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The Management of Modern Salt Business as a Community Economic Improvement on Remote Islands in East Nusa Tenggara, Indonesia

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Abstract:

The modern salt business is an alternative to the community's economic business in remote island areas. However, this business requires large investment capital which is impossible for local people to do, so it needs support from the government and the private sector. This study aims to obtain a model of management for the modern salt business by involving local communities. The results showed that there are three scenarios of modern salt industry management models with the involvement of local communities where the two models have gone through the review, evaluation and adaptation stages so it is expected that there will be perfection in its implementation. Meanwhile, one other model has never been implemented so requires initiation from the local government and the private sector to start piloting this scenario.

Keywords: Management models, modern salt business, local community

1. Introduction

East Nusa Tenggara (NTT) is one of the provinces in Indonesia which is an archipelago province, consisting of 1,192 islands and only 432 islands that have names. Based on the classification of Schmid and Ferguson (1992), most of the NTT region is a semi-arid area characterized by a dry season that are about 9 months in a year or a rainy season of only about 3 months a year. Based on these extreme climatic conditions, farming activities can only be carried out during one season in a year, that is during the rainy season. Therefore, problems with limited income and limited food availability are happens more often in rural households on these critical areas.

From a geographical aspect, some of the islands in East Nusa Tenggara are categorized as isolated islands because during the high sea wave season there is no mobility to and from the island. Community livelihoods as subsistence farmers with food production and catch is very limited. Especially for coastal communities, they rarely have cash because there are no products that can be used as trading commodities. Therefore, the existence of a model for the development of the people's salt industry in a modern way is expected to provide income for the community so that becomes a multiplier effect on the acceleration of the economy in these remote areas.

As an archipelago province, there are rows of islands in this region so that it has a coastline of 5,700 Km (East Nusa Tenggara Statistical Bureau, 2019); which is very potential to be developed by the salt industry. So far, people's salt industry in this region has only been carried out traditionally so that production is very low. and takes quite a long time (\pm 30 days), limited production, low product quality due to high pollutant content and only 80% - 90% NaCl content so that the selling price of the product is low. On the other hand, salt that is produced in a modern way contains NaCl 95% - 97% so that it is not only for consumption needs but also suitable for industrial needs. The salt industry with geomembrane technique is one of the modern salt industries which at this time has been widely developed. The production process of salt cultivation using geomembrane techniques is faster, which is around 10-14 days with production increasing to more than 200%, and the product selling price is much higher (Effendi, Zainuri, and Hafiluddin, 2012; Iswidodo and Ciptomulyono, 2013).

The salt industry with geomembrane techniques has also been implemented in the NTT region. Because starting this business required a lot of capital, two local governments in NTT initiated the business by involving local communities. Supposedly, the semi-arid conditions in NTT would greatly support this modern salt industry to be able to produce optimally. However, in fact, not all businesses run smoothly. Some of the salt industries with geomembrane techniques have not developed well, although there are also those whose business is progressing rapidly.

Whether the implementation of the modern salt business in NTT is progressing or not, it really depends on its management. Therefore, research that aims to find a Modern Salt Industry Management Model to Improve the Economy of Remote Islands in NTT Province is very important to be implemented.

2. Materials and Methods

2.1. Study Site

This research was conducted on three islands in the NTT Province, namely on the island of Sabu in Sabu Raijua Regency, on Alor Island and on Pantar Island in Alor Regency. The three islands were selected because they meet the criteria as remote islands and there are many flat beaches that are potential for salt business. Besides that, the selected area is a critical area characterized by dry land conditions and dry climate. The location of the study area is shown in Figure 1.

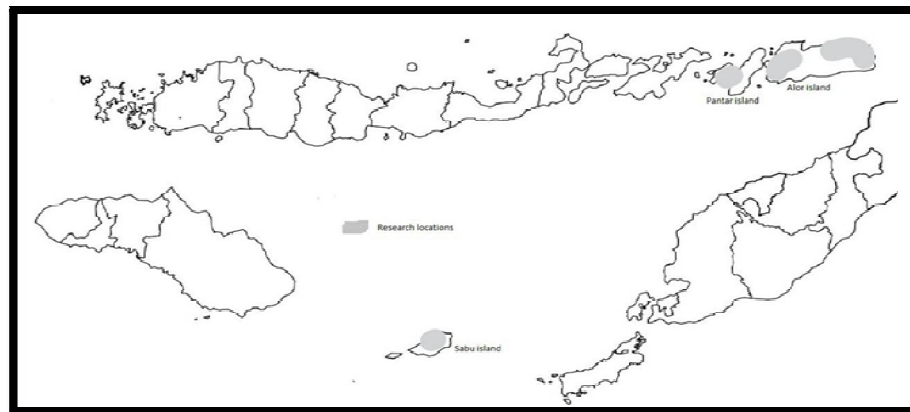


Figure 1: The Map of East Nusa Tenggara Showing Three Islands as Research Locations

2.2. Data Collection

The research has been conducted for two years, during 2018 (first year) and 2019 (second year). In the first year, the focus is on zoning activities for the development of salt industry with a geomembrane technology in the coastal areas at the research location; Assessing the performance of the traditional salt business in the conventional way and the modern (semi-conventional) method that has been implemented in the research area. In the second year, the research focuses on: examining the perceptions and roles of the community, local government, as well as state-owned enterprises in salt industry with the geomembrane technology through focus group discussions as well as socializing the potential implementation of modern salt industry.

The salt smallholder industries were selected in locations by census. Meanwhile, the samples of salt farmer group were taken deliberately by considering the diversity of production methods such as conventional salt ponds, salt ponds with a geomembrane system, and salt business through processing or cooking salt. There were 10 groups of salt farmer, and as many as 79 salt farmers were interviewed face to face, also, a number of 120 farmers and 24 local government and private officials participated in the socialization and focus group discussions.

2.3. Data Analysis

All data that had been collected were then validated and analyzed using descriptive analysis methods complemented by quantitative analysis through cross tabulation. This descriptive analysis method is carried out by applying the following procedures:

- By developing categories that are relevant to the research objectives,
- The interpretation of the results of the analysis is guided by appropriate theories.

The results of this descriptive analysis become the main database for the subsequent analysis.

Through the Participatory Rural Appraisal (PRA) approach, several alternative scenarios can be compiled through the opinions drawn from the community and stakeholders, then issue priorities are made (issues validated and prioritized) and a treasury of management options developed is developed.

Then, with the Logical Framework Analysis (LFA) approach, the geomembrane system management options selected and adopted should be selected. According to Australian Agency for International Development (2002), approach with Logical Framework Analysis through at least 4 (four) stages or flow as follows:

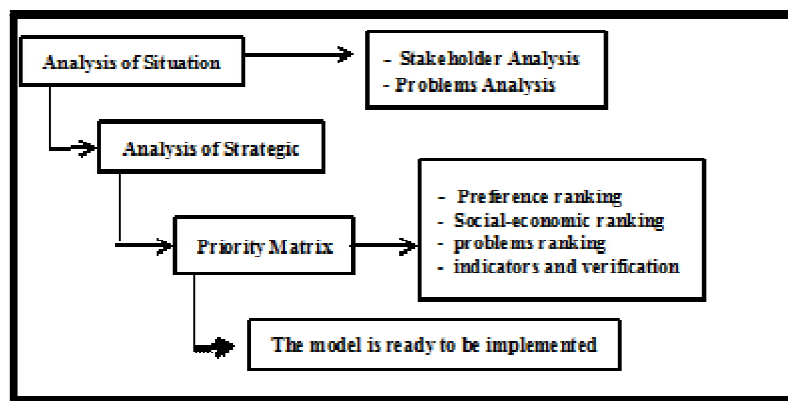


Figure 2

3. Result

3.1. Zoning of the Location for the Development of the People's Salt Industry Using Geomembrane Technology

From the bio-physical aspect of the area, the ideal location for the development of the salt industry with geomembrane technology is a sloping coastal area. At the time the field research was carried out, Sabu Raijua Regency already had 107 hectares of salt ponds with geomembrane technology and there is no conventional salt industry or all salt ponds are equipped with geomembrane.

Based on observations of land suitability, salt ponds with geomembrane technology can still be developed in several coastal areas in Sabu Raijua up to an area of 386 hectares, and the local government to reach 400 hectares until the end of 2021 (Wiendiyati, Ignatius, and Nur, 2018).

In Alor Regency, when field observations were carried out there were only 1.9 hectares of salt pond area with geomembrane technology. But, based on observations of land suitability, the potential for coastal land which can become a salt pond in Alor Regency is 710 hectares. These potential locations as reflected based on the actual conditions of a flat beach and most of the traditional salt business has been carried out by the local community. The real potential is definitely even greater considering that the district of Alor consists of a cluster of islands with a coastline about 650 square kilometers. If the assumption is that two percent of the existing coastline is managed into salt ponds, then at least this area will have around 1300 hectares of salt land (Wiendiyati, Ignatius, and Nur, 2018).

3.2. The Performance of Traditional Salt Pond Business in the Study Area

In Alor Regency some of the salt businesses are still practiced traditionally. That salt business is carried out at no cost because it is completely dependent on natural processes, by supporting of sunlight. The time it takes from draining seawater to saline plots to formation of salt crystals is about 30 days or depending on the weather. The hotter the weather, the more salt crystals are produced. When the weather is not hot enough, the salt crystals that are formed are few because sea water re-seeps into the soil or sometimes the results totally fail.

Since the process is highly depend on weather conditions, the productivity of salt produced in this way is difficult to determine. As an illustration, the salt business with an area about 27 hectares by groups of salt farmers in Mariabang, Middle Pantar District produces about 18-20 tons a year. This means that the productivity of salt is only 61.73 kg per hectare per month. If the selling price is IDR 5,000 per kg, then in one month the average income is IDR 308,650, or IDR 103,200 per member. This is a very small value, because this salt pond business is only a side business besides other agricultural business.

3.3. The Performance of Modern Salt Pond Business in the Study Area

In Sabu Raijua Regency, all salt business has implemented geomembrane technology which is managed by the local government. Initially, the salt industry with geomembrane techniques was started since 2013. The implementation of the development of salt with this pattern was started through the trial of the construction of 1 (one) hectare of salt ponds, then gradually the local government programmed the development with the financing of the Regional Budget.

With the development of salt commodities in Sabu Raijua, it has had a significant impact on the regional economy which is indicated by: (i) absorption of labor (each hectare of salt pond with 8 workers from local farmers), farmers get a monthly wage according to the Regional Minimum Wage standard); (ii) influencing regional fiscal development by reducing the portion of the consumptive budget in the regional expenditure budget as well as the existence of Regional Original Revenue from the salt business in 2014 amounting to IDR 66.7 million, in 2015 amounting to IDR 89,000,000, in 2016 amounting to IDR 1,843,173,200, and in 2017 amounting to IDR 9,495,227,355, (iii) the economic growth of salt loading and unloading activities at production sites and at sea ports which benefits workers and transport (truck) owners, and (iv) the land owners get additional income from the 5% profit sharing from the salt pond business.

Financing for the salt industry with geomembrane technology consist of investment costs and operational costs. The investment costs include building a reservoir, procuring a geomembrane, a water pump machine, a salt storage house with a size of 12 x 8 meters (200 tonnes capacity), and equipment such as shovels, tarpaulins, and others. The average investment value (in an area of one hectare) to construct a reservoir, seedling and crystal table, around IDR 520,657,000

to IDR 798,952,000. The cost of building a storage house around IDR 209,732,000 to IDR 370,000,000. The operational cost component per hectare is shown in Table 1.

The operational cost components in table 1 showed, 72.49% were costs for labor, 11.18% for packaging components, 7.88% for the fuel component, and 1.51% for the procurement of maintenance equipment and harvesting equipment components. The components of investment and operational costs illustrate that the salt business using geomembrane techniques is not a cheap, so that is impossible for small farmers to do it. These efforts need support from both the Government and the private sector.

The revenue of salt business with geomembrane technology depend on the level of production. The potential for salt production using geomembrane technology in Sabu Raijua district is around of 45 tons / ha / month. The production period in one year is generally 7 months - 8 months, thus, in one year the production per hectare of salt land with geomembrane technology is in the range of 316 tons - 360 tons. The selling price of salt in the storage house (on site) per kg in the range of IDR 1,400 to IDR 2,000; thus, when the price of salt is IDR 1,400 per kg, the income from the salt business with geomembrane technology per hectare is around IDR 441,000,000 to IDR 504,000,000. When the price of salt is IDR 2,000 / kg, the revenue will be IDR 630,000,000 to IDR 720,000,000 per hectare per year.

No.	Cost Component	Unit	Total Coat (IDR)	Note
1	Labor Costs	96 people working x 1,250,000	120,000,000	
2	Fuel oil & lubricant (diesel fuel 1400 lt, fuel 50 lt, lubricant 28 lt, grease 1 kg)	Package	11,911,600	Diesel fuel @ IDR 5,500, fuel @ IDR 6,500, lubricant @ IDR 37,300; grease @ IDR 50,000
3	Maintenance costs: <ul style="list-style-type: none"> • Pond cleaning tools • Pond maintenance: glue, board, beam, nail • Maintenance of machine tools (parts) 	Package Package Package	30,000 1,500,000 300,000	
4	Harvesting equipment (shovel, bucket, sorkot)	Package	450,000	
5	Packaging tools: (sack, size 50 kg 6,300 sheets, sack sewing thread 7 gross, tarpaulin 4 sheets).	various	16,895,000	sack@ IDR 2,500, sewing @ IDR 32,000, tarpaulin @ IDR 225,000
6	Costs for electricity and cable	Package	700,000	
Total			151,093,600	

Table 1: The Average of Operational Costs per Hectare per Year for the Salt Industry with Geomembrane Technology

In Alor Regency, the salt industry development program with geomembrane method is carried out by the Office of the Industry Service with as many as 7 ponds, each of 0.2 hectares through funding the official budget. Then the pond building was immediately handed over to the community group as an empowerment effort for the recipient group. Thus, the whole management of salt production up to the management of its products is in the hands of the group.

An overview of the income of the people's salt industry using geomembrane technology, as shown in the following table 2. According to the table, the salt business revenue by each member of the group is greater than the income of traditional salt farmers. Although the income from this geomembrane salt business is small, it is significant in contributing to family income, especially in generating cash.

Note	Value in IDR
Production per month (kg)	700 - 800
Productivity per month (ton per hectares)	3.5 - 4.0
Productivities per year (ton per hectares)	21 - 24
Revenue per group (IDR per month)	3,500,000 - 4,000,000 *)
Spending for fuel (IDR per month)	100,000
Net Benefit per group (IDR per month)	3,400,000 - 3,900,000
Net benefit per member group (IDR per month)	680,000 - 780,000

Table 2: The Income of Salt Industry Business Actors with Geomembrane on A Business Scale of 0.2 Hectares

*) At the Selling Price of Salt IDR 5000 per Kg

3.4. Public Perception of the Salt Industry Program with Geomembrane Technology

As a first step to implementing the salt industry with geomembrane technology to the community by using a combination of questionnaires, program socialization, and continued with focused group discussion (FGD). By this

discussion, it is hoped that several alternative management models for the salt industry can be socialized, public opinion and preferences can be filtered, and various priority issues can be arranged.

The community in this case is grouped into two, that are the community as planners and policy makers who have relevance to the objectives of activities and the implementer of the activity, in this case is the farmers who are taken by four farmers from each of the ten salt farmer groups in Sabu Regency and in Alor Regency. The results of the filtering of public opinion are shown in Table 3.

According to the table, almost all technical officers in the Regional Government have heard about the salt industry / business with geomembrane technology, while farmer groups in general have never heard of it, except for the farmer groups appointed to participate in the salt business program with geomembrane technology from Sabu Island and a small part from Alor Island. There is recognition from all community groups that salt business with geomembrane technology produces better output in quality and quantity, as well as faster production processes. Also, they do not know that salt is useful for the large chemical industries and for the offshore oil drilling industry.

Item	Government Official	Famer
Who Have Heard of Industry / Salt Business with Geomembrane Technology	90 %	36,5%
Who knows the flow / process of Industry / Salt Business with Geomembrane Technology.	35 %	36,5%
From what media do you know the Salt Industry / Business with Geomembrane Technology.	Central Government Television	Joining the Program from the Industry Official
Business Purpose of Salt with Geomembrane Technology	Fast and higher yield, Good Quality: Clean and not easy to liquid	Higher yield, faster processing, Clean and not easy to liquid
Do you know that our country imports salt from outside?	know	Do not know
What are the uses of salt mention	Consumption, Preservation of foodstuffs (fish, eggs, meat, vegetables), Ice making	Consumption, Food preservation, Ice making

Table 3: Public Opinion against the Salt Industry Program with Geomembrane Technology before Socialization Is Conducted

The results of the FGD also noted that there were several issues that had arisen to start a salt business with geomembrane technology, the ranking of the issues that would certainly be an obstacle when starting a business, including: (1) availability of capital; (2) market continuity of salt products; (3) the distribution pattern of group work; (4) the selling price of the product, and (5) business land competition for mangrove forests and for tourism.

3.5. Several Alternative Models of Community/ Farmer Engagement to Manage the Salt Industry with Geomembrane Technology

Several scenarios of community involvement models to manage the modern salt industry are prepared based on several issues gathered from the first-year research. These scenarios include the following three alternatives:

- *First alternative*, the local government open a geomembrane salt pond on community owned land. The alternative funding for building salt ponds can be obtained from the national/ regional revenue and expenditure budget (APBN/ APBD). First, the community prepared as workers in a working group and given the responsibility of handling the work to produce salt with geomembrane technology under the guidance and supervision of the management officer. As workers, people are given a decent wage according to the local region's minimum wage. On the other hand, the community as the owner of the land is rewarded for the results according to mutual agreement. The amount of the profit sharing is around 5 percent besides still getting wages as labor.

Every month, the performance of each working group is evaluated with the aim to correct the underperformance. After 2-3 years of implementation, the group needs to be evaluated again. For groups that succeed in maintaining continuity of production, they are entrusted with managing fully and independently. For groups who cannot maintain production continuity properly, they remain as workers, while the rights to manage and improve performance should be handled by Regional Owned Enterprises (BUMD) or Village Owned Enterprises BUMDES). Both community groups and BUMD still have the responsibility to contribute to regional development.

- *Second alternative* is the nucleus and plasma patterns. This pattern can be adopted especially if we want to develop a pond on a wider scale by cooperating with the private sector as the provider of capital and acting as the core and in charge of fostering salt farming community groups, in this case as the plasma. The core development of plasma is not only in production techniques to produce salt in quantity and quality, but also as an investor and guarantee the market for the salt produced by plasma. This scenario has never been implemented, so the government and the private sector need to initiate its implementation.

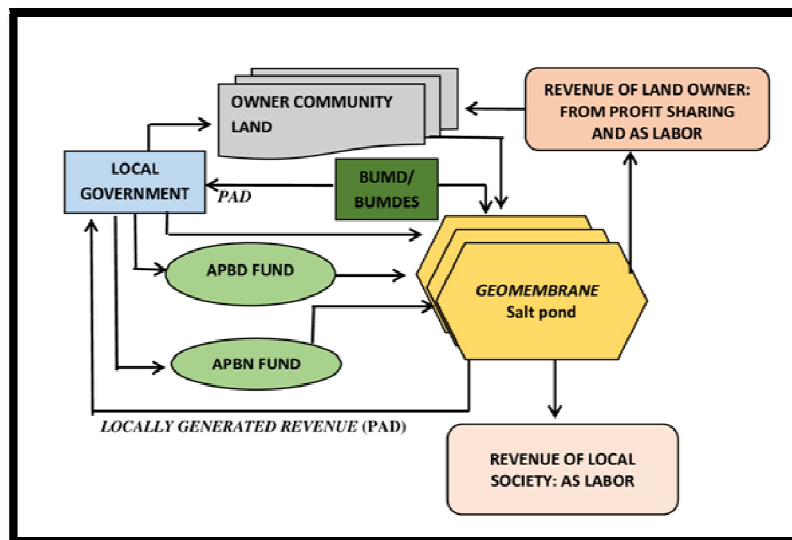


Figure 3: The Management Model of Geomembrane Salt Business (First Alternative)

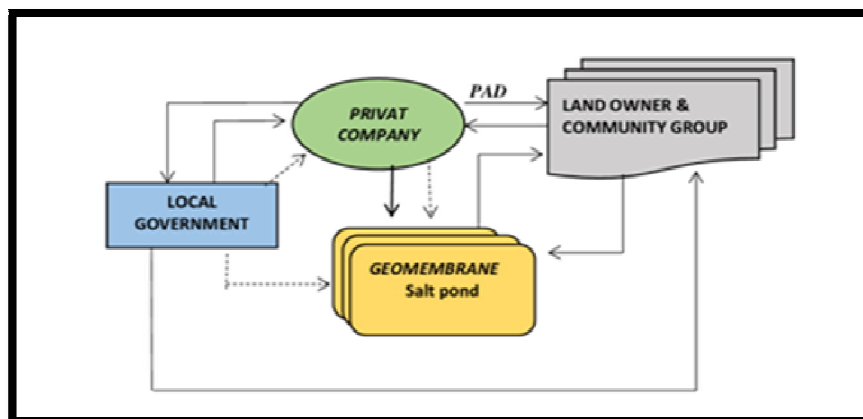


Figure 4: The Management Model of Geomembrane Salt Business (Second Alternative)

- *Third alternative*, adopting what has become a pilot project for the development of people's salt with geomembrane technology in Alor Regency, that is a mini salt pond (0.2 hectares) managed by four members. Although this management model provides less than optimal salt production, but many neighbors in the village who have land around the coast want to give up their land to be used as mini salt ponds so that in the dry season they can provide income to their families instead of having to find work in the city as laborers. as a maid or as a messenger.

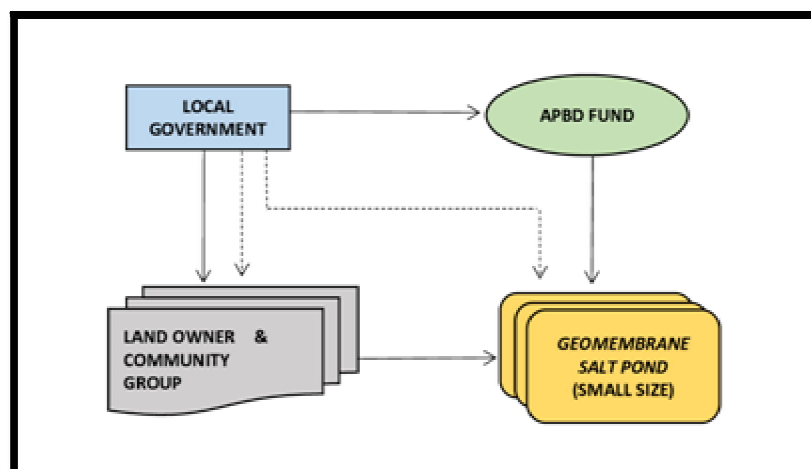


Figure 5: The Management Model of Geomembrane Salt Business (Third Alternative)

4. Discussion

Until the end of 2020, Sabu Raijua Regency targets a salt area with geomembrane technology to reach 400 hectares. If the target area is achieved with the current production pattern, salt production in this area will be 144,000 tonnes per year. Meanwhile, Alor Regency has a target area of 700 hectares. If this target is actually realized, the current

production pattern in this region will produce 147,000 tonnes of salt. Thus, the two areas which are the sample observations can produce salt production of 291,000 tons per year.

According to the East Nusa Tenggara (NTT) Industry officer (2017), the potential for salt areas in this province is 23,860 hectares spread across several districts. If the potential of this area is fulfilled by 50% only, then NTT will have a salt area of 11,930 hectares. If the management of the salt industry is carried out as implemented in the Sabu Raijua district, the NTT Province will have a salt production of 3.7 million tons or be able to contribute to the national salt demand of around 83%; and if the production process is carried out in Alor Regency, then the production will be 2.5 million tons or able to contribute to the national salt demand of around 56%.

Meanwhile, the performance of the geomembrane salt business according to the business scale shows a significant difference, that are in terms of income of business actors, productivity aspects, and business sustainability aspects. As previously explained, on a large-scale business (1 hectare) the local community works as a worker, while on a small scale (0.2 hectare) local people work as business managers. In fact, the revenue of a business as a laborer is greater than that of a business manager. As explained in traditional theory (Hayami and Kikuchi, 1981), the low acceptance from managers of a plot of land occurs due to the inability of local communities to achieve an optimum allocation of resources. Also, because of the factor of poor knowledge or experience in the line of business was one of the most important constraints faced by most agribusiness actors (Nwibo & Okorie, 2013; Kastrati, 2015; Claudio et al, 2017).

From a productivity aspect, a smaller business scale should have better productivity because on a small business scale there is no span of control constraint so that the production process runs better. In fact, the productivity of small-scale salt businesses (0.2 hectares) is only 6.67% - 17.14% of what it should be. This condition occurs because people who manage geomembrane salt have never been given training on the management and maintenance of ponds and machines. In line with the opinion of Dermibas et al, (2011), Dorow et al (2013), Kastrati, (2015), Petter & Andrade (2011), Xie & Zeng (2013) that lack of training makes lack of skilled labor and lack of managerial knowledge so that it affects the difficulties for teamwork.

From the business sustainability aspect, it shows that the small-scale geomembrane salt business managed by farmers is very vulnerable because all income from the business are distributed directly to group members without setting aside for maintenance costs or unexpected costs when there is damage to the pond or machines. Meanwhile in large-scale salt businesses, all expenditure for maintenance is always budgeted. Various opinions say that business scale has a causal relationship with business sustainability, because business scale has a correlation with the level of profitability (Scherer and Ross, 1990; Szymanski, Bharadwaji, and Varadarajan, 1993). Therefore, the relationship of size and business survival might simply be a proxy for an underlying profitability and business survival relationship. Also, three decades of research shows that larger firms and businesses tend to survive longer than smaller companies (Aldrich and Auster, 1986; Schary, 1991; Mitchell, 1994; Baum, 1996; Bercovitz & Will 2007).

Based on focus group discussions, the main issue ranking when local communities are assigned to manage geomembrane a salt pond independently is about the availability of capital and capital management. This issue arose because of limited financial resources so that local people never held extra cash. According to Bozic and Rajh (2016); Parolin et al; (2006); Claudio et al, (2017); limitation of financial resources makes them difficult to access and to effectively use financial resources, so needed support from top management, training to provide their capacity to get credit or to manage business finances.

5. Conclusion

The modern salt industry management model involving local communities on remote islands is arranged through the stages of situation analysis, strategy analysis, ranking priorities for the results of the analysis, compiling model scenarios for modern salt industry management models, evaluating and adapting to model scenarios to revise the model before it is implemented.

There are three alternative models of modern salt industry management by involving local communities on remote islands. Since starting a modern salt industry requires high investment costs, the model needs to be initiated by local governments and by the private sector. The model initiated by the private sector is the nucleus-plasma model, where the private sector is the core and the salt industry business is managed by the community as plasma. Meanwhile, the management initiated by the local government will become a model for community empowerment and / or regionally owned enterprises (BUMD) and village-owned enterprises (BUMDES).

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