SOCIAL STUDY OF FARMING COMMUNITIES IMPACT OF THE CONSERVATION FLOOD MANAGEMENT IN SELECTED RIVER BASINS (FMSRB) PROGRAM IN SERANG DISTRICT

Aliudin[1], Setiawan Sariyoga[1], Nanang Khaerudin [2],Muchlisiah Octaviya[2], dan Opi Tiawati[2]

[1]Lecturer in the Department of Agribusiness, Faculty of Agriculture, Sultan Ageng Tirtayasa University

[2]Research Assistant Team for the Flood Management Program in Selected River Basins

Deparetement of Agribusiness Sultan Ageng Tirtayasa University

*Email: alicardan@yahoo.com; aliudin@untirta.ac.id

ABSTRACT

Floods are often a very crucial problem for humans all over the world from the past, present and in the future. The flood and erosion occurred in Serang Regency, Banten Province, in the Cidanau-Ciujung-Cidurian watershed (3C). This condition has an impact on the social conditions of society, especially endangering the agricultural sector. The Indonesian government is trying to jointly tackle flooding and erosion in the watershed (3C) through the Flood Management in Selected River Basins (FMSRB) program, which is flood management in selected watersheds. The purpose of this study was to analyze the social conditions of farming communities affected by the Flood Management in Selected River Basins conservation program in Serang District. The type of research used is explanatory descriptive with the analytical method used in this study is the Multidimensional Scaling Test (MDS). Based on the results of the research conducted, it was found that the FMSRB program had a positive effect on social change in the farming community in Serang Regency. The results of the Multidimensional Scaling (MDS) analysis obtained an output value of -stress 0.011 which was concluded to have relatively good results. most of the respondents answered elements of community empowerment,

this shows that the FMSRB Conservation program is able to increase community empowerment. Community empowerment in question is that with the FMSRB, the frequency of community social activities increases such as community participation in mutual cooperation, the frequency of holding meetings,

Keywords: Social, Flood Management, FMSRB, Conservation, Community Empowerment, Multidimensional Scaling (MDS)

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Floods are often a very crucial problem for humans all over the world from the past, present and in the future. The flood and erosion occurred in Serang Regency, Banten Province, namely in the Cidanau-Ciujung-Cidurian watershed (3C). This condition has an impact on the social conditions of society, especially endangering the agricultural sector. the Indonesian government is trying to jointly tackle flooding and erosion in the watershed (3C) through the Flood Management in Selected River Basins (FMSRB) program, which is flood management in selected watersheds. The purpose of this study was to analyze the effect of flood management in selected river basins (FMSRB) on social changes in farming communities in Serang district. The type of research used is explanatory descriptive with the analytical method used in this research is the Multidimensional Scaling (MDS). Based on the results of the research conducted, it was found that the FMSRB program had a positive effect on social change in the farming community in Serang Regency. The results of multidimensional scaling (MDS) analysis obtained an output value of -stress 0.011 which was concluded to have relatively good results. most of the respondents answered elements of community empowerment, this shows that the FMSRB Conservation program is able to increase community empowerment. Community empowerment in question is that with the FMSRB, the frequency of community social activities increases such as community participation in mutual cooperation, the frequency of deliberations,

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1.   INTRODUCTION

Indonesia is an agricultural country where the agricultural sector is one of the livelihoods of the Indonesian people. This is also supported by the geographical condition of the country which is a potential and has useful resources for the survival of the community. Agricultural development needs to be developed and improved.

The development of national development in all fields, land degradation is also growing rapidly,

which is increasingly threatening the sustainability of the agricultural system. Many dense forests were cut down and water storage lakes were stockpiled for various other purposes, resulting in a decrease in hydrological functions. Various development activities often use fertile agricultural land such as to build infrastructure, residential offices, mining and industry. Land degradation is not only in the form of soil erosion, but has penetrated into other forms such as flooding. Various efforts need to be made to overcome these problems, namely through conservation.

Conservation must be carried out to overcome land degradation which becomes the embryo of flooding. Appropriate conservation actions can maintain community welfare in a sustainable manner and have an impact on the social conditions of the community. To be able to continue to maintain prosperity and bring change to the community in a sustainable manner, it is necessary to have empowerment in the form of conservation as an effort to social change for farming communities.

Marian (2019) states that, empowerment is not just a process of changing behavior in a person, but is a process of social change, which includes

many aspects, including politics and the economy which in the long run can gradually be relied upon to create new choices to improve people's lives.

In social life, changes are often found in all aspects of life, including changes in society itself, because basically no society is static and runs by itself. There will always be social changes in society dynamically. According to Rafiq (2020) social change is a symptom of changes in societal institutions that can affect the social system, including changes in values, attitudes, and patterns of behavior between groups in that society. Alone.

The development that occurs in the agricultural sector will have an impact on social change in the farming community itself. Social change became the forerunner of modernization. Modernization in agriculture is characterized by fundamental changes in agricultural patterns, the existence of a renewable program, so that modernization in agriculture will have a positive impact on farmers, and their social welfare will increase. Increasing production in the agricultural sector requires management in the agricultural sector. The management of the agricultural sector is an approach to how

to manage agro-ecosystems to increase productivity, increase profits and improve food security while preserving and enhancing the agricultural resource base and environment.

In the process of managing the agricultural sector there are always causes that hinder agricultural production itself. One of the factors that hinder production in the agricultural sector is natural disasters that often occur such as floods which often cause damage to the agricultural sector. Floods are often a very crucial problem for humans all over the world from the past, present and in the future.

Flooding and erosion occurred in Serang Regency, Banten Province, to be precise, namely in the Cidanau-Ciujung-Cidurian (3C) watershed, where these conditions had an impact on the social conditions of the community, especially endangering the agricultural sector. This river is a river in Serang Regency, which has an important role as one of the supports, especially in the agricultural sector. There is watershed degradation caused by weak farming management and ongoing deforestation, which results in high water when it rains so that flooding occurs in the watershed (DAS).

The government continues to work to address problems in the agricultural sector as a result of erosion or flooding to jointly tackle flooding and erosion in the watershed (3C) through the Flood Management in Selected River Basins (FMSRB) program. The program is Flood Management In Selected River Basins (FMSRB), namely flood management in selected river basins. Based on the description above, the problems in this research can be identified as follows:

1. What is the social condition of the farming community affected by the conservation Flood Management in Selected River Basins (FMSRB) program in Serang District?

2. What are the efforts to develop the social conditions of farming communities in conservation areas as the target of the Flood Management in Selected River Basins (FMSRB) program?

2. METHODE

Type, Location and Time of Research

This research uses explanatory descriptive research method. According to Sugiyono (2005) states that the descriptive method is a method used to describe or analyze a research result but is not used to make broader conclusions. Explanatory research is a study with the aim of testing a theory or hypothesis, explanatory research is useful for strengthening or possibly rejecting theories or hypotheses from existing research results. Explanatory research is also called causal research.

The location taken in this study was in Serang Regency in the Cidanau-Ciujung-Cidurian watershed conservation area (3C). Location selection is determined purposively or intentionally. Antara (2009) suggests that purposive is a method of deliberately determining research locations based on certain considerations.

The location in this study was determined with the consideration that the area was an area that received the Flood Management in Selected River Basins (FMSRB) program.

Data and Research Instruments

This study uses primary data and secondary data. Primary data were obtained from respondents through questionnaires which were filled out by the respondents directly. Secondary data in this study were obtained from related agencies including the Central Bureau of Statistics of Serang Regency, the Department of Agriculture of Serang Regency. Besides that, it can also be obtained from searching the internet literature and literature related to this research.

The research instrument uses a questionnaire to be answered by respondents regarding the use of input. According to Sugiyono (2011), a research instrument is a tool used to measure observed natural and social phenomena.

Method of collecting data

This study uses several data collection methods, including:

1. In-Depth Interview

Interview is a data collection technique that is carried out by asking questions directly between the researcher and the respondent.In-depth interviews were conducted using the snowballing technique with key informants and supporting informants.

The interview technique is open and structured with questions that focus on the problem so that the data collected is quite complete and in-depth.

2. Participatory Observation

Observation or observation is carried out through the five senses, therefore observation is the ability of researchers to use direct observation through the work of the five senses.Observation is making direct observations by approaching the subjects and objects to be studied. Conducting participatory observations, researchers will be more silent, observe more by opening their eyes and ears, to examine various things related to the research theme.

3. Questionnaire

Questionnaire is a data collection technique that is carried out by giving structured questions to respondents. To make it easier to obtain information, researchers used data collection techniques in the form of questionnaires, namely asking questions to respondents to then answer. This instrument measures using the Summated Rating Method Likert scale or Likert scale.

4. Qbrowse Documentation

Documentation review is a data collection method that is carried out by seeking information through search activities and finding evidence. Documentation review is useful because it can provide a broader background on research subjects.

5. Focus Group Discussions

Data collection using focus group discussions (FGD) was complemented by an FGD guide, so that the FGD could focus on the problem under study, not spreading everywhere. The FGDs conducted can focus on the core of the problem and can be used to answer problems.

6. Library Studies

Literature study is a data collection method that is directed at finding data and information through various documents, both written documents, documents in the form of photos, drawings, and electronic documents that support the research process.

Population and Sample

Arikunto (2002) states that the population is the entire research subject. The population is a generalization area consisting of objects and subjects that have certain qualities and characteristics determined by researchers to be studied and conclusions drawn (Sugiono, 2012).

The population in this study is the farming community of Serang Regency which is in the Cidanau-Ciujung-Cidurian watershed. The FMSRB program area of Serang Regency covers 4 sub-districts, namely Padarincang District, Cinangka District, Mancak District, and Baros District. Each sample was taken from the source farmer groups, namely 22 farmer groups from Padarincang District, 21 from the Cinangka District, 2 farmer groups from Mancak District, 4 groups from Baros District.

Sugiyono (2001) suggests that the sample is part of the characteristics and the number possessed by the population. Sampling in this study was carried out by purposive sampling method, namely the sampling method with certain considerations. Margono (2004) suggests that the selection of samples using purposive sampling, is based on the characteristics or characteristics of the population that are known beforehand. This means that the sample to be taken is adjusted to certain criteria implemented based on the research objectives.

Based on calculations using the Lemeshow formula, it is known that the sample value (n) obtained is 96

respondents and rounded up to 100 respondents. The reason researchers used the Lemeshow formula is because the population studied was too large with varying amounts.

Data processing

The data that has been collected is then tabulated and analyzed using the SPSS computer program. The results of the computerized SPSS program are then entered into the Multidimensional Scaling (MDS) analysis model. Sustainability index analysis is carried out.

Multidimensional Scaling(MDS).

MDS is a procedure used to describe perceptions with stimuli that are carried out geometrically between points into dimensional space (Supranto, 2010, p.60) from the results of the mapping, the position of the perceived competition will be obtained.

The perceptual map does not clearly show the difference in location visually, so to overcome this problem you can calculate the euclidean distance for each brand. In principle, the smaller the Euclidean distance, the closer each object is, and the higher the level of competition. To calculate the Euclidean

distance, you need to know the coordinates of each object first.

Then the euclidean distance can be calculated by the formula:

$$D = \sqrt{(Xi - Xi - 1)^2} + (yi - yi - 1)^2$$

Where :

D = geometric distance (Euclidean distance)

xi = X-to-i coordinates

yi = Coordinate y-i

The two known dimensional relative weights (x and y) can be described as direction vectors for all the attributes of the products being compared in their positions. The direction of the vector for each attribute shows that it will be better or more preferred by consumers. Knowing the ranking order of the products being compared based on each attribute can be done by drawing a line perpendicular to the vector and the ranking order of the products can be sorted from the product closest to the end of the attribute vector (arrow).

RSQ in *multidimensional scaling* indicates the proportion of input data variance that can be explained by the MDS model. The higher the RSQ, the better the MDS model. According to Maholtra in Simamora's book (2010: 268), the multidimensional scaling model is acceptable if RSQ ≥ 0.6. In multidimensional scaling, the stress level indicates the proportion of the variance that is not explained by the model. Simamora's book (2005: 268-269), Maholtra formulates the most widely used formula in MDS, namely the Kruskal Type 1 formula:

$$\text{Stress} = \sqrt{\sqrt{\frac{\sum(dy - \acute{dy})^2}{\sum(dy - \acute{d})^2}}}$$

Where :

đ = average map distance

đy = Derived distance or computer-generated similarity data

dy = Distance data given by the respondent

Interpretation applies the principle "the lower the stress, the better the resulting MDS mood". Knowing the limiting indicators of stress values as quoted from Maholtra in Sinamamora's book (2010: 269), namely as follows:

Table 1. Model Feasibility Assessment Categories Based on S-Stress

Stress (Percents)	**Suitability**
20	Bad
10	Enough
5	Good
2,5	Special

| 0 | Perfect |

Source: Simamora (2010:269)

3.   RESULTS

Perceptions of Respondents Per Elements of the Social Dimension

The social dimension is divided into 11 attributes consisting of (1) community education, (2) community empowerment, (3) public health, (4) community lifestyle, (5) population density, (6) environmental awareness, (7) environmental knowledge, (8) community participation in environmental programs, (9) community participation in conservation, (10) the level of water theft, (11) health problems due to consuming water (water pollution).

Figure 1. is a portrait of the results of the social dimension survey. Based on Figure 1. it can be obtained an overview of the majority of respondents answering elements of community empowerment, this shows that the Conservation Flood Management in Selected River Basins (FMSRB) program is able to increase community empowerment. Community empowerment in question is that with the Flood Management in Selected River

Basins (FMSRB) program, the frequency of community social activities increases such as community participation in mutual cooperation, the frequency of holding meetings, the empathy of group members increases, and the solidarity among members also increases.

The level of community education is directly related to the social conditions of the people affected by the conservation FMSRB program, based on respondents' perceptions of the social dimension, the education level of the people affected by the conservation FMSRB program has increased, this shows that the conservation FMSRB program is able to change people's mindsets, where previously their mindset was still very low, with the FMSRB conservation the community's mindset is getting better such that the community is able to accept innovations or new programs that provide changes to the social conditions of the people affected by the program.

The FMSRB conservation program is able to increase environmental awareness for affected communities, the existence of a conservation FMSRB increases public knowledge about the environment such

as participating actively in environmental programs and conservation programs. This activity is carried out by each farmer group affected by the FMSRB conservation program. Environmental awareness is able to improve public health status and change the lifestyle of people affected by the FMSRB conservation program for the better, awareness of the importance of preserving the environment has a positive impact on health status and is able to change people's lifestyles. A clean living environment is able to create a sense of comfort and health for every individual who lives in it.

The level of water theft has decreased and is almost non-existent, this shows that the conservation FMSRB is able to change the behavior of people affected by the conservation FMSRB program. There are almost no health problems due to consuming water (pollution), because basically the people affected by the program do not experience health problems due to consuming water.

The element that gets the lowest rating is the element of population density, this shows that the density level of the FMSRB Conservation program in
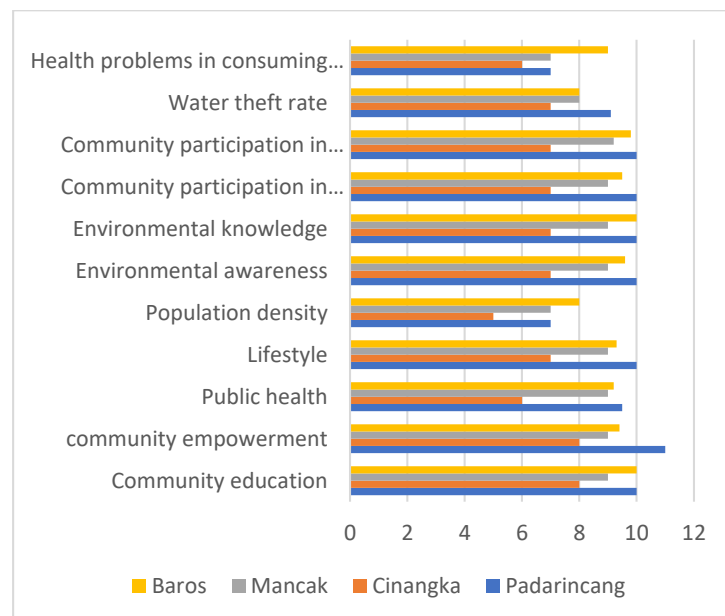
the short term has an indirect relationship.

Figure 1. Weight of respondents' answers per element of the social dimension

The attributes that have the highest influence on the social dimension sustainability index are (1) community empowerment with an average score (9.35), (2) community education with an average score (9.25), and (3) community participation in conservation program with an average score (9). This means that the Flood Management in Selected River Basins (FMSRB) program has an impact on social change in farming communities in conservation areas. These three attributes are important in determining

the sustainability of the Flood Management in Selected River Basins (FMSRB) program.

Multidimensional Scaling Analysis (MDS) Social Dimensions

Multimedial scaling(MDS) is an algorithmic technique used to find the coordinates of data points in dimensional space, where these points are based on the data proximity (proximity) of the distance between one point and another. The aim of MDS is to obtain the configuration of data points in adjacent multidimensional space (proximity) the distance of which shows similarity with the observation data.

The output results of Multidimensional Scaling Analysis with SPSS are described as follows:

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Stress and squared
correlation (RSQ) in
distances


Averaged (rms) over stimuli
Stress = 0.011 RSQ = 1.000
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Source: SPSS Output 2022

Figure 2. stressed and squared*correlation (RSQ) in distances*

Based on table 1, the output value of S-stress will be smaller if the estimated distance approaches the actual

data distance value. The S-stress value obtained is 0.011 or 11%, which means that the model has good feasibility (perfect). Thus the RSQ value is quite high, namely 1.000 (100%), where the RSQ interpretation value is the same as R-square in linear regression.
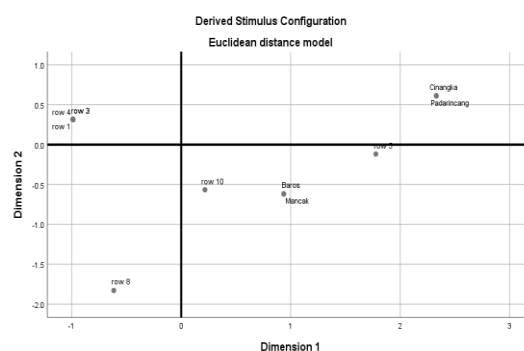
Source: SPSS Output 2022

Figure 3. Social Dimension Preceptual Mapping

The configuration map graph above contains a grouping of conservation areas. It can be seen that the Padarincang conservation area is similar to the Cinangka area because it is in the same quadrant. Likewise, the baros conservation area is similar to the mancak area because it is in the same quadrant.

Analysis from the angle of 1st dimension (X axis) and 2nd dimension (Y axis):

1) Dimension 1: in the picture it can be seen that the farther to the right, the number of dimension 1 is getting

bigger. It can be seen that the Cinangka and Padarincang conservation areas are located closest to the largest 1st dimension. Pay attention to the Baros and Mancak conservation areas, although they are not rated as the largest in dimension 1, the two areas are similar (in one quadrant). For example, dimension 1 contains attributes of empowerment and community participation in conservation programs. This means that these attributes in the Baros and Mancak regions are the most differentiating compared to the attributes in other regions.

2) Dimension 2 :In the picture it can be seen that the higher up, the bigger the 2nd dimension number. Seems likethat the Cinangka and Padarincang conservation areaslocated at the end of the 2nd dimension of the largest number. WhereasBaros and Mancak conservation areaslocated at the very bottom of this dimension.Baros conservation areahas the closest distance to the mancak and both are in one quadrant.

Social Dimension Sustainability Index Analysis

The index and sustainability status of the social dimension in conservation areas were determined based on the results of research and interviews with target farmers for the Flood Management in Selected River Basins (FMSRB) program. Attributes that have sensitivity to the status of sustainability are known by conducting analysis*Multimedial scaling*(MDS). Analysis*Multimedial scaling*(MDS)conducted to determine the attributes that are sensitive to the sustainability of the Flood Management in Selected River Basins (FMSRB) program in the conservation area of Serang Regency.

The attributes that are expected to influence the social dimension of each conservation area are community empowerment, and the level of community participation in conservation programs, this shows that the Conservation Flood Management in Selected River Basins (FMSRB) program is able to increase community empowerment. Community empowerment in question is that with the Flood Management in Selected River Basins (FMSRB) program, the

frequency of community social activities increases such as community participation in mutual cooperation, the frequency of holding meetings, the empathy of group members increases, and the solidarity among members also increases. The community also actively participates in the conservation program.
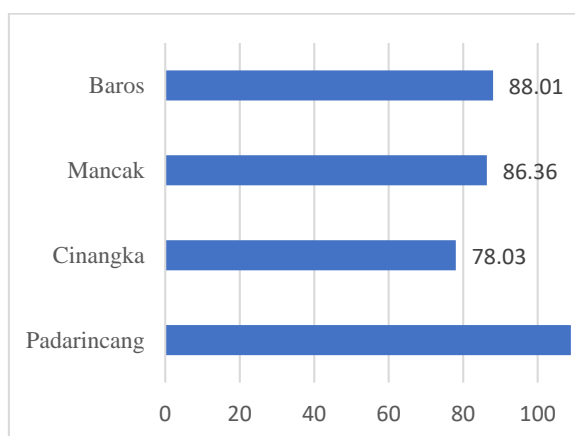
Source: Processed Data 2022

Figure 4. Social Dimension Index Value

Based on Figure 8. Social Dimension Index Value, the results illustrate that the social dimension index value in Padarincang District has the highest score, namely (108.9). This shows that the status of sustainability is on the social dimension in the DistrictPadarincang has the highest level of sustainability, and the social dimension index with the lowest index value, namely in Cinangka District with a value of (78.03). This means that the social dimension index in the sub-district has the lowest sustainability.

4.   CONCLUSION

The conclusions from the results of research on the influence of Flood Management in Selected River Basins (FMSRB) on social change in farming communities in Serang Regency are as follows:

1. The conservation Flood Management in Selected River Basins (FMSRB) program is capable of changing the social conditions of farming communities in conservation areas. Based on the results of this social analysis, it shows that the conservation Flood Management in Selected River Basins (FMSRB) program is able to increase the level of community education, community empowerment, community health, community lifestyle, environmental awareness, environmental knowledge, community participation in environmental programs, and community participation in conservation. The level of water theft has decreased and is almost non-existent, this shows that the conservation FMSRB is able to change the behavior of people affected by the

conservation FMSRB program. Health problems due to consuming water (pollution) are almost non-existent, because basically the people affected by the program do not experience health problems due to consuming water. The lowest rating element is the element of population density, this shows that the density level of the FMSRB conservation program in the short term has an indirect relationship.

2. Efforts to develop the social conditions of farming communities in conservation areas as the target of the Flood Management in Selected River Basins (FMSRB) program can be carried out by the government through the elements that have the most influence on social change in farming communities, the most influential element is community empowerment. Through empowerment, the community is able to actively participate in environmental conservation activities and participate in all development activities in order to increase the social stability of farming communities.

Based on the results of the research that has been done, the suggestions that can be given by the author are as follows:

1) The government needs to consider the policy implications for the sustainability of the Flood Management in Selected River Basins (FMSRB) program for the target areas affected by the program.

2) It is necessary to increase the activities of the Flood Management in Selected River Basins (FMSRB) program to support community self-help in processing agricultural products and support agro-tourism.

Reference

Aristanto, E. (2020). Mapping of Social, Economic and Institutional Aspects as a Supporting Capacity for the Implementation of Rehabilitation of the Ciliman Irrigation Area (DI) of Banten Province. LPPM Merdeka University Malang.

Bhinadi, A. (2017). Poverty reduction and community empowerment. Deepublish.

George, D., & Mallery, P. (2019). IBM SPSS statistics 26 step by step: A simple guide and reference. Routledge.

Haris, A. (2014). Understanding the Community Empowerment Approach. Jupiter, 13(2).

Indrawan, M., Primack, RB, & Supriatna, J. (2012). Conservation Biology: Revised Edition. Indonesian Torch Library Foundation.

Kholil, K., Dharoko, TA, & Widayati, A. (2015). Multidimensional Scaling Approach To Evaluate Sustainability of Cirata Reservoir-West Java Province. Journal of Humans and the Environment, 22(1), 22-31.

Mahida, M., & Handayani, W. (2019). Assessment of the Sustainability Status of the Trans Semarang Bus E-Ticketing Supports Smart Cities with a Multidimensional Scaling Approach. News of Transportation Research, 31(1), 15-24.

Martono, N. (2012). Sociology of social change: Classical, modern, postmodern, and postcolonial perspectives (page sample). RajaGrafindo Persada Jakarta.

Maryani, D., & Nainggolan, RRE (2019). Community empowerment. Deepublish.

Mukhtari, W. (2018). Use of Agricultural Technology and Socio-Economic Changes in Rice Farming Communities in Gampong Lam Alu Cut, Kuta Baro District, Aceh Besar District. Ar-Raniry State Islamic University Thesis. Banda Aceh.

Nurmalina, R. (2008). Sustainability of the National Rice Supply System: a rap-rice ordination technique approach with the multidimensional scaling (MDS) method. Journal of Agribusiness and Agricultural Economics, 2(2).

Putri, NE, & Yamin, M. (2018, October). Flood risk management on rice farming land. In Proceedings of the National Seminar on Wetland Environment (Vol. 3, No. 2).

Rachman, M. (2012). Conservation of cultural values and heritage. Indonesian Journal of Conservation, 1(1).

Rivani, E. (2014). Changes in the Structure of the Labor Economy

and Multidimensional Scaling Analysis (MDS) in Classifying Labor Absorption in Various Provinces. Journal of Economics & Public Policy, 5(1), 29-41.

Shrestha, BB, Okazumi, T., Miyamoto, M., Nabesaka, S., Tanaka, S., & Sugiura, A. (2014). Fundamental analysis for flood risk management in the selected river basins of Southeast Asia. Journal of Disaster Research, 9(5), 858-869.

Sudalmi, ES (2010). Sustainable agricultural development. INNOFARM: Journal of Agricultural Innovation, 9(2).

Sugiyono, Quantitative, Qualitative Research Methods, and R&D, (Bandung: Alfabeta, 2017), p. 8.

Sugiyono. (2012). Business Research Methods (Quantitative, Qualitative and R&D Approaches). Bandung: Alphabet, 58

Supranto J. 2010. Statistical Theory and Applications. Jakarta: UIPress.

Suryawati, S., & Arriyana, I. (2022). Prospects for the Sustainability of Salin Tilapia Cultivation Fishing Village in Pati Regency Based on Multidimensional Scaling Analysis. Proceedings, 11(1).

Syamsudin and Damiyanti. 2011. Language Education Research Methods, Bandung. PT. Rosdakarya youth

Upadani, IGAW (2017). A Model for Utilizing Social Capital in Empowering Rural Communities in Managing Watersheds (Das) in Bali. Wicaksana: Journal of Environment and Development, 1(1), 11-22.

Zubaedi. (2007). Alternative Development Discourse: Various Perspectives on Community Development and Empowerment. Yogyakarta: Ar Ruzz Media Group.