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# The Effects of Objective Economic Pressure and Coping Strategies on Fisherman Family Vulnerability

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**Abstract:** Fisherman families experience objective economic pressure due to unstable income, thus requiring coping strategies to avoid family vulnerability. This study aims to analyze the influence of objective economic pressure and coping strategies on the vulnerability of fisherman families. The study employed a cross-sectional design involving 105 intact fisherman families with school-age children in Muara Angke Fishing Village, North Jakarta, selected through purposive sampling. The data were analyzed using descriptive statistics, correlation analysis, and path analysis. The correlation analysis showed that the husband's years of education were significantly and negatively related to objective economic pressure. Per capita income was significantly and negatively associated with objective economic pressure, coping strategies, and family vulnerability. Family size was significantly and positively associated with objective economic pressure. Objective economic pressure was significantly and positively associated with coping strategies and family vulnerability, while coping strategies were significantly and negatively associated with family vulnerability. The path analysis revealed that per capita income had a significant direct negative effect on objective economic pressure. Furthermore, per capita income had significant indirect negative effects on coping strategies and family vulnerability through objective economic pressure. Objective economic pressure had significant positive direct effects on both coping strategies and family vulnerability. Based on the findings, fisherman families are recommended to seek additional income sources, maintain assets, save money, avoid conflicts, and share household responsibilities among family members.

**Keywords:** family vulnerability, fisherman families, coping strategies, objective economic pressure

## 1. INTRODUCTION

Indonesia is a maritime country with a sea area reaching 6.4 million km² (BPS, 2023). The abundant potential of marine and fisheries resources has led many coastal communities to make fishing their primary livelihood. This is supported by data from the Statistics of the Ministry of Marine Affairs and Fisheries which shows that the number of fishermen in Indonesia reached 2,401,540 people in 2022 (KKP, 2022). However, their residence in coastal areas and dependence on marine products as a source of livelihood make fisherman families vulnerable to crises and misfortunes. These crises and misfortunes include declining income due to reduced fish catches, economic pressure, dissatisfaction with meeting food needs, and misfortunes such as illness (Sunarti et al., 2011). Such conditions lead fisherman families to experience vulnerability. Family vulnerability refers to deficiencies that cause a family to be unable to fulfill its roles, functions, and responsibilities (Sunarti, 2021). The components of family vulnerability include physical-economic vulnerability, social vulnerability, and psychological vulnerability (Sunarti, 2021).

The vulnerabilities commonly faced by fisherman families are related to safety and economic issues (Rahman & Schmidlin, 2019). Safety problems arise because coastal areas are prone to coastal erosion and other natural disasters that threaten the family's safety and residence. Economic problems, on the other hand, occur because fish catches are influenced by seasonal changes (Laily & Sunarti, 2022). During the lean season, fishermen often fail to catch fish, leading to unstable and generally decreasing income. Such fluctuating income creates economic vulnerability among fisherman families (Yuniarti & Sukarniati, 2021).

A decrease in family income can lead to economic pressure (Zahroo et al., 2024). Economic pressure refers to the family's condition concerning economic resources and management that not only limits the fulfillment of needs but also causes

stress for the family (Sunarti, 2021). The components of economic pressure consist of objective economic pressure and subjective economic pressure (Sunarti, 2021). Objective economic pressure is measured based on factual family economic conditions, such as per capita income, the ratio of income to expenditure, the ratio of debt to assets, and the burden of loan repayments (Sunarti, 2021). The objective economic pressure experienced by fisherman families affects their level of economic vulnerability (Mustika et al., 2023). Moreover, objective economic pressure can lead to higher levels of vulnerability if the family has limited income sources. The fewer income sources a fisherman family has, the higher its level of vulnerability (Gani & Dharmawan, 2021).

Fisherman families require coping strategies when facing economic pressure to reduce their level of vulnerability. Coping strategies are active processes carried out by individuals and families as a unit to manage, adapt, and face stressors (Sunarti, 2013). Coping strategies can be divided into problem-focused coping strategies and emotion-focused coping strategies (Lazarus & Folkman, 1984). The coping strategies used by families are influenced by physical health, positive beliefs, problem-solving skills, social skills, social support, and material resources (Sunarti, 2013). Coping strategies are among the key factors that affect family resilience in dealing with challenges (Irzalinda & Sofia, 2020). As a livelihood strategy and an approach to meeting basic needs such as food security, coping strategies play an important role in determining the level of vulnerability in fisherman families (Hoang et al., 2020).

Previous studies generally examined economic pressure, coping strategies, and vulnerability in families separately and within different research contexts (Johan et al., 2013; Pratiwi 2017; Kumalasari et al., 2018; Gani & Dharmawan 2021; Mustika et al., 2023; Djakiman et al., 2024). However, there has been no research that simultaneously examines the relationships among objective economic pressure, coping strategies, and family vulnerability within the context of economically high-risk fisherman families using the SEM approach.

Research on economic pressure and coping strategies in fisherman families has been conducted by several previous studies. Pratiwi, (2017) dan Djakiman et al., (2024) examined economic pressure and coping strategies among fisherman families. Kumalasari et al., (2018) investigated economic pressure among both farmer and fisherman families. Johan et al., (2013) studied coping strategies in fisherman families. While Gani & Dharmawan, (2021) and Mustika et al., (2023) analyzed economic vulnerability among fisherman families. Mustika et al., (2023) also examined per capita income and economic vulnerability. Djakiman et al., (2024) analyzed per capita income and objective economic pressure among fisherman families. Furthermore, Pratiwi, (2017) investigated per capita income and coping strategies among fisherman families.

This study introduces novelty by integrating the variables of objective economic pressure, coping strategies, and family vulnerability in the context of fisherman families. The originality of this research lies in its population focus—fisherman families, the analytical approach using SEM, and the integration of the three key variables within one conceptual model. This study aims to analyze the effects of family characteristics, objective economic pressure, and coping strategies on family vulnerability among fisherman families. Specifically, the objectives are: 1) to identify family characteristics, objective economic pressure, coping strategies, and family vulnerability among fisherman families; 2) to analyze the relationships among family characteristics, objective economic pressure, and coping strategies with family vulnerability; and 3) to analyze the effects of family characteristics, objective economic pressure, and coping strategies on family vulnerability among fisherman families.

# 2. METHODS

## 2.1 Research Design

This study employed a quantitative–explanatory approach, which investigates a population or sample using numerical data to determine the relationships or effects among variables (Sugiyono, 2013). The study adopted a cross-sectional design, meaning that data were collected at a single point in time. This research is part of a broader umbrella study entitled *"Economic Pressure of Fisherman Families in Muara Angke."* The study was conducted in Muara Angke Fishing Village, Pluit Subdistrict, Penjaringan District, North Jakarta. The research site was selected using purposive sampling based on the consideration that Muara Angke Harbor is one of the main coastal areas in North Jakarta, with a total of 25,903 fishermen recorded in 2021 (BPS, 2024a). Residents of Muara Angke face various economic pressures such as reduced income during the lean season and social pressures including inequality in social aid distribution. These conditions have trapped many families in a cycle of poverty (Nadia, 2016). Data collection was carried out in December 2024, coinciding with the lean fishing season—when fish catches decline due to adverse weather conditions.

## 2.2 Sampling Technique

The population of this study consisted of intact fisherman families with school-age children residing in Muara Angke Fishing Village, Pluit Subdistrict, Penjaringan District, North Jakarta. A total of 105 fisherman families were selected as the sample, based on data obtained from the local neighborhood (RT and RW) administration. The sample criteria were intact fisherman families with school-age children, with the wife serving as the respondent. Respondents were selected using a purposive sampling technique, as sampling was adjusted to meet the study's objectives and specific inclusion criteria (Sugiyono, 2013). The sample size of 105 families was determined based on the *10 times rule* commonly applied in SEM analysis. Accorsing to Hair et al., (2021) the minimum sample size should be ten times the number of paths leading to a particular construct. This study included six paths derived from the hypotheses and the SEM model diagram. Thus, the minimum required sample size was $6 \times 10 = 60$ samples. Therefore, 105 samples were deemed sufficient for this analysis.

## 2.3 Variable Measurement

The variables in this study consisted of: 1) family characteristics; 2) objective economic pressure; 3) coping strategies; dan 4) family vulnerability. Family characteristics included the husband's age, wife's age, husband's years of education, wife's years of education, husband's occupation, wife's occupation, per capita income, and family size. Family characteristics served as descriptive and control variables; therefore, they were not included in the study title. The operational definitions, measurement instruments, scales, and indicators for each variable are presented in Table 1.

Table 1. Variable, operational definitions, and indicators of objective economic pressure, coping strategies, and family vulnerability

| Variable | Indicators |
|---|---|
| Objective economic pressure<br>- Family economic pressure scale (TEKEN-GA) (Sunarti, 2021)<br>- Response option 0,1, and 2<br>- *Cronbach's Alpha* 0,658 | 1. Monthly per capita income<br>2. Cash (savings) ownership<br>3. Employment status of main breadwinner<br>4. Risk of job loss<br>5. Income–expenditure ratio<br>6. Installment or loan payment burden<br>7. Debt-to-asset ratio<br>8. Housing cost burden<br>9. Burden of caring for family members with severe illness |

| Variable | Indicators |
|---|---|
| Operational definition:<br>A factual condition of financial strain experienced by a family, measured based on economic indicators such as income–expenditure ratio, employment status of the main breadwinner, debt–asset ratio, and per capita income. | |
| Coping strategies<br>- Coping strategis (Djakiman et al., 2024)<br>- Economic emotion-focused coping<br>- Economic problem-focused coping<br>- Social-psychological emotion-focused coping<br>- Social-psychological problem-focused coping<br>- Response scale 1=Never; 2=Rarely; 3=Often; 4=Always<br>- *Cronbach's Alpha* 0,600<br>Operational definition:<br>Actions or efforts undertaken by individuals and families as a unit to manage, adapt, and deal with stress or pressure. | Economic emotion-focused coping<br>1. Considering financial problems as something ordinary<br>2. Remaining silent and waiting for all problems to resolve on their own<br>3. Comparing one's financial condition with that of others who are less fortunate<br>4. Accepting the existing situation and condition because nothing can be done<br>5. Focusing on important aspects of life rather than financial problems<br>Economic Problem-Focused Coping Strategies<br>1. Reducing unnecessary expenses<br>2. Modifying or changing food menus<br>3. Borrowing money from relatives or friends<br>4. The husband seeks a side job to supplement income<br>5. Pawning or selling owned assets<br>Social-Psychological Emotion-Focused Coping Strategies<br>1. Avoiding social interaction with other people<br>2. Sharing problems with someone they trust<br>3. Seeking sympathy from people around them<br>4. Sleeping longer than usual<br>5. Praying sincerely and surrendering to God<br>Social-Psychological Problem-Focused Coping Strategies<br>1. Thinking critically and giving oneself advice when facing problems<br>2. Looking for various solutions to solve the problems<br>3. Hoping for a miracle to happen<br>4. Seeking advice from a trusted person when facing problems<br>5. Striving to obtain or achieve something desired |
| Family Vulnerability<br>- Family vulnerability detection (SIREN-GA) (Sunarti, 2021)<br>- Physical-economic vulnerability<br>- Social vulnerability<br>- Psychological vulnerability<br>- Response scale 1=Yes; 0=No<br>- *Cronbach's Alpha* 0,650<br>Operational definition:<br>Any deficiency that may cause dysfunction or disruption in an individual's or family's roles, functions, or responsibilities. | Physical-Economic Vulnerability<br>1. Family income is lower than household expenditure<br>2. The family does not have savings sufficient for six months of household needs<br>3. There is a family member at risk of being laid off<br>4. The family does not own a house<br>5. The family experiences difficulty in meeting various expenses<br>6. The family's debt exceeds its income<br>7. The family rarely contributes to social or community activities<br>Social Vulnerability<br>1. There is a family member suffering from a severe or serious illness<br>2. There is a family member who has committed immoral behavior<br>3. The family does not know their neighbors or local community leaders (RT/RW)<br>4. The family lacks relatives or close friends who are always available to help when needed<br>5. The family often forgets or neglects to give attention during special occasions of family members<br>6. Frequent conflicts occur within the family (between husband and wife, parents and children, or among siblings)<br>7. The family finds it difficult to perform daily religious practices<br>8. The family rarely spends time together |

| Variable | Indicators |
|---|---|
| | 9. It is not easy for family members to share or often they withhold important matters from one another<br>10. The wife or family members often feel exhausted due to the absence or ambiguity of task distribution within the household<br>Psychological Vulnerability<br>1. Sometimes feels lonely<br>2. Sometimes feels depressed<br>3. Sometimes feels helpless<br>4. Sometimes feels a loss of hope<br>5. Finds it difficult to be grateful for the current condition<br>6. Finds it difficult to feel happiness<br>Does not believe that ease will come after hardship |

### 2.4 Data Collection

This study relied on primary data, which included family characteristics (husband's age, wife's age, education levels, occupations, per capita income, and family size), objective economic pressure, coping strategies, and family vulnerability. Data were collected through direct interviews with the wives of fisherman families using a structured questionnaire. Wives were chosen as respondents because they act as the primary financial managers and possess a better understanding of daily family conditions, particularly when their husbands are at sea.

### 2.5 Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) and Smart Partial Least Squares (SmartPLS). Three analytical stages were conducted descriptive analysis, correlation analysis, and path (effect). Descriptive analysis (minimum, maximum, mean, and percentage) to identify family characteristics, objective economic pressure, coping strategies, and family vulnerability. Correlation analysis to examine relationships among family characteristics, objective economic pressure, coping strategies, and family vulnerability. Path (effect) analysis to determine the direct and indirect effects among variables using Structural Equation Modeling (SEM) with a *second-order* construct and the *embedded two-stage* approach. The second-order construct was applied because several variables contained multiple complex indicators. The embedded two-stage approach was used as an alternative to the *repeated indicator* method, which often produces biased Composite Reliability and Average Variance Extracted (AVE) values at the variable level (Sarstedt et al., 2019).

The prerequisite test for the correlation analysis (Pearson correlation) required that the data be in ratio scale and normally distributed (sig. > 0.005), as well as that the relationships among variables be linear (sig. < 0.05). Meanwhile, the prerequisite test for the effect analysis consisted of the measurement model fit test (*outer model*) and the structural model fit test (*inner model*). The *outer model* is a measurement model that describes the relationship between indicators and their latent variables. The outer model test was conducted to identify and evaluate the validity and reliability of the model. This test can be assessed by performing item deletion based on loading factors (>0.5), evaluating the validity through the Average Variance Extracted (AVE) value (>0.5), and testing reliability using Composite Reliability (>0.7) and Cronbach's Alpha (>0.6). The *inner model* is a structural model used to estimate causal relationships among latent variables or to test hypotheses. Hypothesis testing was carried out using the *t-statistic* obtained from the bootstrapping process, with a significance criterion of $t > 1.96$. The goodness of fit of the inner model was examined by observing the *R-square* value for each latent variable to predict the strength of the structural model. In addition to identifying the *R-square* value, the *Goodness of Fit (GoF)* index was also used to determine the overall adequacy, fit, and accuracy of the

model. The structural equation modeling (SEM) analysis framework is presented in Figure 1.

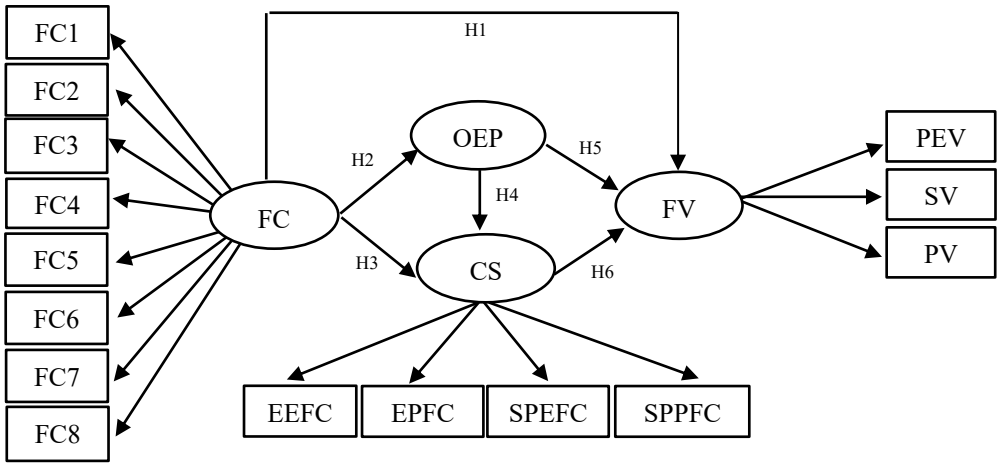


Figure 1. SEM Analysis Model Design

Notes:

| | | | | | |
|---|---|---|---|---|---|
| FC | = | Family characteristics | CS | = | Coping strategies |
| FC1 | = | Husband's age | EEFC | = | Economic Emotion-Focused Coping Strategies |
| FC2 | = | Wife's age | EPFC | = | Economic Problem-Focused Coping Strategies |
| FC3 | = | Husband's length of education | SPEFC | = | Social-Psychological Emotion-Focused Coping Strategies |
| FC4 | = | Wife's length of education | SPPFC | = | Social-Psychological Problem-Focused Coping Strategies |
| FC5 | = | Pekerjaan suami | FV | = | Family Vulnerability |
| FC6 | = | Pekerjaan istri | PEV | = | Physical-Economic Vulnerability |
| FC7 | = | Per capita income | SV | = | Social Vulnerability |
| FC8 | = | Family size | PV | = | Psychological Vulnerability |
| OEP | = | Objective economic pressure | | | |

### 2.6 Research Hypotheses

H1 : Family characteristics have a significant effect on family vulnerability
H2 : Family characteristics have a significant effect on objective economic pressure
H3 : Family characteristics have a significant effect on coping strategies
H4 : Objective economic pressure has a significant effect on coping strategies
H5 : Objective economic pressure has a significant effect on family vulnerability
H6 : Coping strategies have a significant effect on family vulnerability

## 3. RESULTS

### 3.1 Family Characteristics

Family characteristics were used to describe the socioeconomic context that influences a family's ability to manage economic pressure and apply coping strategies as efforts to avoid vulnerability. The family characteristics of the sample in this study were measured based on the husband's and wife's ages, years of education, occupations, per capita income, and family size. The largest percentage of husbands were categorized as middle adults (63.8%), while the largest percentage of wives were categorized as early adults (52.4%). The average age of husbands (45.11 years) and wives (41.06 years) in the sample families fell within the middle-adult category (41–60 years). The largest percentage of husbands' years of education (63.8%) and wives' years of education (64.8%) were categorized as having completed elementary school (6 years). The average years of education for husbands (6.26 years) and wives (6.11 years) were also within the elementary school category (6 years). The husbands' occupations were divided into two categories: labor fishermen who owned boats (51.4%) and labor fishermen who did not own boats (48.6%). Meanwhile, the wives'

occupations were categorized based on employment status, with working (72.4%) and not working (27.6%). Based on the research findings, most wives worked as shellfish peelers. The families' per capita income ranged from IDR 150,000 to IDR 5,000,000, with an average of IDR 1,088,314.00. A total of 40.0 percent of fisherman families were categorized as poor, while 60.0 percent were categorized as non-poor, based on the North Jakarta poverty line of IDR 712,835.00 (BPS, 2024b). The largest proportion (48.6%) of families belonged to the medium-sized family category (5 to 7 members).

### 3.2 Objective Economic Pressure

Objective economic pressure refers to economic strain measured objectively based on factual indicators such as income, employment status, expenditures, and the debt-to-asset ratio. Table 2 shows that the largest percentage of sample families experienced low objective economic pressure (43.8%), with an average index score of 0.38. This finding is supported by the distribution of responses, which indicates that the largest proportion of sample families did not bear the burden of caring for a family member with a severe illness (75.2%), owned their own house (72.4%), and had per capita income above the poverty line (60%). However, the results also show that 40% of the sample families had per capita income below the poverty line. The lowest percentage (4.8%) was found in the indicator of cash savings exceeding six months of household needs, indicating that most sample families either did not have savings or had savings for less than six months of household needs.

Table 2. Distribution of samples (%) by category, minimum and maximum values, mean, and standard deviation of the objective economic pressure index

| Variable | Category | | | | Min-max | Mean±Std |
|---|---|---|---|---|---|---|
| | Very Low | Low | Moderate | High | | |
| Objective economic pressure | 16.2 | 43.8 | 29.5 | 10.5 | 0.06-0.78 | 0.38±0.19 |

Notes: index categories follow the cut-off by Sunarti, (2021): very low=0,00-0,19; low=0,20-0,39; moderate=0,40-0,69; high=0,70-1,00

### 3.3 Coping Strategies

Coping strategies refer to the efforts made by individuals and families to manage, adapt to, and deal with stress or pressure. Table 3 shows that most sample families' coping strategies were in the low category (81.9%), with an average index score of 47.65. This finding is supported by the distribution of responses, which indicates that the lowest percentage (3.8%) was found in the economic problem-focused coping dimension, specifically in the indicator pawning owned assets. This suggests that most sample families never pawned their assets when facing economic problems, mainly because they did not possess sufficient valuables that could be pawned during emergencies. Meanwhile, the highest percentages were found in the economic problem-focused coping dimension, particularly in the indicators reducing unnecessary expenses (39.0%) and modifying food menus (34.3%).

Table 3. Distribution of samples (%) by category, minimum and maximum values, mean, and standard deviation of the coping strategy index

| Coping Strategy Dimension | Category | | | Min-max | Mean ±Std |
|---|---|---|---|---|---|
| | Low | Moderate | High | | |
| EEFC | 87.6 | 10.5 | 1.9 | 0.00-83.33 | 32.38±20.65 |
| EPFC | 69.5 | 25.7 | 4.8 | 0.00-91.67 | 52.14±18.91 |
| SPEFC | 66.7 | 27.6 | 5.7 | 0.00-100.00 | 43.65±23.61 |
| SPPFC | 44.8 | 32.4 | 22.9 | 0.00-100.00 | 57.93±23.12 |
| CS | 81.9 | 17.1 | 1.0 | 13.33-80.00 | 47.65±13.88 |

Notes: Index categories follow the cut-off by Sunarti et al., (2005): Low = <60.0; Moderate = 60.0–79.9; High = ≥80.0. EEFC = Economic Emotion-Focused Coping Strategies; EPFC = Economic Problem-Focused Coping Strategies; SPEFC = Social-Psychological Emotion-Focused Coping Strategies; SPPFC = Social-Psychological Problem-Focused Coping Strategies; CS = Coping Strategies.

### 3.4 Family Vulnerability

Family vulnerability refers to any deficiency that is predicted to cause suboptimal performance or disruption in the roles, functions, and responsibilities of individuals or families. Table 4 shows that the largest percentage of sample families fell into the moderate vulnerability category (46.7%), with an average index score of 0.41. This finding is supported by the distribution of responses showing that the highest percentages occurred in the physical–economic vulnerability dimension, particularly in the indicator lack of savings sufficient for six months of household needs (88.6%). In addition, high percentages were also found in the social vulnerability dimension, specifically in the indicators wives feeling exhausted due to the absence or ambiguity of task distribution within the family (97.1%) and frequent conflicts within the family (70.5%). Based on interview information, wives reported feeling exhausted because they bear a double burden—responsible for domestic chores such as household management while also engaging in productive work to earn income. The study found that most wives worked as shellfish peelers. Furthermore, the conflicts most commonly occurring in the sample families were between husbands and wives. The lowest percentages were found in the social vulnerability dimension, particularly in the indicators having a family member who commits immoral acts (2.9%) and not knowing neighbors or local community leaders (4.8%), as well as in the psychological vulnerability dimension, in the indicators finding it difficult to be grateful for the current condition (6.7%) and not believing that ease comes after hardship (8.6%). These results indicate that most sample families did not have members who committed immoral acts, maintained familiarity with neighbors and community leaders, were generally grateful for their current conditions, and believed that ease would follow hardship.

Table 4. Distribution of samples (%) by category, minimum and maximum values, mean, and standard deviation of the family vulnerability index

| Family vulnerability dimension | Category | | | | | Min-max | Mean ±Std |
|---|---|---|---|---|---|---|---|
| | Very low | Low | Moderate | High | Very high | | |
| PEV | 67 | 13.3 | 54.3 | 21.9 | 3.8 | 0.00-1.00 | 0.50±0.19 |
| SV | 15.2 | 45.7 | 35.2 | 3.8 | 0.0 | 0.10-0.70 | 0.40±0.14 |
| PV | 41.0 | 9.5 | 32.4 | 9.5 | 7.6 | 0.00-1.00 | 0.34±0.28 |
| FV | 2.9 | 41.9 | 46.7 | 8.6 | 0.0 | 0.13-0.79 | 0.41±0.13 |

Notes: Index categories follow the cut-off by Sunarti (2021): Very Low = 0.0–0.2; Low = 0.2–0.4; Moderate = 0.4–0.6; High = 0.6–0.8; Very High = >0.8. PEV = Physical–Economic Vulnerability; SV = Social Vulnerability; PV = Psychological Vulnerability; FV = Family Vulnerability.

### 3.5 Correlation between Family Characteristics, Objective Economic Pressure, and Coping Strategies with Family Vulnerability

The prerequisite test results showed that the variables in this study were measured on a ratio scale. The normality test results indicated that the data were normally distributed, with a significance value of 0.200 (>0.005). In addition, the correlation analysis results showed that the relationships among variables were linear, as indicated by significance values of <0.05. Table 5 presents the correlation coefficients between family characteristics, objective economic pressure, and coping strategies with family vulnerability. The results revealed that the husband's years of education ($r = -0.206$; $p < 0.05$) had a significant negative relationship with objective economic pressure. This means that the lower the husband's years of education, the higher the objective economic pressure experienced by the family. Per capita income ($r = -0.619$; $p < 0.01$) showed a significant negative relationship with objective economic pressure, indicating that the lower the per capita income, the higher the objective economic pressure faced by the family. Per capita income ($r = -0.368$; $p < 0.01$) also showed a significant negative relationship with coping strategies, meaning that families with higher per capita income tended to apply fewer coping strategies. Furthermore, per capita income ($r = -0.256$; $p < 0.01$) had a significant negative relationship with family

vulnerability, indicating that lower per capita income was associated with higher family vulnerability.

Family size ($r = 0.352$; $p < 0.01$) showed a significant positive relationship with objective economic pressure, suggesting that the larger the family, the higher the objective economic pressure experienced. The results also showed that objective economic pressure ($r = 0.475$; $p < 0.01$) had a significant positive relationship with coping strategies, meaning that higher objective economic pressure was associated with more coping strategies being applied. Similarly, objective economic pressure ($r = 0.374$; $p < 0.01$) had a significant positive relationship with family vulnerability, indicating that higher objective economic pressure led to greater family vulnerability. In contrast, coping strategies ($r = -0.336$; $p < 0.01$) had a significant negative relationship with family vulnerability. This means that the lower the coping strategies used by the family, the higher their level of vulnerability.

Table 5. Correlation coefficients between family characteristics, objective economic pressure, and coping strategies with family vulnerability

| Variable | Objective economic pressure | Coping strategies | Family vulnerability |
|---|---|---|---|
| **Family Characteristics** | | | |
| Husband's age (years) | -0.060 | -0.117 | -0.151 |
| Wife's age (years) | -0.041 | -0.189 | -0.171 |
| Husband's length of education (years) | -0.206* | 0.061 | -0.088 |
| Wife's length of education (years) | 0.092 | 0.040 | -0.136 |
| Ped capita income (IDR) | -0.619** | -0.368** | -0.256** |
| Family size | 0.352** | 0.102 | -0.038 |
| Objective economic pressure | 1 | 0.475** | 0.374** |
| Coping strategies | | 1 | -0.336** |
| Family vulnerability | | | 1 |

Notes. (*) significant at p<0,05 (2-tailed); (**) significant at p<0,01 (2-tailed)

### 3.6 The Effects of Family Characteristics, Objective Economic Pressure, and Coping Strategies on Family Vulnerability

**Measurement Model Fit Test (Outer Model)**

The outer model is a measurement model that describes the relationship between indicators and their latent variables. The outer model test was conducted to identify and assess the validity and reliability values of the model. This test can be evaluated by performing item deletion based on loading factors (>0.5), testing validity through the Average Variance Extracted (AVE) value (>0.5), and testing reliability using Composite Reliability (>0.7) and Cronbach's Alpha (>0.6). Based on the test results, 26 indicators had loading factor values greater than 0.5, indicating that these indicators successfully represented their respective latent variables. The first stage of the SEM-PLS procedure, using the embedded two-stage approach, was conducted with the repeated indicator method to identify the model fit of the measurement model (outer model). The results showed that some indicators still had outer loading values below 0.5, namely social-psychological problem-focused coping strategies (0.356) and physical–economic vulnerability (0.469). The outer loading values representing the effects of family characteristics, objective economic pressure, and coping strategies on family vulnerability are presented in Table 6.

Table 6. Outer loading values for the effects of family characteristics, objective economic pressure, and coping strategies on family vulnerability

| Variable | Outer loading value |
|---|---|
| Per capita income ← Family characteristics | 1.000 |
| Monthly per capita income ← Objective economic pressure | 0.874 |
| Cash fund (savings) ownership ← Objective economic pressure | 0.574 |
| Income–expenditure ratio ← Objective economic pressure | 0.797 |

| Variable | Outer loading value |
|---|---|
| Credit/loan installment burden ← Objective economic pressure | 0.555 |
| Debt–asset ratio ← Objective economic pressure | 0.628 |
| Economic emotion-focused coping strategies ← Coping strategies | 0.513 |
| Economic problem-focused coping strategies ← Coping strategies | 0.793 |
| Social-psychological emotion-focused coping strategies ← Coping strategies | 0.614 |
| Social-psychological problem-focused coping strategies ← Coping strategies | 0.356 |
| Physical–economic vulnerability ← Family vulnerability | 0.469 |
| Social vulnerability ← Family vulnerability | 0.716 |
| Psychological vulnerability ← Family vulnerability | 0.939 |

Table 7 presents the Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) values for the variables *objective economic pressure*, *coping strategies*, and *family vulnerability*. The results show that the variables *objective economic pressure* and *family vulnerability* had Cronbach's Alpha values > 0.6 and Composite Reliability values > 0.7. However, the *coping strategies* variable had Cronbach's Alpha < 0.6 and Composite Reliability < 0.7. According to Hair et al., (2010), a Cronbach's Alpha value ≤ 0.6 indicates a low level of reliability, but it can still be accepted for further analysis. In addition, the variables *objective economic pressure*, *coping strategies*, and *family vulnerability* had AVE values < 0.5. According to Fornell & Larcker (1981); Hair et al., (2010); Lam (2012), Cronbach's Alpha < 0.6 and AVE < 0.5 are still acceptable if the Composite Reliability value > 0.6. Based on these results, the Composite Reliability values for all three variables were greater than 0.6; therefore, the model can be considered acceptable and meets the reliability and validity requirements.

Table 7. Cronbach's Alpha, Composite Reliability, dan Average Variance Extracted (AVE) of objective economic pressure, coping strategies, and family vulnerability

| Variable | Cronbach's Alpha | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|
| Objective economic pressure | 0.728 | 0.820 | 0.488 |
| Coping strategies | 0.403 | 0.666 | 0.349 |
| Family vulnerability | 0.606 | 0.707 | 0.471 |

**Structural Model Fit Test (Inner Model)**

The inner model test was conducted by identifying the R-square ($R^2$) value of each latent variable to predict the strength of the structural model. The $R^2$ value indicates that the effect of per capita income on objective economic pressure was 0.581 (moderate effect). The effect of per capita income and objective economic pressure on coping strategies was 0.416 (moderate effect). The effect of per capita income, objective economic pressure, and coping strategies on family vulnerability was 0.397 (moderate effect). According to Chin (1998), the R-square value can be categorized into four levels: $R^2 < 0.19$ (weak), $0.19 \leq R^2 < 0.33$ (fair), $0.33 \leq R^2 < 0.67$ (moderate), and $R^2 \geq 0.67$ (strong). The R-square values of the structural model are presented in Table 8.

Table 8. R-square value of the structural

| Variable | R-square | Category |
|---|---|---|
| Objective economic pressure | 0.581 | Moderate |
| Coping strategies | 0.416 | Moderate |
| Family vulnerability | 0.397 | Moderate |

The overall contribution of $R^2$ to the model can be calculated using predictive relevance (Q-square / $Q^2$). $Q^2$ is used to measure predictive relevance, or how well the model can predict the data (Chin, 1998). This model produced a $Q^2$ value of 0.852, indicating that the independent variables—family characteristics, objective economic pressure, and coping strategies—could explain 85.2% of the variance in family

vulnerability, while the remaining variance was explained by other variables outside the model. The $Q^2$ value was calculated using the following formula:

$Q^2 = 1 – (1-R^21) (1- R^22) (1- R^23)$
$Q^2 = 1 – (1-0.581) (1-0416) (1-0397)$
$Q^2 = 1 – (0.419) (0.584) (0.603)$
$Q^2 = 0.852$

The model in this study had a Goodness of Fit (GoF) value of 0.352. The GoF value is used to determine the level of adequacy, fit, and accuracy of a model as a whole. Wetzels et al., (2009) classified the Goodness of Fit (GoF) values into three categories, namely GoF < 0.1 (low fit value), 0.1 < GoF < 0.25 (medium fit value), and 0.25 < GoF < 0.36 (high fit value). A GoF value < 0.1 indicates that the model does not adequately explain the endogenous variables. A value of 0.1 ≤ GoF < 0.25 suggests a weak model fit but may still be acceptable if the variables are new or if the model complexity is high. A GoF value between 0.25 and 0.36 indicates that the model has an adequate fit and can be used for further interpretation, while a **GoF ≥ 0.36** indicates a very good fit, showing that the relationships among variables are strong and the model can effectively explain the endogenous variables. The GoF value was calculated using the following formula:

GoF $= \sqrt{meanAVE \text{ x } meanR^2}$
GoF $= \sqrt{0.577 \text{ x } 0.464}$
GoF $= 0.352$

The inner model represents the structural model used to estimate the causal relationships among latent variables and to test hypotheses. Hypothesis testing was carried out using the t-statistic value obtained from the bootstrapping process, with the criterion t > 1.96. The results showed that there were five paths with t-values > 1.96 (see Table 9). Meanwhile, one path—Coping Strategies → Family Vulnerability (t = 1.002)—did not meet the hypothesis criterion (t < 1.96). The final model of the effects of family characteristics, objective economic pressure, and coping strategies on family vulnerability is presented in Figure 2.

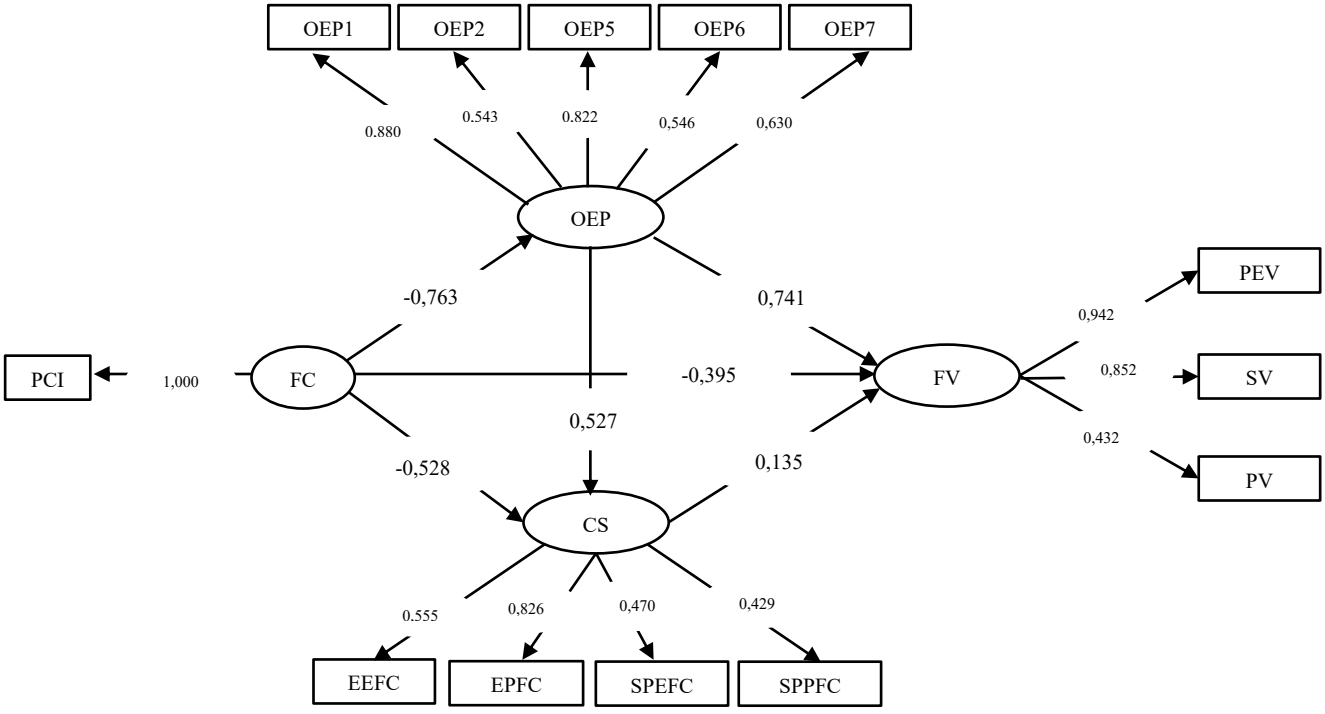


Figure 2. Final model of the effects of family characteristics, objective economic pressure, and coping strategies on family vulnerability

Notes:

| | | | | | |
|---|---|---|---|---|---|
| FC | = | Family characteristics | SPEFC | = | Social-Psychological Emotion-Focused Coping Strategies |
| PCI | = | Per capita income | SPPFC | = | Social-Psychological Problem-Focused Coping Strategies |
| OEP | = | Objective economic pressure | FV | = | Family Vulnerability |
| CS | = | Coping strategies | PEV | = | Physical–Economic Vulnerability |
| EEFC | = | Economic Emotion-Focused Coping Strategies | SV | = | Social Vulnerability |
| EPFC | = | Economic Problem-Focused Coping Strategies | PV | = | Psychological Vulnerability |

Table 9 presents the results of the effect test between family characteristics, objective economic pressure, and coping strategies on family vulnerability. The results show that per capita income (β = -0.763, t > 1.96) had a significant negative direct effect on objective economic pressure. This indicates that the higher the family's per capita income, the lower the objective economic pressure experienced by the family. Objective economic pressure (β = 0.572, t > 1.96) had a significant positive direct effect on coping strategies. This suggests that the lower the objective economic pressure faced by the family, the lower the coping strategies implemented by the family. Objective economic pressure (β = 0.741, t > 1.96) also had a significant positive direct effect on family vulnerability. This means that the lower the objective economic pressure experienced by the family, the lower the level of family vulnerability.

Furthermore, per capita income (β = -0.528, t > 1.96) had a significant negative indirect effect on coping strategies through objective economic pressure. This indicates that the higher the family's per capita income, the lower the objective economic pressure, which in turn leads to lower coping strategies used by the family. Similarly, per capita income (β = -0.395, t > 1.96) had a significant negative indirect effect on family vulnerability through objective economic pressure. This indicates that the higher the family's per capita income, the lower the objective economic pressure, and consequently, the lower the family vulnerability.

Table 9. Results of the effect test between family characteristics, objective economic pressure, and coping strategies on family vulnerability

| Path of influence | Direct effect | Indirect effect | Total effect |
|---|---|---|---|
| Per Capita Income → Objective Economic Pressure | -0.763** | - | -0.763** |
| Objective Economic Pressure → Coping Strategies | 0.527** | - | 0.527** |
| Objective Economic Pressure → Family Vulnerability | 0.741** | - | 0.741** |
| Per Capita Income → Objective Economic Pressure → Coping Strategies | - | -0.436** | -0.528** |
| Per Capita Income → Objective Economic Pressure → Family Vulnerability | - | -0.506** | -0.395** |

Notes. (**) significant at p<0,01

## 4. DISCUSSION

The results of this study show that the largest percentage of objective economic pressure among fisherman families falls within the low category. This finding is consistent with the study of Djakiman et al., (2024) which found that fisherman labor families experience low levels of objective economic pressure. The low level of objective economic pressure among fisherman families may occur because the majority of families have a per capita income above the poverty line, thus they do not experience significant economic pressure (Laily & Sunarti, 2022). In addition, the majority of families' coping strategies were in the low category. The results indicate that fisherman families never pawn their assets when facing difficult economic conditions. This occurs because they do not possess sufficient property to be pawned. Maryam (2017) stated that coping strategies adopted by families are closely related to

the availability of resources, including economic assets. Fisherman families more often apply problem-focused economic coping strategies, such as reducing expenditures, changing meal menus, and borrowing money from relatives or friends (Muflikhati & Hernawati, 2016; Herawati et al., 2017; Djakiman et al., 2024).

The largest percentage of family vulnerability was found in the moderate category. The findings reveal that most fisherman families do not have savings to meet their needs for six months. Economically, fisherman families belong to the vulnerable group because of their lack of savings, which increases their exposure to economic pressures that may lead to poverty (Candrakuncaraningsih, 2020). They also often experience conflicts between husbands and wives. Potential conflict needs to be understood by every couple to prevent disturbances to family harmony that could lead to vulnerability (Sunarti, 2018). Moreover, wives experience fatigue due to unequal division of tasks. Fishermen's wives bear double burdens—domestic responsibilities and income-generating work—which affect their physical and psychological condition (Darmawan et al., 2024).

The results show that the average length of the husband's education falls under the low education level, equivalent to elementary school (six years). Elanda & Alie (2021) stated that fisherman families belong to a group with relatively low education levels. The correlation analysis shows that the husband's education length has a significant negative relationship with objective economic pressure. Consistent with Djakiman et al., (2024) who found that lower education levels of husbands increase objective economic pressure in fisherman families. The results also indicate that the average family per capita income was above the poverty line. The correlation test shows that per capita income has a significant negative relationship with objective economic pressure, aligning with previous studies showing that higher per capita income reduces economic pressure (Djakiman et al. 2024). Furthermore, per capita income has a significant negative relationship with coping strategies. Families with higher per capita income tend to apply fewer coping strategies when facing problems (Herawati et al., 2017). Per capita income also has a significant negative relationship with family vulnerability—families with higher incomes tend to be more resilient in facing risks and have better ability to meet basic needs, thus reducing vulnerability (Sunarti et al., 2009). The study also shows that the majority of families fall within the medium family size category (5–7 members). Family size has a significant positive relationship with objective economic pressure, meaning that a larger number of dependents increases the family's economic burden (Herawati et al., 2017).

The results also show that objective economic pressure is significantly and positively related to coping strategies. The higher the objective economic pressure experienced by families, the greater the coping strategies they employ (Sunarti et al., 2024). Given that both objective economic pressure and coping strategies were found to be in the low category, it can be inferred that when families experience low economic pressure, they are less likely to engage intensively in coping strategies (Astuti et al., 2016). Families can face economic pressure through coping strategies designed to address problems (Diponegoro et al., 2020). Objective economic pressure also shows a significant positive relationship with family vulnerability. Families unable to cope with economic pressure tend to experience higher vulnerability (Sunarti, 2015). Hence, families capable of adapting, managing circumstances, and handling change under economic pressure are more likely to avoid higher levels of vulnerability (Sunarti, 2021). Coping strategies were found to have a significant negative relationship with family vulnerability, consistent with Wulandari et al., (2022) who found that lower coping strategies increase the level of vulnerability among fisherman families. A variety of coping strategies—including financial management, such as reducing expenditures—can help lower family vulnerability (Danquah et al., 2021). Families with poor coping capacity are more susceptible to difficulties.

The findings support the first hypothesis, namely that per capita income has a significant negative indirect effect on family vulnerability through objective economic pressure. Ningsih et al., (2023) explained that per capita income influences a family's ability to meet needs, preventing problems and economic pressures that contribute to family vulnerability. Sunarti (2015) stated that families face various vulnerabilities as a consequence of their inability to handle economic pressure.

The results support the second hypothesis, which states that per capita income has a significant negative direct effect on objective economic pressure. This is consistent with Djakiman et al., (2024) who found that the higher the per capita income, the lower the level of economic pressure among fisherman families. The high per capita income in this study is also supported by findings that most fishermen's wives are employed, contributing to household income. Wives' earnings can help support their husbands' income and improve the family's ability to meet needs, thereby reducing economic pressure (Haqiqi & Subroto, 2021). Although this study was conducted during the lean season, the relatively high per capita income may be due to fishermen engaging in side jobs to sustain daily needs (Pangidunan et al., 2023). Common side jobs include working as construction laborers or providing engine repair services for fishing boats.

The results support the third hypothesis, which states that per capita income has a significant negative indirect effect on coping strategies through objective economic pressure. Higher per capita income indirectly reduces the intensity of coping strategies because the family faces lower economic pressure. Mardiharini (2016) stated that the coping strategies employed by families are influenced by the level of income earned. Higher income enables families to meet their needs more easily. Families with higher income tend to experience lower economic pressure and thus do not require intensive coping strategies to manage household needs (Handayani & Yulistiyono, 2023).

The results also support the fourth hypothesis, indicating that objective economic pressure has a significant positive direct effect on coping strategies. When families experience lower economic difficulties, they are more passive in developing coping strategies to survive. Astuti et al., (2016) emphasized that coping strategies are actions taken to reduce perceived economic pressure. Families with low objective economic pressure tend not to apply diverse coping strategies to overcome economic challenges (Yulfa et al., 2022).

The results further support the fifth hypothesis, showing that objective economic pressure has a significant positive direct effect on family vulnerability. Low economic pressure indicates that the family is capable of fulfilling basic needs and managing family finances (Ningsih et al., 2023). Moreover, low objective economic pressure suggests that families can meet basic needs, reducing the risk of vulnerabilities that may disrupt family stability (Raharjo et al., 2015). A stable economic condition enhances the family's ability to maintain economic, social, and psychological balance, thereby reducing vulnerability. However, the results do not support the sixth hypothesis, which posited that coping strategies significantly influence family vulnerability. This may be due to other unobserved variables influencing family vulnerability that were not included in this study.

## 5. Conclusion and Suggestions

This study involved fisherman families in Muara Angke Fishing Village. The results show that the average age of husbands and wives falls within the middle adulthood category. The majority of both husbands and wives completed elementary school as their highest education level. Most husbands work as labor fishermen who own boats, while most wives are employed. The largest proportion of fisherman families are classified as non-poor, with an average per capita income above the poverty line. In addition, the majority of fisherman families belong to the medium-sized family category. The findings indicate that the majority of fisherman families

experience low levels of objective economic pressure and low levels of coping strategies, while family vulnerability falls within the moderate category.

The correlation analysis revealed that the husband's education length has a significant negative relationship with objective economic pressure. Per capita income has a significant negative relationship with objective economic pressure, coping strategies, and family vulnerability. Family size has a significant positive relationship with objective economic pressure. The correlation analysis also shows that objective economic pressure has a significant positive relationship with both coping strategies and family vulnerability, while coping strategies have a significant negative relationship with family vulnerability.

The path analysis results show that per capita income has a significant negative direct effect on objective economic pressure. Objective economic pressure has a significant positive direct effect on both coping strategies and family vulnerability. Moreover, per capita income has a significant negative indirect effect on coping strategies and family vulnerability through objective economic pressure.

Based on the findings, to reduce objective economic pressure, fisherman families are advised to engage in side jobs as alternative sources of income during the lean season when fishing activities are limited, to help meet daily needs. To improve coping strategies in emergency situations, fisherman families are encouraged to maintain assets as a buffer against financial shocks. Furthermore, to reduce family vulnerability, fisherman families are advised to manage finances wisely, such as through saving, which can serve as an emergency fund during lean seasons. Families should also work to maintain harmony and avoid conflicts among members by clearly dividing household responsibilities.

For the government, it is recommended to strengthen the economic capacity of fisherman families by providing skill enhancement training for fishermen and fish processing training for fishermen's wives. Future researchers are encouraged to expand this study by applying different research designs, such as longitudinal studies, to capture the dynamics of objective economic pressure, coping strategies, and family vulnerability during both harvest and lean seasons. In addition, future research should involve husbands as respondents to obtain alternative perspectives on fishing activities and their impacts on family life.

From a practical perspective, this study highlights the importance of improving financial literacy, income diversification, and adaptive coping strategies through financial management training for fisherman families to reduce vulnerability caused by economic pressures. From a policy perspective, the findings can serve as a basis for governments and community development agencies to design family empowerment programs that strengthen fishermen's household economies. Theoretically, the study reinforces the concept that objective economic pressure significantly affects family vulnerability, whereas coping strategies do not necessarily have a direct effect in reducing vulnerability. This study contributes empirically to the development of family resilience studies within the context of fisherman families.

The study has certain limitations, including that data collection was conducted during the lean season, so the findings do not fully represent the conditions of fisherman families regarding objective economic pressure, coping strategies, and vulnerability during the harvest season. Furthermore, the study intentionally involved only wives as respondents, based on the consideration that wives spend more time at home and are assumed to have greater knowledge of household conditions. However, because the study's unit of analysis is the family, involving both husbands and wives would yield more comprehensive results. Additionally, some households in the study area were affected by tidal flooding, which made data collection through interviews less conducive.

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