Global Scientific JOURNALS

GSJ: Volume 7, Issue 12, December 2019, Online: ISSN 2320-9186
www.globalscientificjournal.com

ANALYSIS OF HUMAN RESOURCES COMPETITIVENESS OF MINAPADI AQUACULTURE FISHERIES IN WEST JAVA PROVINCE

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ABSTRACT

The fisheries sector is an important sector for the people of Indonesia and can be used as a prime mover of the national economy. Minapadi cultivation is a fisheries sector with a system of rice and fish cultivation which is cultivated together in a paddy field. West Java Province as one of the biggest producing regions of Minapadi fisheries in Indonesia, and is considered as a potential area for Minapadi cultivation. The potential of human resources affects the efforts of business entities in achieving maximum mineral production. Minapadi aquaculture competitiveness can be used as a benchmark for regional development, regional mapping, and regional development planning. This study has the objective to analysis of human resources competitiveness of Minapadi aquaculture in West Java Province. The method used in this study is the litelature survey method to determine the competitiveness of minapadi cultivation in 18 regencys and nine cities in West Java Province. After all data has been processed, the data will be analyzed descriptively. The technique used to retrieve primary data in this study in the from of expert judgment. Whereas secondary data was obtained from statistical data of the Office of Maritime Affairs and Fisheries of West Java Province. The results of this study indicate that the regencys with very high competitiveness are Tasikmalaya Regency, Cianjur Regency, and Bandung Regency. While the regencys with low competitiveness are regencys / cities in the central region.

Keywords: Competitiveness, Fisheries Sector, Human Resources, Minapadi Cultivation, West Java.

INTRODUCTION

West Java Province has an area of 37.087,92 km^2 (Source: Spasial Plants of West Java Province, Geographic Information System calculation) with a coastline of 832,69 km (Source: Map of zoning plans for coastal areas and small islands of West Java Province). Based on the sea management authority of 0-12 miles, the sea area of West Java Province is 1.552.890,67 ha, and has 19 small islands (Regional Planning and Development Agency West Java 2018). West Java Province is a region that has natural conditions suitable for the development of aquaculture, especially freshwater aquaculture. This is supported by the large amount of fresh water resources in West Java because it is supported by high rainfall. Average annual rainfall is generally above 2.000 mm. The amount of rain is estimated to be 180 days / year, so that West Java has many rivers, swamp lakes, situ and other puddles (Suryana 2013).

Administratively, the area of West Java Province is divided into 27 regencys / cities, covering 18 regencys and 9 cities, namely Bogor, Sukabumi, Cianjur, Bandung, West Bandung, Garut, Tasikmalaya, Ciamis, Kuningan, Cirebon, Majalengka, Sumedang, Indramayu, Subang, Purwakarta, Karawang, Bekasi, and Pangandaran as well as the City of Bogor, Sukabumi, Bandung, Cirebon, Bekasi, Depok, Cimahi, Tasikmalaya and the City of Banjar. Sukabumi Regency is the largest regency area in West Java Province with an area of 4.145,70 Km^2 (11,72 percent of the area of West Java Province), while the smallest area is Cirebon City which is 37,36 km^2 (0,11 percent of the total area of the Province West Java). West Java Province consists of 627 regencys, 645 villages and 5.312 villages (Bappeda West Java 2018).

The fisheries sector is an important sector for the people of Indonesia and can be used as a prime mover (prime mover) of the national economy. This is based on the fact that the fisheries sector has enormous potential in terms of Indonesian waters which have an area of 5,8 million km^2. In addition, Indonesia has a coastline of 95.181 km, which is largely the basis of fisheries economic activities (Department of Maritime Affairs and Fisheries 2009). The great potential of the fisheries sector can also be seen from the volume of Indonesian fisheries production. Based on the publication of the Directorate General of Aquaculture in 2013 stated that fisheries production in Indonesia has various types of aquaculture, namely aquaculture, ponds, ponds, cages, floating nets and rice fields.

Minapadi Cultivation according to Tupan *et al*., (2013) is a system of how to care for fish on the sidelines of rice plants in the paddy fields, as a slice between two seasons of rice plants and / or rearing fish as a substitute for palawija in paddy fields. Because it can enrich the growing media with organic fertilizer and increase the production of plankton which is a source of eating fish. Even according to Montazeri (2012) Minapadi is one of agricultural land technology to improve the quality of the environment in anticipation of climate anomalies, because Minapadi is an integrated cultivation that can increase the productivity of paddy fields, namely: increasing farmers' income through increasing rice production by 10%; increased diversity of agricultural products due to fish production; increasing soil and water fertility (reducing fertilizer by 30%) can also reduce the pest of Brown Wereng on rice plants.

According to Effendi (2013), Minapadi has several advantages, namely helping to reduce pest and disease attacks, increasing the potential of paddy fields, increasing fish production by pond area and water level and increasing income due to two rice and fish businesses. According to Anwar (2012), the weakness of the minapadi system is that excessive application of pesticides to rice can also affect fish life and the ease of pests such as snakes, frogs, and birds entering the fields.

Types of fish that will be maintained to consider the factors of the fish itself and the environment in his life. According to Supriadi and Setiawan (2005) in Aryanto (2016), fish factors are related to fish quality and its

suitability with the environment, while environmental factors are related to good irrigation and fertility levels related to the existence of natural food for fish.

According to Khairuman and Amri (2002 in Aryanto 2016), several types of fish suitable to be raised in the fields include goldfish, tawes, tilapia, carp, dumbo catfish and giant prawns. According to Suharti (2003 in Hanifah 2016) revealed that goldfish and other types of carp are the best types of fish maintained in the fields, because these fish can grow well even in shallow water, and are more resistant to the sun's heat.

According to Sadili Samsudin (2010) human resources are people who design and produce goods or services, supervise quality, market products, allocate financial resources, and formulate all strategies and objectives of the organization. The potential of human resources affects the organization's efforts in achieving its goals. No matter how advanced technology, information development, availability of capital and adequate materials, if without human resources it is difficult for organizations to achieve their goals (Edy 2011).

Fisheries Household is an abbreviation of Household Fisheries. Fisheries Households are households that carry out activities of catching, cultivating fish or other aquatic animals or marine plants for the purpose of part or all of the proceeds for sale. Whereas PP is an abbreviation of Fisheries Company. Fisheries Company is a legal entity economic unit that carries out fishing, aquaculture or other aquatic animals or aquatic plants, part of the processing, with the aim of part or all of the proceeds for sale. FHs can be divided into Marine FHs and Public Water FHs which differentiate based on the location of their activities (Fachrussyah 2016).

The concept was popularized by Porter's competitiveness in the book The Competitive Advantage of Nations (Porter 2009) which examines the creation of prosperity and competitiveness in the global economy. This book has influenced supranational, national and regional policies globally. Furthermore, it is also explained the importance of the productivity of the potential of the region which is sourced from human resources, natural resources, and capital. Furthermore, Porter argues that regional potential is not an element of competitiveness, but is a resource that must be developed and produced to support two elements of competitiveness, namely macroeconomics and microeconomics (Yogi *et al*. 2018).

METHOD

This research was conducted at the Department of Maritime Affairs and Fisheries of West Java Province in May 2019 - September 2019 which aims to analyze the competitiveness profile of human resources in Minapadi aquaculture in West Java Province. The method used in this study is the litelature survey method to determine the competitiveness of minapadi cultivation in 19 regencys and eight cities in West Java Province. The data used in the form of primary data and secondary data are realized in the form of numbers and analyzed using descriptive statistics. The technique used to retrieve primary data in this study is expert judgment. Whereas secondary data was obtained from statistical data of the Office of Maritime Affairs and Fisheries of West Java Province.

DATA ANALYSIS

Data analysis was performed using qualitative descriptive analysis. The qualitative descriptive analysis in this study was intended to obtain a profile (picture) of the competitiveness of Minapadi aquaculture in the Regency / City of West Java Province.

Analysis of Minapadi cultivation competitiveness profiles in the regencies / cities of West Java Province through several stages, as follows:

1. Determine the main indicators and variables from human resources,

2. The stage of the research is to take data on aquaculture minapadi Provinsi Jawa Barat tahun 2000 sampai 2016.
3. Identify priority weights or relative importance between indicators, variables and sub-variables.
4. Taking primary data in the form of expert judgment which gives weight to the main indicators and variables. As for the experts who were respondents as many as 10 people consisting of lecturers from the Department of Social Economics of Fisheries and Marine Sciences Faculty (FMSF) Padjadjaran University and aquaculture lecturers from FMSF Padjadjaran University, Head of Aquaculture in West Java Province, Head of Production and Business Section, Head of Facilities and Infrastructure Section and Head Fish and environmental health section.
5. Calculate the weight of the results of the expert judgment of indicator, variable and sub-variable human resources.
6. Processing data that has been obtained during the study, using secondary data, namely fisheries statistics of West Java Province in 2016 to determine the competitiveness profile of each regency / city.
7. Calculate scores and values of main indicators, variables and sub-variables from secondary data and calculate values based on weights and scores obtained.

   Score $= \frac{Data\ each\ Regency/City}{Total\ Province\ Data}\ x\ 100$

   Value = Weight x score
8. Specifies criteria for the competitiveness of aquaculture minapadi all regencys / cities in West Java by using quartiles. Competitiveness profiles are divided into four categories of competitiveness based on quartiles. Q1 means to have very high competitiveness, Q2 means to have high competitiveness, Q3 means to have sufficient competitiveness, and Q4 means to have low competitiveness.

RESULTS AND DISCUSSION

The results of this study are in the form of a ranking of competitiveness between regencys / cities in West Java. This overall competitiveness ranking shows the relative position of a region to other regions by taking into account all the variables it has and how far the region can realize the potential of its variables. The competitiveness ranking of each regency can be divided into ranks based on each of the main indicators of human resources. Minapadi aquaculture competitiveness from 27 regencies / cities can be known through the quartile calculation that will be obtained the values of Q1,
Q2, Q3, and Q4. The value owned by each regency / city of West Java Province will represent a high or low level of competitiveness. Q1 is a very high competitiveness region, Q2 is a high competitiveness region, Q3 is a sufficiently competitive region, and Q4 is a low competitiveness area.

The value obtained is based on the main human resource indicators from each regency / city resulting in a final score that shows the ranking and category of competitiveness of the regency / city. Ranking of regencies / cities in West Java Province in Minapadi cultivation activities can be seen in table 1.

Table 1. Competitiveness Ranking of Minapadi Fisheries in West Java Province / Regency Based on Human Resources Indicators

Regency / City	Final Score	Ranked	Competitiveness Category
Tasikmalaya Regency	59.622	1	Very High
Cianjur Regency	18.817	2	
Bandung Regency	15.703	3	High
Ciamis Regency	4.869	4	
Majalengka Regency	0.725	5	Enough
Bogor Regency	0.126	6	
Sukabumi City	0.103	7	
Bekasi Regency	0.034	8	Low
Sukabumi Regency	0	9	
Garut Regency	0		
Kuningan Regency	0		
Cirebon Regency	0		
Sumedang Regency	0		
Indramayu Regency	0		
Subang Regency	0		
Purwakarta Regency	0		
Karawang Regency	0		
Bogor City	0		
Bandung City	0		
Cirebon City	0		
Bekasi City	0		
Depok City	0		
Cimahi City	0		
Tasikmalaya City	0		
Banjar City	0		
West Bandung Regency	0		
Pangandaran Regency	0		

(Source: Data Processing Results)

Based on the research that has been done, the final value obtained from each regency / city that illustrates the category of human resources competitiveness of Minapadi aquaculture in West Java Province can be seen in Figure 1.

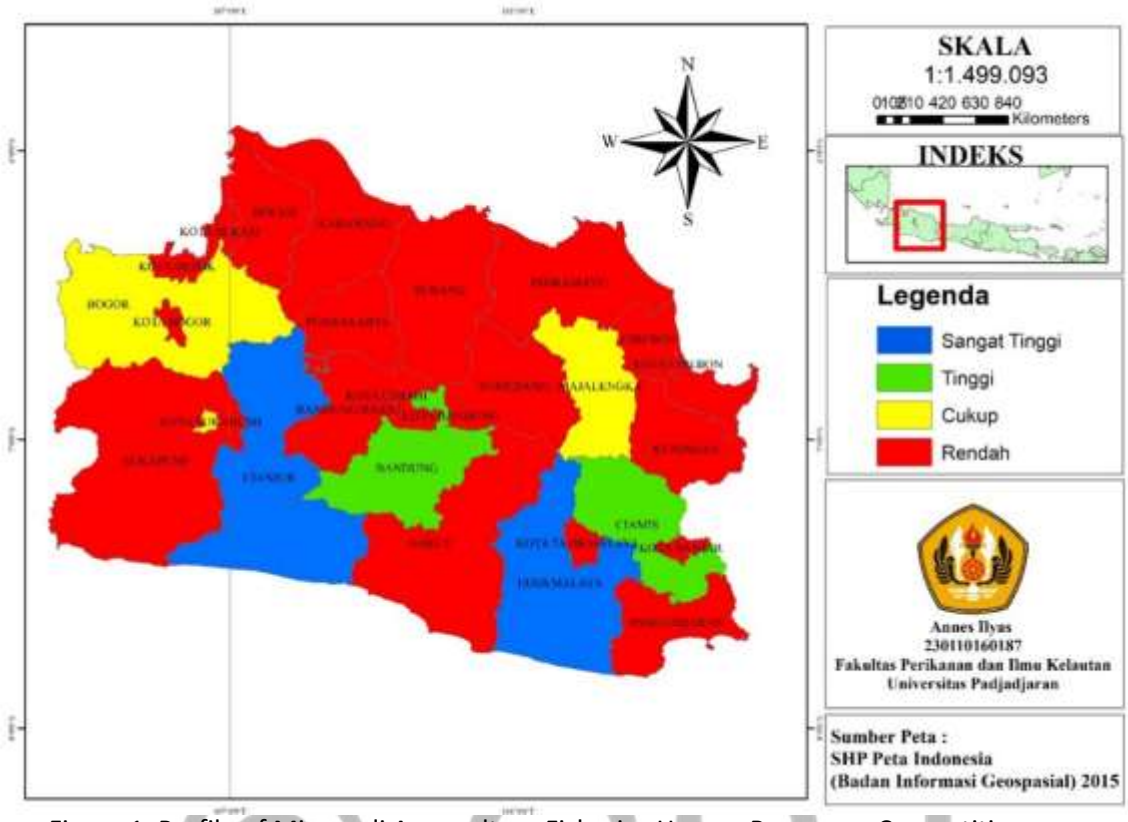

Figure 1. Profile of Minapadi Aquaculture Fisheries Human Resources Competitiveness

Table 1 and figure 1 above show that Tasikmalaya Regency is ranked 1 in the competitiveness of the province's human resources with a final value of 59,622. Tasikmalaya Regency has more Fisheries Household / Fishing Company compared to Cianjur Regency and Bandung Regency. Tasikmalaya Regency has 13.838 FHs in its own ownership category and is also dominated by 13.070 intensive FHs. The composition gives an indication that the aquaculture of Minapadi in Tasikmalaya Regency is in the category of applying modern technology. This shows that Tasikmalaya Regency is a regency that has great potential for human resources to support minapadi aquaculture activities.

According to Hermawan *et al* (2017), the characteristics of farmers are inherent traits or traits of fish farmers including demographic, social and economic levels. Limitation of fish aquaculture it self is aimed at individuals whose livelihoods are conducting fish farming business (hatchery, nursery and or enlargement of fish) and are incorporated in a business group. Tasikmalaya Regency itself as one of the centers of aquaculture in West Java has 87.532 people and 344 groups of fish farmers spread in 39 regencys. The dominant business commodity is freshwater fish which is mostly managed in a semi-intensive integrated manner in wetland (mina paddy) and calm water ponds on a small scale.

Cianjur Regency is ranked 2nd in the competitiveness of human resources with a final value of 18,82. As well as being in quartile one, which means it has a very high level of competitiveness. Cianjur Regency has 19,961 Fisheries Households in tenure ownership status. This shows that Cianjur Regency has quite high human resources and has a high interest and skills in minapadi aquaculture activities. The majority of the population of Cianjur Regency works as farmers who are very superior and have potential resources humans

in Minapadi aquaculture activities.

Bandung Regency ranks 3rd in the province's competitiveness with a final grade of 15,70. However, being in the quartile is two which means it has a high level of competitiveness. The total number of FHs owned by the Regency of Bandung is 9.152 FHs including 4.576 FHs in the simple technology category, 1.830 FHs in their own ownership status, and 2.746 in the ownership status of tenants. This shows that Bandung Regency has high land and human resources so that it supports and encourages Bandung Regency to excel and potential in minapadi aquaculture activities in West Java Province. Although, the technology used still tends to be simple.

Regencies / cities that are ranked 9th out of 27 regencys / cities in West Java Province have 19 regencys / cities. And also in quartile four, which means it has a low level of competitiveness. The majority of regencies / cities that are ranked lowest are occupied by regencies / cities located in the central region of West Java Province. According to the 2013-2018 West Java Province RPJMD, the central region is a mountainous region. Many mountain areas have hillsides that are not suitable for minapadi cultivation activities. As according to Hardjowigeno & Widiatmaka (2011) classifies land located on steep slopes (more than 15%) as land that is not suitable for cultivation (non-arable land).

The strategy to increase the production and productivity of minapadi cultivation can be seen from the existing human resources. Conduct training and training regarding Minapadi cultivation techniques in enhancing the knowledge and skills of human resources. The more extensive knowledge and skills possessed will affect performance in minapadi aquaculture and can apply intensive aquaculture techniques, so that the resulting production will increase.

The aspects technological endowment are very important in minapadi cultivation. Agricultural production cannot increase if its implementation does not master technology. The second aspect is institutional endowment. In developing the concept of agribusiness, producers or farmers should also be able to work on their own agricultural production, process the results and simultaneously market it at favorable price conditions. The third aspect is the aspect related to cultural endowment, this aspect develops dynamically. Risk and uncertainty factors, the unavailability of farmers to adopt new technologies, farmers do not want to follow agricultural development programs and so on (Atikah *et al* 2018).

Strategies that can be carried out in improving the competitiveness of Minapadi cultivation of human resources in West Java Province based on research conducted, namely:

1. Conduct training and training regarding Minapadi cultivation techniques in improving the knowledge and skills of human resources.
2. Applying the science of development and technology of mini-aquaculture in the category of intensive technology in order to increase the production and productivity of mini-rice.
3. Form a group of mini-aquaculture activities between regencies / cities so that they can share knowledge and skills.

CONCLUSION

Based on the results of research that has been carried out obtained several conclusions as follows:

1. Tasikmalaya Regency is ranked 1 in the category of competitiveness of the Minapadi aquaculture fisheries human resources in quartile one with a final value of 59.622. Has 13,838 Fisheries Household in the category of self-ownership and 13,070 intensive Fisheries Household. Cianjur Regency is ranked 2nd with a final score of 18.82, and is in quartile one. Cianjur Regency has 19,961 Fisheries Households in tenure ownership status. Bandung Regency ranks 3rd with a final grade of 15.70 and is in quartile two. The total number of FHs owned by the Regency of Bandung is 9,152 FHs including 4,576 FHs in the simple technology category,

1,830 FHs in their own ownership status, and 2,746 in the ownership status of tenants.

2. There are 19 regencys / cities in the quartile four which means they have a low level of competitiveness. The majority of regencies / cities that are ranked lowest are occupied by regencies / cities located in the central region of West Java Province.

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