of fishermen's lives can be measured by four indicators, namely economic aspects, the natural surroundings, social aspects and reduced vulnerability. The novelty of this study is to use the SEM method and the four latent variables are explained with 14 indicators, whereas previous studies have mostly analyzed qualitatively. In this study, the sustainability of fishermen's lives can be measured by four indicators, namely economic aspects, the natural surroundings, social aspects and reduced vulnerability.

The novelty of this study is to use the SEM method and the four latent variables are explained with 14 indicators that have not been carried out by previous researchers. This study aims to identify economic, social, environmental aspects and reduced vulnerability to the survival of fishermen in Bireuen Regency using the Confirmatory Factor Analysis (CFA) method. 2. RESEARCH METHODS This research was conducted in Bireuen District, Aceh Province, namely in the two Districts of Peudada and Jangka.

The selection of the two sub-districts was carried out by purposive sampling because the two sub-districts are capture fisheries production centers in Bireuen Regency. This research was conducted from July to October 2021. The population is all fishermen in the Peudada District with a total of 1,950 fishermen and in the Jangka District with a

total of 936 fishermen in Bireuen Regency as a whole, a total of 2,886 fishermen (BPS, 2021). The research sample was selected using the Taro Yamane formula ( Ridwan and Engkos, 2011) , so that a total sample of 124 fishermen was obtained .

The sampling method was carried out using an accidental sampling technique (ie, the technique of determining the sample by chance). The data used are primary data and secondary data. The **primary data collection method** is direct observation at the research location using interviews with fishermen. Secondary data was obtained from literature, print media, fisheries service and other related agencies. This research was analyzed qualitatively and quantitatively. This study uses a confirmatory factor analysis model. This CFA is used to identify the determinants of the survival factors of fishermen in Bireuen Regency.

In equation form, this CFA model may be represented by several equations as follows:  
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<https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 273 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.  

$$x_1 = \lambda_{11}x_{11} + \dots + \lambda_{1n}x_{1n} + \epsilon_1$$

$$x_2 = \lambda_{21}x_{11} + \dots + \lambda_{2n}x_{1n} + \epsilon_2$$

$$\dots$$

$$x_n = \lambda_{n1}x_{11} + \dots + \lambda_{nn}x_{1n} + \epsilon_n$$
 Where,  $x_1 \dots x_n$

$n$  = variable (indicator) that determines the construct  $\eta_1 \dots \eta_n = \dots$  the construct determined by the variable  $x_{11} = \dots$  'path' which represents the relationship between latent factors ( $\eta_1$ ) and variables ( $x_1$ ). value In the Confirmatory Factor Analysis model for indicators of the sustainability of fishermen's lives using 4 latent indicators or constructs, namely economic aspects, social aspects, environmental or environmental aspects and reduced vulnerability aspects. Research Concept Framework The sustainability of fishermen's lives is based on four latent indicators or constructs, namely, 1. Economic aspects; determined by four indicators, namely  $Ae_1$  ,  $Ae_2$  ,  $Ae_3$  and  $Ae_4$  2.

Social Aspect; determined by three indicators namely  $As_1$  ,  $As_2$  ,  $As_3$  3. Aspects of the surrounding nature; determined by three indicators, namely  $Al_1$  ,  $Al_2$  , and  $Al_3$  4. Reduced vulnerability; measured by four indicators, namely  $Kr_1$  ,  $Kr_2$  ,  $Kr_3$  ,  $Kr_4$  , 2.1 Research variable a . Exogenous Latent Variable **In this study, the** b. Endogenous latent variable **In this study, the** endogenous latent variables are as follows. (1)  $\eta_1$  ,  $\eta_2$  ,  $\eta_3$  , and (4)  $\eta_4$  , c. Indicator Variables Indicator variables are variables that can be measured directly. In this study, which act as indicator variables are as follows.

$Ae_1$  = income is increasing  $Ae_2$  = savings are increasing  $Ae_3$  = increase in welfare  $Ae_4$

4 = increase in catch sales As 1 = social relations are getting better Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 274 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. As 2 = participation of fishermen to increase knowledge As 3 = to participate in as social religious activities \_ Al 1 = planting mangrove trees as an effort to protect the natural surroundings Al 2 = use of fishing gear that does not damage the environment Al 3 = participation in mutual cooperation activities Kr 1 = available work opportunities Kr 2 = work skills other than fishermen, Kr 3 = there is no debt bond Kr 4 = there are variations in fishing gear. 2.2

Data analysis method To answer the research objectives, namely identifying economic, social, environmental aspects and reduced vulnerability to the survival of fishermen in Bireuen Regency using the Confirmatory Factor Analysis (CFA ) method. The steps of data analysis carried out in this study are as follows. a. Perform a multivariate normal assumption test on all data. b. Test the fit between the model and the data using the Goodness of Fit (GoF) criteria, if it is not appropriate then modify the model. c.

Identifying the model based on a comparison of the number of parameters estimated with the known number of variance covariances. d. Evaluate the dominant indicator and latent variables on the sustainability of fisherman variables by looking at the R 2 value and the loading factor of each indicator and latent variable. 3. RESULTS AND DISCUSSION a. Identification of Economic, Social, Natural Aspects and Reduced Vulnerability to Fishermen's Survival using the Confirmatory Factor Analysis (CFA) method To identify the Economic, Social, Natural Aspects and Reduced Vulnerability to Fishermen's Survival using the Confirmatory Factor Analysis (CFA) method, several stages are used. Confirmatory factor analysis was performed to test whether the model has the unidimensionality of the indicators that make up the latent variables.

In this study, there are four latent variables, namely economic aspects (formed by four indicators), social aspects (three indicators), perceived environmental aspects (three indicators), and reduced vulnerability aspects (four indicators). By using the AMOS program, the results of the confirmatory factor analysis are obtained as shown in Figure 1 which shows the model 1 factor validation hypothesis for the Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 275 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. variable fishermen's survival.

In the confirmatory factor analysis, there are two basic tests, namely the model

suitability test and the factor weight significance test. The MLE method is used to estimate 14 indicators from the four fishermen's life sustainability constructs that are formed. Figure 1. CFA Model of Latent Variable Fishermen Survival (Model 1) b. Multivariate Normal Distribution Data Assumption Test Before carrying out Confirmatory Factor Analysis (CFA), it is necessary to test the multivariate normal assumptions (Kuncoro, 2014) .

Testing the multivariate normal assumptions is carried out on all latent variable data, which includes economic, social, natural surroundings, and reduced vulnerability aspects. Testing the multivariate normal assumptions with the mahalanonic distance approach shows that the value of the proportion  $d_j^2 = 2(22;0.05)$  is 0.5726. The value is around or close to 0.5. This means that the data is normally distributed multivariate so that CFA can be performed .

Kelsetarian nian Ekonomi Sosial Alam Kurangrentan Ae1 Ae2 Ae3 Ae4 As1 As3 Kr4 K2 As2 Al1 Al2 Al3 Kr1 Kr3 e4 1 1 1 e3 1 e2 e1 1 1 e7 e6 e5 e10 1 1 e9 e8 1 e14 e13 e12 e11 1 1 1 1 1 Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 276 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. c. Model Fit Test The goodness of fit test is a test to measure the degree of suitability between the hypothesized model and the data presented (Brown & A., 2006).

The test was carried out using several fit indices that measure the correctness of the proposed model by comparing the test results and the cut-off value (Ramayah & Lee, 2012) . The test results can be seen from the model fit index as follows, that the chi square value ( 189.976) and df is 73 , and this value is relatively high indicating that the observed covariance matrix is significantly different from that predicted and produces a probability smaller than the significance level ( 0.005).

The Chi Square value is very sensitive to the number of samples, so it is necessary to look at other index values. Most of the model fit indices still did not meet the required cut- off values ( TLI value of 0.899 and CMIN/DF value of 3.297). The TLI and CMIN/DF indexes show poor acceptance rates, while the RMSEA, GFI, AGFI and CFI indexes show good acceptance rates of 0.063, 0.939, 0.915 and 0.917. These results indicate that the fit of the data with the hypothesized model is good. The results of the model suitability index above indicate that the model is not fit yet, so a model modification is needed . Therefore the model needs to be improved, by testing the significance of the factor weights. d.

Factor Weight Significance Test The factor weight significance test was carried out to see whether an indicator can be used to confirm that the indicator can, together with other indicators, explain a latent variable (Rungie, 2013) and (Kenny, 2007), (Marsh & Hocevar, 1985). This test was carried out with two stages of analysis, namely analysis based on factor loading values and factor weights (regression weight). Based on the factor loading value of each indicator, there are 0.5. In model 1 it is found that the variables Ae 1, As 1, Al 2 and Kr 3 have low coefficient values. The three indicators are (Ae 1  $\lambda$ =0, As 1  $\lambda$ =0.213), and Kr 3 factor  $\lambda$ =0.03 (fa redd sptiity,  $\lambda$ 9).

Ekonomi Ae4 Ae3 Ae2 Ae1 e4 1 1 1 e3 1 e2 e1 1 5 e e15 Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 277 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. Figure 2. Fishermen's Survival CFA Model (After Modification to Model 2) Variable As 1 is an indicator of fishermen's participation in fishermen groups, Al 2 is an indicator of fishermen's participation in working together to clean up the village.

In line with (Sahri et al., 2011) which uses two indicators to explain the livelihood outcomes of fishermen, namely increasing income and strengthening community social ties. The variable Kr 3 is an indicator of the number of jobs available. All indicators have not been able to explain the construction of economic, social, environmental aspects and reduced vulnerability aspects. Meanwhile (Yulisa Gardenia, 2018) found that increased vulnerability was due to conflict between fishermen. Apart from looking at the Lambda value, the factor weight significance test can also be seen by using the t-test, which can be seen from the Critical Ratio (t count). The cr value must be greater than 2.0

which indicates that the indicator is significantly a dimension of the formed latent variable. In model 1 all indicators have  $cr > 2.0$ . Based on the model suitability test and the significance of the factor weights, it is necessary to reconfirm the factor analysis by removing the three problematic indicators. Model modification aims to reduce measurement errors so as to produce better model values. Model modification is done by selecting the largest Modification Index (MI) value (Marsh & Hocevar, 1985), (Bollen, 2016).

To further increase the value of model compatibility, it is necessary to perform MI analysis for each model (McDonald & Marsh, 1990). The first largest MI value is 40.732; and the second is 22.662, where each of these values is a covariant value e3-e10, and e13-e14. This MI value means that if the model is re-estimated by setting the parameter e 13 with e 14 as independent, then the value will decrease Kelsetarian nian Sosial Alam



Kurangrentan As3 K2 As2 Al1 Al3 Kr4 Kr1 1 e6 e5 e10 1 1 e8 e14 e13 e11 1 1 1 1 e e e e17 e18 e16 Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 278 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. by 40.732, and the estimated value is around 0.233.

In line with this research (Adhiana & Suryadi, 2017) , the more diverse the fishermen's fishing gear will increase their fish catch and strengthen their economic status so that they are not bound by debt. Based on Figure 2 above, it shows that the probability significance value is in accordance with the standard value or marginal acceptance level, with df 38 and most of the model suitability indices have met the cut-off value requirements. Details can be seen in Table 1. Therefore it can be concluded that the model is acceptable. Table 1.

Results of the CFA Model Suitability Index After Modification Goodness of fit Index  
Cut-off values Analysis results Value suggested by previous researchers Evaluation Chi square probability RMSEA GFI AGFI CMIN/DF TLI CFI Expected small =.0 =.0 =.9 =.9 2.00  
38,221 0.459 0.062 0.948 0.911 1.006 0.954 0.938 <0.08 >0.90 >0.90 2 3 >0.90 >0.90  
Brown & Cudeck (1993) Hair et al. (2006) Byrne (2016) Marsh & Hocevar (1985) Bollen (2016) MacDonald & Marsh (1990) Good Good Good Good Good Good Good Good  
Source: processed data (2022) These results indicate that the fit of the data with the hypothesized model is good.

The chi square value is ( 38.221) and the df is 38 , and this value is relatively low which indicates that the observed covariance matrix is significantly different from that predicted and produces a probability smaller than (0.005). Therefore it is necessary to look at other index values. All model fit indices have met the required cut-off values (GFI, AGFI, TLI, CFI and CMIN/DF) as suggested (Browne & Cudeck, 1992) , (Byrne, 2016) , (Bollen, 2016) , and (McDonald & Marsh, 1990) .

This index already shows a good level of acceptance , and these results show that the fit of the data with the hypothesized model is good. The results of the model suitability index above indicate that the model is fit or adequate. The results of the analysis of model 2 after modification can be seen in Table 2 which shows the regression values that all factor loading values show numbers above 0.5 and all P (probability) values are significant at = 1% and this shows that all indicators can explain the existing construct .  
Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 279 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative

Commons Attribution-ShareAlike 4.0 International License. Table 2.

Significance and Validity Test and R Value of 2 Variables Latent Conservation of Fisherman's Life Variable The value of  $t$ -count P-values R Value 2 Before Modification R Value 2 After Modification less vulnerable .353 1,089 >0.001 .973 .982 Natural .994 4.168 < 0.001 .988 .989 Social .962 10,945 < 0.001 .303 .303 Economy .991 37,582 < 0.001 .928 .929 Kr4 .503 6.178 < 0.001 .202 .220 AI3 .548 7.178 < 0.001 .117 .200 Ae4 .996 8,921 < 0.001 054 .113 Kr2 .983 2,371 <0.05 .503 .506 Kr1 .921 2,243 <0.05 .122 .127 AI1 .711 5.019 <0.001 .861 .869 As3 .495 6.178 <0.001 .961 .967 As2 .536 8,422 <0.001 080 081 Ae3 .503 10043 <0.001 .993 .994 Ae2 .594 5,508 <0.001 .300 .301 Ae1 .962 8,196 <0.001 .148 .149 Source: Processed data (2022) The latent variable to the survival of fishermen can also be known based on the resulting loading factor and coefficient of determination (  $R^2$  ) .

The higher the value of the loading factor and  $R^2$  of a constituent latent variable, the greater the contribution given by these variables to the latent variables. The value of  $R^2$  indicates the large diversity of constituent latent variables that can be explained by latent variables (Brosseau & Savalei, 2014) and (Bollen, 2016) . Table 2 shows that each latent variable and indicator produces a  $t$ -value >  $t(0.05; 647) = 1.657$  and a  $P$ -value (0.05) of the  $n$  factor ) of all latent variables and almost all indicators is greater than 0.5 indicating that the latent variables and indicators are good (valid) to measure the latent variables of fishermen's survival.

Construct reliability value the resulting latent variable of fisherman survival after modification is 0.991 and before modification is 0.986, indicating that after modification it is better so it has better reliability. Overall the value of  $R^2$  after modification is better than before modification. Prior to modification, the latent variable reduced vulnerability made the largest contribution to the Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399 <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 280 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. latent variable of fisherman survival (KHN), namely 0.973 (97.30% diversity reduced vulnerability can be explained by the latent variable KHN) with the constituent indicator available work opportunities (Kr1 ) as the largest contributor of 0.861 (86.1% of the diversity of Kr1 can be explained by reduced vulnerability latent variables, while the variable Kr2 contributed 0.122 (12.2% of the diversity of Kr2 can be explained by reduced vulnerability of latent variables), and there are variations in fishing gear owned fishermen contributed 0.117 (11.7% of the diversity of Kr4 can be explained by the reduced vulnerability of the latent variable) . (Adhiana, 2017), that the reduced vulnerability is explained by the available indicators of farmer employment opportunities

. Meanwhile (Silaban et al.,

2021) found rubber tapping households used several livelihood strategies such as having other jobs apart from rubber tapping. Based on the results of the research, it shows that fishermen do not only rely on work from fishermen, but also have a side job besides being a fisherman. After modification, the latent variable reduced vulnerability makes the greatest contribution to the latent variable Fishermen's survival, namely 98.20% diversity, reduced vulnerability can be explained by the latent variable Fishermen's survival with constituent indicators (Kr 1 ) as the largest contributor of 86.9% diversity Kr 1 can be explained by the latent variable reducing vulnerability, the Kr 2 variable contributing 12.7% to the diversity Kr 2 can be explained by the latent variable reducing vulnerability, and the variation in fishing gear owned by fishermen contributing 20% to the diversity Kr 4 can be explained by variable reduced susceptibility.

In addition, the value of the loading factor Kr 2 is also the highest value, which is equal to 0.983 and the value of the loading factor Kr 4 is the lowest value, which is equal to 0.503. This means that having work skills other than being a fisherman will reduce vulnerability so that the sustainability of fishermen's lives can be achieved. In contrast to research (Yulisa Gardenia, 2018) which explains that increased vulnerability is caused by conflicts between fishermen. Furthermore, after modification, the natural latent variables around contribute 98.80 % to the sustainability of fishermen's lives, latent variables Al 1 contribute 96.10% to the sustainability of fishermen's lives. Economic latent variables contribute 92.80 percent to the sustainability of fishermen's lives.

The latent variable As 1 contributes 99.30% to the sustainability of fishermen's lives. In line with (Turton, 2008) and (Faried et al., 2018) including environmental aspects in development because the environment functions as a support for sustainable human development. In contrast to (Roslina, 2009) and (Idris, [Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399](https://ajmesc.com/index.php/ajmesc) <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 281 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

2011) which also uses a structured equation model and analyzes the socio-economic and environmental impacts with the Sustainable Livelihood approach . Based on the results of the analysis, it shows that the indicators of income, savings, sales of fish catches, and welfare can explain the construction of economic aspects. Based on research (Khuswati et al., 2022) explains that food security can guarantee an increase in the economic aspects of society.

The construct of the social aspect can only be explained by two indicators, namely the social relations of the community and increased social and religious activities . In contrast to (Ustriyana & Artini, 2018) that social and environmental aspects are said to not necessarily guarantee safety for the environment. The environmental construct can be explained by two indicators, namely using organized fishing gear and participating in efforts to plant mangroves near the coast.

The vulnerability construct is explained by three indicators, namely there are other work skills, have a variety of fishing gear, no debt. If fishermen have other skills, it will increase fishermen's household income. In line with (Mukherjee et al., 2002) n little fisherman only able to utilize resources in coastal areas with decreased catches , and (Putu Mardana, 2014) using a poor community empowerment model with a sustainable livelihood approach based on local culture. 4. CONCLUSION Based on the results of the research, it can be concluded that from the economic aspect the most dominant indicator for the sustainability of fishermen's lives is the increase in sales of fish caught, meaning that the higher the level of fish sales will improve **the economy of fishing** communities. The social aspect, the participation of fishermen in training activities as an effort to increase the knowledge of fishermen is the most dominant for the sustainability of fishermen's lives.

Aspects of the surrounding nature, the most dominant indicator is planting mangrove trees around the coast will preserve nature which will ultimately affect the sustainability of fishermen's lives. In the aspect of reduced vulnerability, the most dominant indicator is the availability of job opportunities in the research area which will affect the improvement of the sustainability of fishermen's lives, meaning that more and more available job opportunities will reduce the vulnerability of the community. SUGGESTION

Suggestions for further research that can be given based on the results of this study are to review indicators and latent variables that have a low contribution, both in terms of **Asian Journal of Management Entrepreneurship and Social Science ISSN: 2808 7399** <https://ajmesc.com/index.php/ajmesc> Volume 03 Issue 02 282 AJMESC, Volume 03 Issue 02, 2023 Copyright at authors some right reserved **this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.** the value of diversity (coefficient of determination) and the loading factor so that later indicators can be obtained that can measure well (valid) variables. measured latency. REFERENCE Adhiana, A., Shamadiyah, N., & Praza, R. (2019).

Analysis of Determination Factors Outcome of Livelihood of Farmer Post-Tsunami in

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