KEY FACTORS ON DEVELOPMENT OF AGRICULTURAL AND FISHERY AGRO-INDUSTRY CLASSIFICATION IN MERAUKE REGENCY

R.A. Djamali
Agribusiness Management Department, Politeknik Negeri Jember, Jember, Indonesia

P. Betaubun
Civil Engineering Department, Universitas Musamus, Merauke, Indonesia

G.J. Maulany
Information System Department, Universitas Musamus, Merauke, Indonesia

ABSTRACT

Merauke Regency is one of the supply area on national food material in eastern part. To remember that the production potential of agricultural yield which most of them is still sold in the form of raw material, so it is made effort for increasing the added value and competitive advantage. Agro-industry as the industry that transforms the agricultural product into made product which is oriented on the taste and preference of consumer. The clustering of agro-industry is developed for making integration of agro-industry system which intends to increase the efficiency on integrated supply chain starting from the material procurement (production factors), production process, until product marketing. This study intends to indentify the key factors in developing the clustering of agro-industry. The methodology consists of the Participatory Perpective Analysis (PPA). Result shows that the key factors at once as the stimulator factor of growth and developing on agricultural and fishery agro-industry clustering in Merauke Regency such as transfer of skill, agro-industry, fishing ground, intensification of agriculture, and application of plantation technology.

Keywords: determination factor, clustering, agro-industry


http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=9&IType=10
1. INTRODUCTION
Merauke Regency is as the largest food barn especially rice in Papua corridor. The number area of paddy crop reaches 27,075.20 ha in 2010 and the paddy production reaches 122,959.45 ton or it is increasing as 21.55% from 2009 which only reached as 101,161 ton. Three districts as the most paddy production is Tanah Miring District (39,381.30 ton), Kurik District (35,523.75 ton), and Semangga District (26,389.65 ton).

Besides paddy production (Supriyadi et al., 2017), the other commodity in Merauke Regency which is famous enough is banana, tuber, and vegetable horticulture (Suryaningsih et al., 2018). Fishery production in 2010 was recorded as 4,975.06 ton which consists of 4,585.30 ton (92.17%) of sea fishery and 389.76 ton (7.83%) of land fishery. During 2010, fishery production reaches Rp. 132.97 milyards. In 2010, there was recorded as 20,386 fishery households. All this time, the production of food material and fishery as above is able to supply the food demand of some other regences in Papua Province such as the Regency of Bouven Digul, Asmat, Mappi, Timika, Jayapura, Wamena, and some other highland regencies (BPS Propinsi Papua, 2011).

To refer to the natural potency which is still carried out only 2.3% and the market chance is widely opened, so it stimulates Merauke Regency as the center of food barn for Papua Province (Djamali et al., 2012).

2. MATERIALS AND METHODS
2.1. Research methodology
This study uses the approach method of descriptive research and expert system. Method of data collecting is by survey (Betaubun and Betaubun, 2018), in depth interview, and focus group discussion (Utama et al., 2018). Technique of analysis uses the Participatory Prospective Analysis (PPA). This method is designed for anticipating the unstable environmental change. By the aids of stakeholder, it intends for preparing to face and design the better evolution change and using the argument as the strategic option (Bourgeois and Jesus, 2004). PPA is as the capacity building tool and information base for making decision. The key principal of PPA method is relevance, consistency, plausibility, transparency, effectiveness, participation, capacity-building, and responsibility. Figure 1 presents the key principal of PPA method.

![Figure 1 Key principal of PPA method](image-url)
3. RESULTS AND DISCUSSION
Based on the depth discussion with some academic and practice experts in Merauke Regency which there are some main ideas about the existing condition on development of agriculture and fishery in Merauke Regency as follow:

1. Development way of agriculture and fishery in Merauke Regency is constrained by there has not been set Regional Spatial Plan (RTRW) of Merauke Regency and Papua Province.
2. There is a trend of unsustainable development program on agriculture and fishery as the impact of political authority transition in Merauke Regency.
3. There is a gap between potency and production of agriculture and fishery which is produced.
4. Until now, the production of agriculture and fishery has a trend as semi-commercial or there is mainly for fulfilling the demand themselves or limited society group.
5. Application of technology in production process still has a traditional trend or still in a little scale.
6. Management level of agricultural and fishery plantation still has traditional trend.
7. Distribution of production factors and fishery production is relatively limited because the infra-structure availability of transportation facility is relatively limited.
8. The involving of local society such as Suku Marind is very little as the function in agri-business of agriculture and fishery.
9. There is no synchronization of development among sectors, region, and between central and region.
10. There is still low activity of agro-industry which processes the agricultural and fishery production.

In addition, there is formulated the key factor which stimulates the cluster form of agriculture and fishery agro-industry in Merauke Regency as follow:

1. The number area of agriculture (LLPEG) is as agriculture area which is managed bt the farmer, however, fishing ground is as watering area of fishing.
2. Agricultural intensification (IP) is as an increasing effort of intensification on using the production factors for producing the optimal production.
3. Agro-industry is as an industry system which is based on the processing harvest product of agriculture and fishery which intends to increase the value added.
4. Transfer skill is as an expert transfer process in plantation technique and processing technology of agricultural and fishery product.
5. Application of Plantation Technology (TTB) is as application level of plantation technology on agriculture and fishery intensively for increasing the productivity.
6. Food production distribution (DHP) is Distribution or sending system of agricultural product until the consumers.
7. Production factor availability (KTP) is availability level of main production factors in agricultural and fishery plantation.
8. Regional equalization (PW) is development equalization level in Merauke Regency mainly inter-district and village.
Key Factors on Development of Agricultural and Fishery Agro-Industry Classification in Merauke Regency

9. Continuity of agricultural development program (PERT) is continuity level on the implementation of development program from year to year.

10. Supporting by regional spending income budget (APBD) is how much the budget which is allocated for the development of agricultural and fishery sectors.

11. Education level (PEND) is educational level which can be reached by the society of agricultural and fishery sector.

12. The availability of facility (KSP) is the level of facility availability in developing agriculture and fishery.

13. Population density (PENDUK) is number of population in unit person per-km².

14. The main function of transmigrant society (TRANS) is contribution level of transmigrant society in carrying out the agricultural and fishery agro-business.

15. Life environmental knowledge (LH) is mastery level about management knowledge of life environment.

16. Local wisdom (ARIF) is the values and social norms which is strongly held by society in the effort of maintaining the natural resources preservation and life environment.

17. The involving of local society (MASLOK) who has active participant level of Suku Marind in developing agriculture and fishery.

18. Production level of agriculture/ fishery (TK.PRODI) is how big the production in process of agricultural and fishery product.

19. Sustainability of agricultural development (BELANJ) is showing how big the sustainability level on development program of agriculture and fishery from time to time.

20. Relationship inter-region (KETERHUB) is showing the availability level of available facility for relating inter-region.

21. The function of Government Business Entity (BUMN) is showing the involving level of active function of Government Business Entity in increasing the development program of agriculture and fishery.

22. The function of Social Business Entity (BUMS) is showing the involving level of active function of Social Business Entity in development of agriculture and fishery.

From the 22 variables as above, there is carried out the Participatory Perspective Analysis (PPA) for determining the determinant factor in clustering agricultural and fishery agro-industry. This analysis uses the software aids of PPA (Bourgeois and Jesus, 2004). However, the steps are as follow:

1. To set the whole variables in available metric to be related to the whole variables.

2. Every variable is certainly made to be able to face with every other variable in variable column that influences the row variable.

3. To give the influenced level score inter-variable with score-0 (it means there is no effect inter-variable), score-1 (it means that there is small effect inter-variable), score-2 (it means there is enough effect), and score-3 (it means there is strong effect).

Result of perspective participatory is divided into 4 quadrants as follow:

1. Quadrant-1 means the variable in this quadrant has high dependent and low influencing level to the other variable and it is categorised as output variable.
There are 5 variables in Quadrant-1 which consist of the main function of transmigrant society, life environment knowledge, local wisdom, the involving of local society, and production level of agriculture and fishery.

2. Quadrant-II means variables in there have high dependent level inter-variables and high influencing to the other variable, and there are categorised as leverage variable. In this analysis there is not found the variables which is categorised in quadrant-II

3. Quadrant-III means that the variables in there have low dependent and high influencing level to the other variables. These variables are categorised as driving variable. There are 12 variables in Quadrant-III such as skill transfer, agro-industry, number area of agriculture, agricultural intensification, plantation technology application, regional equalization, support of Regional Spending-Income Budget, continuity of agricultural development program, distribution of food product, facility availability, education level, and production factor availability.

4. Quadrant-IV means the variables in there have low dependent level and low influencing level to the other variables and these variables are categorised as marginal variable. Variables in this quadrant are as marginal variable such as population density.

As the key factor are the variables in Quadrant-III. Variables in Quadrant-III are mentioned as driving variable which means that the variable is on the position as the key factor because this variable is on the position with relatively low dependent level and high influencing level to the other variable. Table 1 presents the global influence, global dependence, global strength, and pondered global strength.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Global influence</th>
<th>Global dependence</th>
<th>Global strength</th>
<th>Pondered global strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number area of agriculture/Fishing Ground</td>
<td>35</td>
<td>-</td>
<td>0.08</td>
<td>2.50</td>
</tr>
<tr>
<td>Agriculture intensification</td>
<td>32</td>
<td>2</td>
<td>0.07</td>
<td>2.15</td>
</tr>
<tr>
<td>Agro-industry</td>
<td>40</td>
<td>4</td>
<td>0.09</td>
<td>2.58</td>
</tr>
<tr>
<td>Skill transfer</td>
<td>41</td>
<td>5</td>
<td>0.09</td>
<td>2.61</td>
</tr>
<tr>
<td>Application of plantation technology</td>
<td>32</td>
<td>10</td>
<td>0.06</td>
<td>1.74</td>
</tr>
<tr>
<td>Distribution of food product</td>
<td>27</td>
<td>9</td>
<td>0.05</td>
<td>1.44</td>
</tr>
<tr>
<td>Availability of product factor</td>
<td>17</td>
<td>9</td>
<td>0.03</td>
<td>0.79</td>
</tr>
<tr>
<td>Regional equalization</td>
<td>31</td>
<td>12</td>
<td>0.05</td>
<td>1.59</td>
</tr>
<tr>
<td>Continuity of agriculture development program</td>
<td>29</td>
<td>16</td>
<td>0.04</td>
<td>1.33</td>
</tr>
<tr>
<td>Support of Regional Spending-Income Budget</td>
<td>29</td>
<td>13</td>
<td>0.05</td>
<td>1.43</td>
</tr>
<tr>
<td>Education level</td>
<td>24</td>
<td>16</td>
<td>0.03</td>
<td>1.03</td>
</tr>
<tr>
<td>Availability of facility</td>
<td>27</td>
<td>19</td>
<td>0.04</td>
<td>1.13</td>
</tr>
<tr>
<td>Population density</td>
<td>10</td>
<td>10</td>
<td>0.01</td>
<td>0.36</td>
</tr>
<tr>
<td>Main function of transmigrant society</td>
<td>20</td>
<td>28</td>
<td>0.02</td>
<td>0.59</td>
</tr>
<tr>
<td>Life environment knowledge</td>
<td>16</td>
<td>25</td>
<td>0.01</td>
<td>0.45</td>
</tr>
<tr>
<td>Local wisdom</td>
<td>15</td>
<td>27</td>
<td>0.01</td>
<td>0.38</td>
</tr>
<tr>
<td>Involving of local society</td>
<td>11</td>
<td>38</td>
<td>0.01</td>
<td>0.18</td>
</tr>
<tr>
<td>Production level of agriculture/fishery</td>
<td>12</td>
<td>47</td>
<td>0.01</td>
<td>0.17</td>
</tr>
<tr>
<td>Sustainability of agriculture development</td>
<td>8</td>
<td>51</td>
<td>0.00</td>
<td>0.08</td>
</tr>
</tbody>
</table>

http://www.iaeme.com/IJMET/index.asp

editor@iaeme.com
Key Factors on Development of Agricultural and Fishery Agro-Industry Classification in Merauke Regency

<table>
<thead>
<tr>
<th>Relationship inter-region</th>
<th>6</th>
<th>41</th>
<th>0.00</th>
<th>0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function of Government Business Entity</td>
<td>2</td>
<td>40</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Function of Social Business Entity</td>
<td>-</td>
<td>41</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Result as in Table 1 is strengthened by 4 output global as follow:

1. Output global influence indicates that the 5 main variables that have the most influence to every other variable beginning from the strongest influence such as transfer skill, agro-industry, number area of agriculture/fishing ground, agricultural intensification, and plantation technology application.

2. Output global dependence indicates that the main 5 variables which are categorized as the lowest dependent level beginning from the lowest such as number area of agriculture/fishing ground, agricultural intensification, agro-industry, transfer skill, distribution of food production, and the availability of production factor.

3. Output global strength indicates that the main 5 variables which are categorized as low dependent level and high influencing ability level to the other variable beginning from the strongest such as transfer skill, agro-industry, number area of agriculture/fishing ground, agricultural intensification, plantation technology application.

4. Output ponderated global strength indicates that the variable that is as the strongest position is transfer skill, however, the weakest is the function of social business entity.

Variable of transfer skill is as the very strong first key position. It is very important as the learning process for the farmer and fisherman in increasing the mastery of knowledge, competency, and skill on managing productive farm. Based on the observation and the other supporting data, it indicates that program of transfer skill is still very limited due to the number, frequency, and scope of number area. The transmigrant society naturally has really been functioned in agricultural development. It can be seen as the main doer on farm which more than 95% of agricultural development is carried out by the transmigrant society. Concomitant with the period more than 25 years, the transmigrant society is become as the sample of direct learning for local society (Suku Marind) in farming and managing the agricultural products. Process of transfer skill is slowly happening, beside the effort of agricultural and fishery counseling which is carried out by the related department for accelerating the process of transfer skill and knowledge in plantation technology that the main objective is local society. However, as the moving motor of regional economy wheel in district and main village is carried out by the transmigrant society. Therefore, there is not excessive if the transmigrant society can become as the hero and mover of agricultural and fishery in Merauke Regency. To visit from the economic-social aspect, it is seen the prosperity of transmigrant society is better and more advanced than the local society. Nowadays, the local society is still difficult to make changes for their custom which is still oriented on the effort of natural product exploitation. They assume that there is not necessary to carry out the agricultural and fishery plantation because nature is naturally still able to sufficient their daily demand without carrying out the farming.

Agro-industry variable is as the second key factor in developing agricultural and fishery agro-industry because it is as the size of agricultural and fishery product from plantation product as well as natural exploitation which almost all of them is direct selling to the consumer in the natural form in markets region of Merauke Regency as well as supplying to the other regency in Papua Province. The plantation product mainly agriculture such as rice, corn, sweet potato, cassava, banana, vegetable, and some fruits horticulture, while the direct
taking product especially land fishery such as snapper fish (*kakap*), common snakehead (*gabus*), tilapia fish (*mujair*), crab (*kepiting*), etc. Caught sea fishery product which is done is only carried out by comer society mainly *Suku Bugis* such as white shrimp and snapper (*kakap*). The agricultural and fishery product is relatively very small that is treated to the variety of chips, salty fish, dried fish. The more natural potency needs to develop the agro-industry in small scale of business as well as big industry scale. The aim of agro-industry development is as follow:

1. To increase the added value of agricultural and fishery product.
2. To increase the competitive advantage of agricultural and fishery product.
3. To simulate to be produced the specific processed product of Merauke Regency.
4. To open the chance of new work field
5. To increase the society prosperity
6. To grow and develop the awareness of enterpreneur especially in young generation.
7. To move the grow of productive business unit as the regional economy mover which is able to give contribution to regional original income (PAD) and Brutto Regional Domestic Product (PDRB) in Merauke Regency.

To remember that natural potency and business development possibility based on the agriculture and fishery is very big, so the agro-industry that is necessary to be developed is as follow:

1. Agro-industry based on the agricultural product also as industry of rice milling unit (RMU), industry of snack processing, industry of bread, industry of nata de coco, industry of “tahu/tempe”, industry of tapioca, industry of mocaf, industry of corn-rice.
2. Agro-industry based on the fishery such as fish freezing, fish bloatering, fish canning, fish flouring, industry of fish crackers, fish salting, industry on variety of fish processing.

The third main variable is number area of agriculture/ fishing ground. Number area of agriculture in Merauke Regency, it is not as in the other region mainly in Java where there is number area depression as the impact of paddy field land use change to the other sector like road infra-structure development, educational building, business central, etc. In Merauke Regency, government together with manufactory carry out the program of new paddy field opening under the MIFEE program. Since 2009, there are 33 units have the operational permission of forest usage for changing into paddy field and plantation. Based on the reference of MIFEE, the investment size of Spatial Pattern has been regarded with the reference of Central and Papua Province for the first stage such as 228,022 ha on KSPP-IV, in outside of farmer development area which is the number area of existing is 40,175 ha (increasing from 38,042 ha + 2,133 ha, area opening of APBN and APBD) for supporting food cropping in 2011). Merauke Regency has the possibility to open the new paddy field regarding the reference of MIFEE development and it can reach 1.5 millions ha. It means that the potency for becoming Merauke Regency as the food barn especially rice for supplying the demand in the eastern region of Indonesia. It is depended on the sooth, willingness, and sustainability of Central Government, Papua Province Government, and Merauke Regency Government together with all of the society for successing to usher the Merauke regency as the producer of food barn and national energy.

The fourth and fifth main variable is agricultural intensification and plantation technology application. The two variables can be as a packet to increase the efficiency of every
Key Factors on Development of Agricultural and Fishery Agro-Industry Classification in Merauke Regency

production factor which is used in plantation so it is hoped to be able to increase the production of agriculture and fishery efficiently in economic and technology. Generally, the agricultural plantation which is carried out by the farmer has not still applied the technological packets which is recommended by government, because the limitation of knowledge about plantation innovation, information access, and asset access. It is happened as the accumulation of limitations which is complex enough from the farmer internal and external side. Therefore, the recommendation of government about plantation technology packets is also limited to be applied to the farmer. Concomitant with the development of telecommunication, supporting facility of agricultural and fishery activity, and development program which has been planned by Central and Merauke Regency Government, it is naccesary to increase the programs of counseling, publication through social networking, audio visual, and the other printed media for accelerating the process of innovation diffusion in managing agricultural (Pasaribu et al., 2018; Mekiuw et al., 2018) and fishery business. Programs of agricultural intensification and plantation technology application include row-cropping system application, intensification of balances fertilizer usage, control of integrated pest, the usage of superior and certified seed, the usage of harvest technology and post harvest such as fermented waste (Razif et al., 2006).

At southern Papua in WPP 718 which includes Arafura sea with the coastal length of 462 sea mil (1,191 km), number area of 7.944 sea mil (14,300 km) is as the rich area of Demersal fish resource (shrimp, red snapper, white snapper, “bawal”, “pari”, “cucut”, and the other small “pelagis” (“teri”, “tongkol”, “kembung”). The other type of fish is “kerapu”, “Napoleon”, “Lobster”, and ornamental fish. Papua has the big potency of natural resource mainly on the coastal area and sea. The resource can be seen from some available tropic ecosystem (mangrove, coral reefs, and “padang lamun”) with high variety level. In addition, Papua also has the potency of bio-fishery resource mainly in northern Papua with the potency og “Pelagis” fish and in the southern with the main commodity of shrimp. Some mine resources, mineral, and gas is also found in the coastal water of Papua sea.

The fishery activity in Merauke and Papua generally can be said as still relatively simple. Type of fishing tool which is used by the local society is still traditional such as gill net, fishing rod, the other ifishing tool like “tonda”, spear, and “kalawai” (spear with many eyes). Small ship is used by the fisherman as the transportation facility to the fishing ground with the time travel of 0.5-2 hours. Generally, the fisherman uses ship without motor such as row boat and motor boat.

The capacity of motor mechanic which is used is 15 HP, 25 HP, and 40 HP. Generally, every village has the moving mechanic of 40 pk and it is as the aids from government. However, because there is high price of BBM so the motor is seldom used. The facility of fishery in Merauke Regency such as archipelago fishery harbour (PPN) of Merauke is in the study stage and it is hoped can be immediatelt developed for servicing the fishery boats which is operated in Pasifik and Arafura sea. Therefore, the fishery boats can fullfill the operational demand as well as the other activity without having to go to the harbour in ouside Papua Province.

For the fishery field, the technology which is nccessary to be developed for stimulating the grow-develop of fishery agro-industry is to increase the capacity of motor boat, insulation technology application, and technology application of fishing tool which is bigger and selective.

Based on the descrition as above, it is hoped the five key variables such as transfer skill, agro-industry, number area of fishing ground, agricultural intensification, and plantation technology application can become as the keys factor as well as the stimulator factor of
growing-developing the agricultural and fishery agro-industry clustering in Merauke Regency.

4. CONCLUSION
The key factors as well as the stimulator factor of growing-developing the clustering of agricultural and fishery agro-industry in Merauke Regency consists of transfer skill, agro-industry, number area of agricultural/ fishing ground, agricultural intensification, and application of plantation technology.

ACKNOWLEDGEMENT
The author is very thankful to the Director of Research and Community Service, General Directorate-Higher Education of Indonesia which has funded the research of MP3EI in second year (2013).

REFERENCES