Potential of salt as salt body scrubs to support salt tourism in Pamekasan, Madura Island, East Java

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Abstract. Madura Island is famous as the salt island and surrounded by Madura Strait and Java Sea has the potential for marine tourism development, one of which is a salt tourism in Pamekasan Regency. Dissemination of cosmetic salt (salt body scrub) to salt farmers in Pamekasan has been organized by Department of Marine Affairs and Fisheries of Pamekasan in 2018 so that they have the skill of local salt diversification into added value products. Diversification of salt as body care products (salt body scrub) can be packaged into an education-ecotourism package which is tourist attraction so that salt body scrubs have business potential to support salt tourism. This paper studies the use of unrefined salt as salt body scrubs and is expected to be a reference for coastal communities, especially salt farmers in Pamekasan that is to support salt tourism and increase the added value of local salt.

1. Introduction

One of the uses of non-biological fishery resources is sea water which is processed into salt. In general, salt-making activities in Indonesia are obtained from evaporation of sea water by utilizing solar evaporation which is influenced by the tropical climate [1]. The simple technology of making salt can be a job for coastal communities such as in the coastal areas of Madura Island.

Madura Island is known as the island of salt because Madura Island is one of the largest salt-producing areas, both on a regional and national scale in East Java. One of the salt-producing areas on Madura Island is Pamekasan Regency. The area of salt ponds in Pamekasan reaches 913.6 hectares. It is recorded that 15 (fifteen) coastal villages in Pamekasan Regency, Madura, East Java which have salt-producing areas. According to the Department of Marine Affairs and Fisheries of Pamekasan, that the fifteen villages spread over three subdistricts, namely Pademawu, Galis, and Tlanakan. Pademawu subdistrict has eight salt-producing villages, which include Baddurih, Pagagan, Majungan, Padelegan, Tanjung, East Pademawu, Bunder, and Dasuk villages with an area of 445.4 hectares. Galis subdistrict has a salt pond area of 458.6 hectares spread over four villages, namely Pandan, Konang, Polagan, and Lembung villages. Tlanakan subdistrict has the least amount of salt land because of the location of the salt pond, which is adjacent to Camplong subdistrict, Sampang regency, there are only three villages, namely Tlanakan village, Branta Tinggi village, and Tlesah village with a land area of 9.6 hectares.

Salt is a white solid crystal which is a collection of compounds with the largest compound is Sodium Chloride (NaCl) and impurities consisting of Calcium Sulfate (CaSO4), Magnesium Sulfate (MgSO4), Magnesium Chloride (MgCl2), etc [2]. Local salt or traditional salt is salt that has not been purified and...
has not been added with iodine, which is generally known as unrefined salt or garam krosok (local name in Indonesia especially in Java).

Unrefined salt contains more than 80% NaCl compounds and compounds CaSO₄, MgSO₄, CaCl₂, MgCl₂, and others up to 20% of the total composition. Unrefined salt still contains magnesium compounds 0.476% or 15.87 mg/g [3], such as magnesium chloride, magnesium sulphate, magnesium bromide, and other trace compounds. Magnesium compounds are categorized as impurities even though these magnesium compounds have a function for body health. So, however unrefined salt is important for the health, and it has higher levels of magnesium compared to table salt or refined salt.

Approximately 99% of the entire human body contains the mineral magnesium in the bones, muscles, and skin tissue [4]. Magnesium in the body can significantly improve blood pressure [5,6,7]. The mineral magnesium also functions as a binding agent for oxygen and hemoglobin in the blood so that the body when bathing in sea salt feels a relaxation sensation, reduces stress, and functions to reduce pain [8,9,10]. In addition to relaxation, the mineral magnesium reduces body inflammation due to several diseases, such as asthma, arthritis, and inflammation of the nerves [11,12].

Other mineral content in unrefined salt such as sodium, chlorine, calcium, potassium, iron, iodine, manganese, copper, zinc, cobalt, and fluorine have benefits as mineral hydration through the skin when the body is bathing with the soaking water of unrefined salt [9] and treat psoriasis [13]. Magnesium mineral in salt has many benefits including softens and smoothest the skin [14]. Some cosmetic ingredients for skin care and hair care use mineral salts as raw materials, including magnesium minerals such as natural deodorants [15], bath salts [16], magnesium bath salts [17], skin cream [18,19], and mineral soap [20].

The results of some study prove that magnesium and other minerals have many health benefits even though all this time they have been considered impurities in unrefined salt. Therefore, the magnesium and other mineral content in unrefined salt has the potential to be a body care product that is salt body scrubs. The diversification of unrefined salt into salt body scrubs is expected to increase the selling value of salt because the problem of salt farmers is low price of unrefined salt.

This paper aims to study the potential of the salt body scrub business to increase sale value of unrefined salt and is expected to be a reference for coastal communities, especially for salt farmers to support salt tourism in Pamekasan Regency, East Java.

2. Methods
This study was conducted using primary data and secondary data. Primary data was obtained from interactive discussions with 50 (fifty) participants while the cosmetic salt (salt body scrub) training on 3-4 December 2018 in Pamekasan Regency, Madura Island, East Java. Secondary data is a literature study that was explored from some databases literature such as Scopus, ResearchGate, Google Scholar to identify and to download the abstracts, reports, review articles, research papers, and patents related to salt production, unrefined salt, mineral salt, salt body scrub, salt tourism, and education-ecotourism.

3. Result and Discussion
3.1. Local salt in Pamekasan
Pamekasan Regency is a salt producing area and among the top ten salt centers in Indonesia. The largest salt ponds are Galis and Pademawu subdistrict [21]. Salt production business in Pamekasan is carried out by farmer groups totaling 164 groups that are 69 groups in Galis subdistrict, 72 groups in Pademawu and three groups in Tlanakan subdistrict. The results of the salt data inventory from the Madura Salt Farmers Forum stated that salt farmer groups in Pamekasan Regency per November 2019 produced 675 thousand tons of salt and were not purchased, consisting of salt geomembrane 375 thousand tons and 300 thousand tons of land table. Previously, salt was still selling well even though the price was low at IDR 300.00/kg. Furthermore, the price decreased to IDR 4,000.00 per sack with containing 60–75 kilograms of salt.
According to the Madura Salt Farmers Forum, Indonesia has excess salt stock. Imported salt in 2018 has not been fully absorbed. Only 2.2 million tons of imported salt should have been imported, but the government has issued an import permit for 3.7 million tons so that this excess stock of imported salt has an impact on local salt that is not sold [22]. Demand of salt for consumption salt (daily needs for food) and industrial salt (pharmaceuticals, cosmetics, textiles, and other industrial raw materials) always increases every year due to population increase and industrial growth. In 2019, Demand for salt reached about 4.2 million tons [23]. Although the demand for salt in 2019 increased, there was still an excess stock of imported salt in the previous year, so the impact is not absorbed local salt. Thus, government policies need to be carried out to reorganize the regulation of the salt trade system by importing salt as needed.

In addition to the revised regulation is necessary, in anticipation of a local salt is not absorbed then it should be done diversification of salt as salt body scrub for the body treatments and therapies salt. Salt processing activities can involve the processing community, especially the coastal women community in Pamekasan. To improve the quality and quantity of salt production, Department of Marine Affairs and Fisheries of Pamekasan has encouraged the use of geomembrane technology and fostering human resource development. One of the strategies to increase human resources, Department of Marine Affairs and Fisheries implemented cosmetic salt training for the salt farmers on 3-4 December 2018 in Pamekasan Regency [24]. Diversification of salt into salt body scrub is expected to be integrated with salt tourism packaged in education-ecotourism that became an attraction traveler. Salt tourism provides information on technology for making salt and diversification of salt into salt body scrub, namely tourists are directly involved in the process of making salt body scrubs.

3.2. Salt body scrubs

3.2.1. Salt body scrubs as a tourist attraction

Several countries, such as in Egypt, Hungary, Italy, Israel, Romania, and Turkey have diversified salt into SPA salt and packaged it as a salt tour package that tourists can experience relaxation directly using SPA salt [25,26] which functions as balneotherapy [27,28,29] and thalassotherapy [30].

The diversification of unrefined salt into salt body scrub is expected to be sold as the salt tour packages, thereby it can increase the price of unrefined salt. The unrefined salt processing into a salt body scrub has the potential business that has a tourist attraction. Tourists get information about the technology of salt production and salt processing for body care, namely tourists can be directly involved in the process of making salt body scrubs.

Body scrubs or lulur (local name in Java) are categorized as cosmetic preparations that are used to clean and smooth the skin and remove dead skin cells [31]. The salt can be developed into cosmetic products such as body scrubs. Salt body scrub is an environmentally friendly body scrub because most of the raw materials use natural ingredients. The raw material for salt body scrub consists of unrefined salt containing the magnesium minerals that are beneficial nourish the skin and for relaxation; sodium bicarbonate to clean and soften the skin; olive oil as an antioxidant and moisturizing the skin; and essential oils provide aromatherapy effects. The process of making a salt body scrub begins with mixing unrefined salt and sodium bicarbonate until the mixture is homogeneous then continued with the addition of olive oil and essential oil. This salt body scrub functions as an exfoliator, which removes dirt and dead skin cells. Thus, salt tourism involves tourists directly processing salt into salt body scrub and tourists can take it as souvenir. This is a fun attraction that attracts tourists.

3.2.2. Break-even point of salt body scrub as salt tourism in Pamekasan

Break-even point (BEP) of salt body scrub business should be made to strengthen opportunities for developing the salt body scrub business as salt tourism supporting in Pamekasan. BEP is used to determine the product minimum limit that must be produced so that a business can provide benefits [32]. BEP analysis provides benefits as a basis for consideration in determining the selling price and making decisions [33].
Determining BEP requires some data that are the investment costs of running a goods and services business. Investment costs consist of fixed costs and variable costs. Fixed costs are incurred costs during a fixed period of work that depends on the production capacity of goods/services and the number of working tool/machines [34]. Fixed costs include equipment depreciation costs and promotion costs. Variable costs are incurred costs when the tool/machine operates that depends on the working hours and the capacity of the goods/services produced. Variable costs include raw material costs, supporting materials, business taxes, commission/salary, and electricity/energy costs [34].

BEP of salt body scrub business packaged as salt tourism should be done to determine production capacity and total investment costs. The salt body scrub business requires investment costs, such as fixed costs, namely equipment depreciation and promotional costs. Production equipment that must be owned consist of grinder mill, measuring cup, digital scale, washbowl, measuring spoon, mattress, towel, and other tools as a medium for making salt body scrub. The initial investment to purchase the equipment is approximately IDR 3,800,000.00 and the total of equipment depreciation per month is IDR 100,000.00. Promotion is done online system, so internet quota fee is required to access Traveloka, Instagram, YouTube, TikTok, Facebook, and WhatsApp Business. Other investment costs are variable costs for purchasing main materials (Unrefined salt, sodium bicarbonate, extra virgin olive oil, and essential oil), supporting materials (packaging and plastic gloves), electricity for powdering salt, business taxes, and employee salaries with the commission system.

Data on the investment costs of the salt body scrub business were obtained when providing technical training of cosmeticsalt (salt body scrub) to the salt farmer community in Pamekasan Regency, Madura on 3-4 December 2018. From the data obtained, it can be known the BEP of salt body scrub business. Table 1 and Table 2 showed the details of fixed costs and variable costs.

**Table 1. Fixed costs of salt body scrub business.**

| Investment                          | Amount (IDR) |
|-------------------------------------|--------------|
| Equipment depreciation              | 100,000.00   |
| Internet quota (online promotion)   | 300,000.00   |
| **Total**                           | **400,000.00**|

**Table 2. Variable costs of salt body scrub business.**

| Investment                                      | Amount (IDR) |
|-------------------------------------------------|--------------|
| Main material                                   | 410,000.00   |
| Supporting material                             | 695,000.00   |
| Electrical energy                               | 25,000.00    |
| Business tax (0.5% from income per month)       | 15,000.00    |
| Salary of employee with 20% commission per tour packages (2 persons) | 1,200,000.00 |
| **Total**                                       | **2,345,000.00**|

Salt body scrubs can be sold as tour packages at a price of IDR 50,000 per package per person. Salt body scrub tours involve tourists making salt body scrubs and tourists can try salt body scrubs on the spot and take home the salt body scrubs that they have made. If every week 15 packages are sold, then per a month is expected to sell 60 packages of body scrub salt tours. Per month, the fixed costs are IDR 400,000.00, the variable costs are IDR 2,345,000,000.00, the price of the tour packages is IDR 50,000.00 per package per person and the capacity of the tour packages is 60 packages sold, then the BEP of salt body scrub can be calculated. The BEP will determine the number of tour packages or the selling price of tour packages that must be achieved so that they reach the break-even point, namely the monthly
costs incurred will be covered and get profit. The calculating BEP in units and BEP in sales use the equation (1) and (2) as follows:

\[
BEP_{\text{units}} = \frac{\text{Fixed costs}}{\text{Price of packages} - \frac{\text{Variable costs}}{\text{Capacity of productions}}} \tag{1}
\]

\[
BEP_{\text{units}} = \frac{\text{ IDR 400,000.00}}{\text{ IDR 50,000.00} - \frac{\text{ IDR 2,345,000.00}}{60}} = 37 \text{ units}
\]

\[
BEP_{\text{sales}} = \frac{\text{Fixed costs}}{1 - \frac{\text{Variable costs}}{\text{Price of package} \times \text{Capacity of productions}}} \tag{2}
\]

\[
BEP_{\text{sales}} = \frac{\text{ IDR 400,000.00}}{1 - \frac{\text{ IDR 2,345,000.00}}{\text{ IDR 50,000.00} \times 60}} = \text{ IDR 1,833,000.00}
\]

BEP shows that the salt body scrub business will break even point when selling 37 units of salt body scrub tour packages or when it reaches sales of IDR 1,833,000.00.

The salt body scrub business as a salt tourism supporting can be categorized as a business that produces goods and services because the sale is an education-ecotourism package. Salt tourism informs tourists about technology of making salt and educate tourists that unrefined salt or local salt contains magnesium and the other minerals, which is beneficial for the body, how to process unrefined salt as an environmentally friendly body care product, tourists are involved in the process of making salt body scrubs and tourists get a salt body scrub as souvenir.

In addition to the availability of investment costs, salt body scrub business can optimally support salt tourism if it involves stakeholder role [35], such as the role of business that is salt farmers cooperatives, hotel/home stay services, traveling services, tour guide services, parking service, cleaning services; the role of government, namely the Ministry of Maritime Affairs and Fisheries, the Ministry of Tourism and Creative Economy; and the role of academics University/College. The collaboration of the three roles serves as a supporting and strengthens the development of salt tourism in a concept of sustainable education-ecotourism.

4. Conclusion
Salt body scrub contains magnesium mineral derived from unrefined salt which still has natural mineral purity and is environmentally friendly exfoliator. Diversification of unrefined salt into salt body scrub can increase the added value and selling value of unrefined salt. The salt body scrub business has a tourist attraction so that it can create a creative economic business opportunity to support salt tourism in Pamekasan, Madura Island, East Java. It has BEP if salt tour packages are sold 37 units or achieve turnover IDR 1,833,000.00. To strengthen and develop salt tourism, a strategy should be carried out by intensifying the role of salt farmer cooperatives in collaboration with the role of business, the role of government and the role of academics.

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