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The Strategy for Developing Salt Commodities as a Leading Product of the Madura Coastal Area

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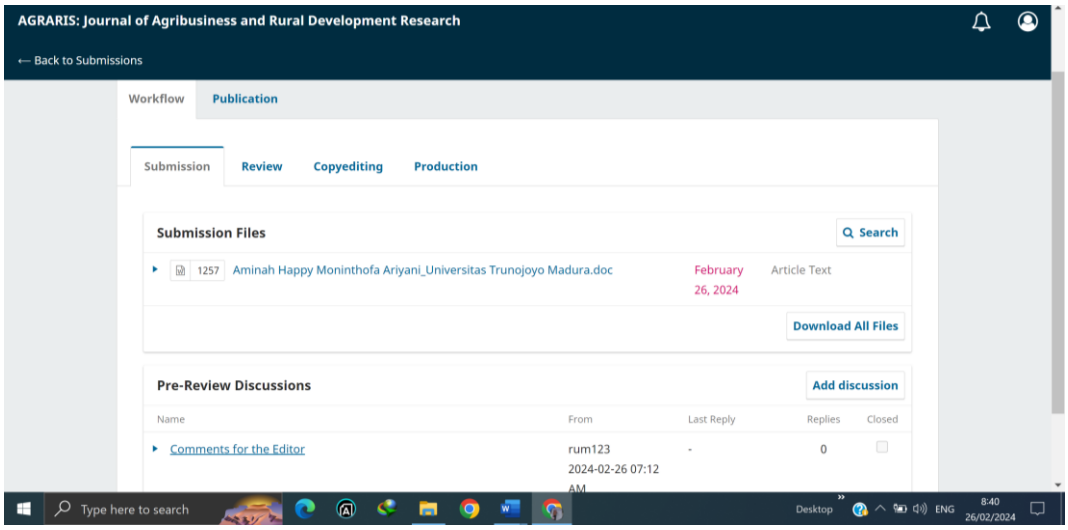

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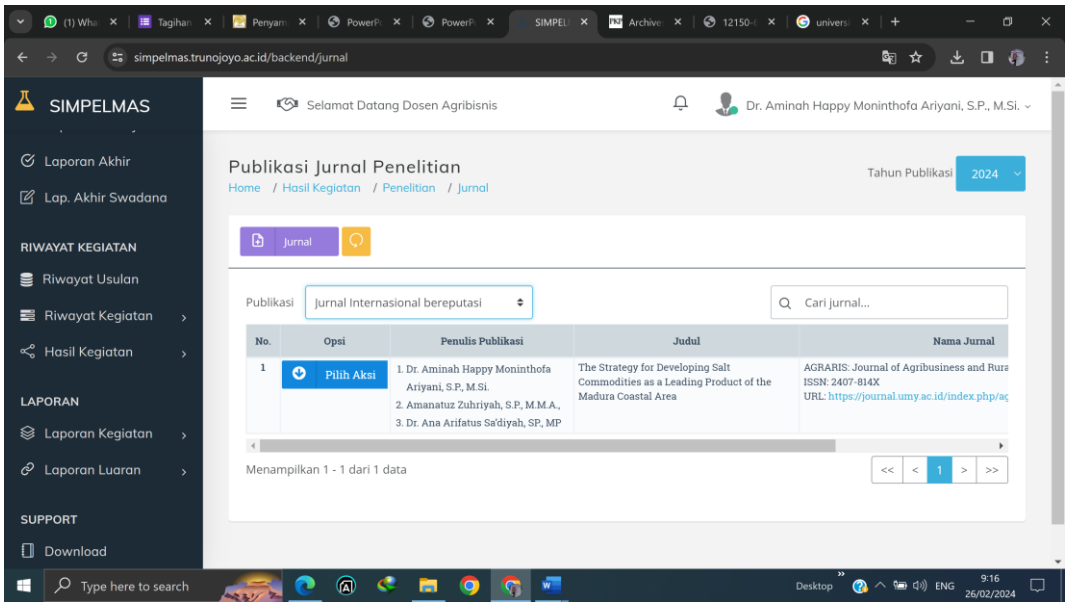

The Strategy for Developing Salt Commodities as a Leading Product of the Madura Coastal Area

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ABSTRACT

Salt is a leading commodity of the island of Madura. Several issues in salt development in Madura include the use of traditional cultivation technology resulting in low productivity and quality of salt; minimal access to capital, information, and markets; marketing inefficiencies, and a business system leading to a monopsonistic market. On the other hand, Madura has great potential to support national salt production. This research aimed to (1) determine priority criteria in determining the strategy for developing salt commodities as a leading product of the Madura coastal area, and (2) determine priority strategies for developing salt commodities as a leading product of the Madura coastal area. This research was conducted on the island of Madura, East Java, specifically in the regencies of Sampang, Pamekasan, and Sumenep. Data collection methods used questionnaires and structured interviews. The data analysis method used the Analytical Hierarchy Process (AHP). The results of the analysis show: (1) the priority criteria in formulating the strategy for developing salt commodities as a leading product of the Madura coastal area are the development of salt-based products, improvement of farmer skills, and strengthening of salt farming institutions; (2) the priority strategies for developing salt commodities as a leading product of the Madura coastal area are the improvement of salt cultivation technology, enhancement of salt quality, partnership development, empowerment of salt farmers, and development of salt education tourism.

Keywords: Salt, Madura, Analytical Hierarchy Process, strategy

INTRODUCTION

East Java Province is an area that has potential in terms of salt production in Indonesia. East Java's contribution to the national salting business is 52%, with a pond area of around 12,279 Ha. One of the salt-producing islands in East Java is Madura with a land area of 15,347 Ha.

Problems in developing the people's salt business include salt land which is increasingly limited due to the conversion of land into housing and warehousing, while national salt demand continues to increase along with population growth and industrial demand (Yogana, 2016), opening new salt land

requires high costs, Salt production still experiences inefficiency problems because the technology used is still traditional (Ariani, 2020). Apart from production factors, the problem of salt price fluctuations is also crucial (Yogana, 2016). At the time before harvest, peak harvest, and end of harvest, the price of salt always experiences price fluctuations. A salt market structure that is too monopsony also exacerbates salt price fluctuations. There is a fundamental problem faced by salt farmers, namely that salt farmers still rely heavily on middlemen in marketing (Nugroho et al, 2020). Where these middlemen act as providers of business capital and then tie them up so that they have a dominant bargaining position when buying salt products which are often lower than the market price (Nugroho et al, 2020).

Most salt farmers still live below the poverty line (Ihsannudin, 2012; Efendi et al., 2014), the education level of salt farmers is low, and their business skills are very limited. Other factors that influence the performance of salt farming businesses are capital, labor availability, institutions, and government policies (Ihsannudin et al., 2016). The problems of the salting business in Madura cannot be separated from the problems above. The decline in salt production is influenced by weather, the quality of the salt produced, production processes that are not yet optimal, production technology that is less effective, and the quality of human resources (Fauziah and Ihsannudin, 2014). From the marketing aspect, the structure of the salt market that is formed tends to be oligopoly (Nugroho et al, 2020), namely control of the market by several parties (large companies), farmers are in the position of price recipients, farmers are often disadvantaged because they get smaller margins than other marketing institutions (Fauziah and Ihsannudin, 2014). The margin received by salt factories is greater than other market players because they carry out more marketing activities and functions (Nugroho et al, 2020).

Therefore, a strategy is needed to overcome the problems that arise in salt development. A decision-making model is needed to design a decision-making strategy for developing salt commodities as a superior product for the Madura coast. Several researchers designed strategies to increase salt production and farmer income using SWOT analysis, including Suwasono et al., 2015; Sinaga et

al., 2020; Asfan and Maflahah (2020. Asfan and Maflahah (2021) used the Analytical Hierarchy Process (AHP) to determine a strategy for developing the Moringa fortified salt business in Sampang Regency, Madura. Several strategies that can be implemented include business partnerships, utilizing product innovation and support from research institutions, and producing products by market standards. Several other researchers use AHP to formulate strategies for salt development in Indonesia (Saputra, I.H., 2022; Haendra et al., 2021).

Therefore, a strategy is needed to overcome the problems that arise in salt development. A decision-making model is needed to design a decision-making strategy for developing salt commodities as a superior product for the Madura coast. Several researchers designed strategies to increase salt production and farmer income using SWOT analysis, including Suwasono et al., 2015; Sinaga et al., 2020; Asfan and Maflahah (2020. Asfan and Maflahah (2021) used the Analytical Hierarchy Process (AHP) to determine a strategy for developing the Moringa fortified salt business in Sampang Regency, Madura. Several strategies that can be implemented include business partnerships, utilizing product innovation and support from research institutions, and producing products by market standards. Several other researchers use AHP to formulate strategies for salt development in Indonesia (Saputra, I.H., 2022; Haendra et al., 2021).

Three regencies in Madura, namely Sampang, Pamekasan, and Sumenep, are areas that have superior potential for salt commodities because geographical potential and resource potential support the development of salt commodities. However, there are still several problems that hamper the productivity of salt products, so studies are needed to increase salt productivity in Madura. This is the basis for using the analytical hierarchy process (AHP) as a decision-making tool for determining strategies for developing salt commodities as a superior product for the Madura coast.

The AHP method can simplify complex problems by creating a hierarchy in the form of objectives, criteria, sub-criteria, and alternatives. Each can be compared in pairs to obtain the weight and priority that will be selected. With hierarchy, a complex problem can be arranged into a hierarchical form, so that the problem appears more systematic and structured (Darmanto E, Latifah N, and

Susanti N., 2014). This research aims to formulate a strategy for developing salt commodities as a superior product for the Madura coast.

RESEARCH METHOD

This research was conducted on the island of Madura, East Java, namely in the districts of Sampang, Panekasan, and Sumenep. The location selection was carried out deliberately (Purposive Sampling), taking into account that the three districts are salt commodity centers in Madura. Respondents consisted of 7 people consisting of farmers, traders, and experts from several agencies, namely the Maritime Affairs and Fisheries Service, the Cooperatives and Micro, Small and Medium Enterprises Service, and Universities. Data collection methods use questionnaires and structured interviews.

The data analysis method uses the analytical hierarchy process (AHP) developed by Saaty (2008). AHP is designed to determine the objectives of decision-making by involving experts who are research respondents. Decision-making aims to formulate a strategy for developing the salt commodity as a superior product for the Madura coast with several criteria, including the use of technology in the salt business, strengthening salting institutions, achieving quality standards for people's salt, developing salt-based products, and increasing farmer skills. In AHP, respondents provide an assessment of statements arranged in a pairwise comparison matrix between criteria and between alternative strategies (Raharja et al., 2018; Rum et al., 2019). Data is measured using a scale of 1-9 (Timisela et al., 2020). Scale 1 means the elements in the pairwise comparison matrix are equally important, scale 3 means slightly more important, scale 5 means more important, scale 7 means very important, and scale 9 means more important. The scale 2,4,6,8 is the middle scale (if in doubt between two adjacent values).

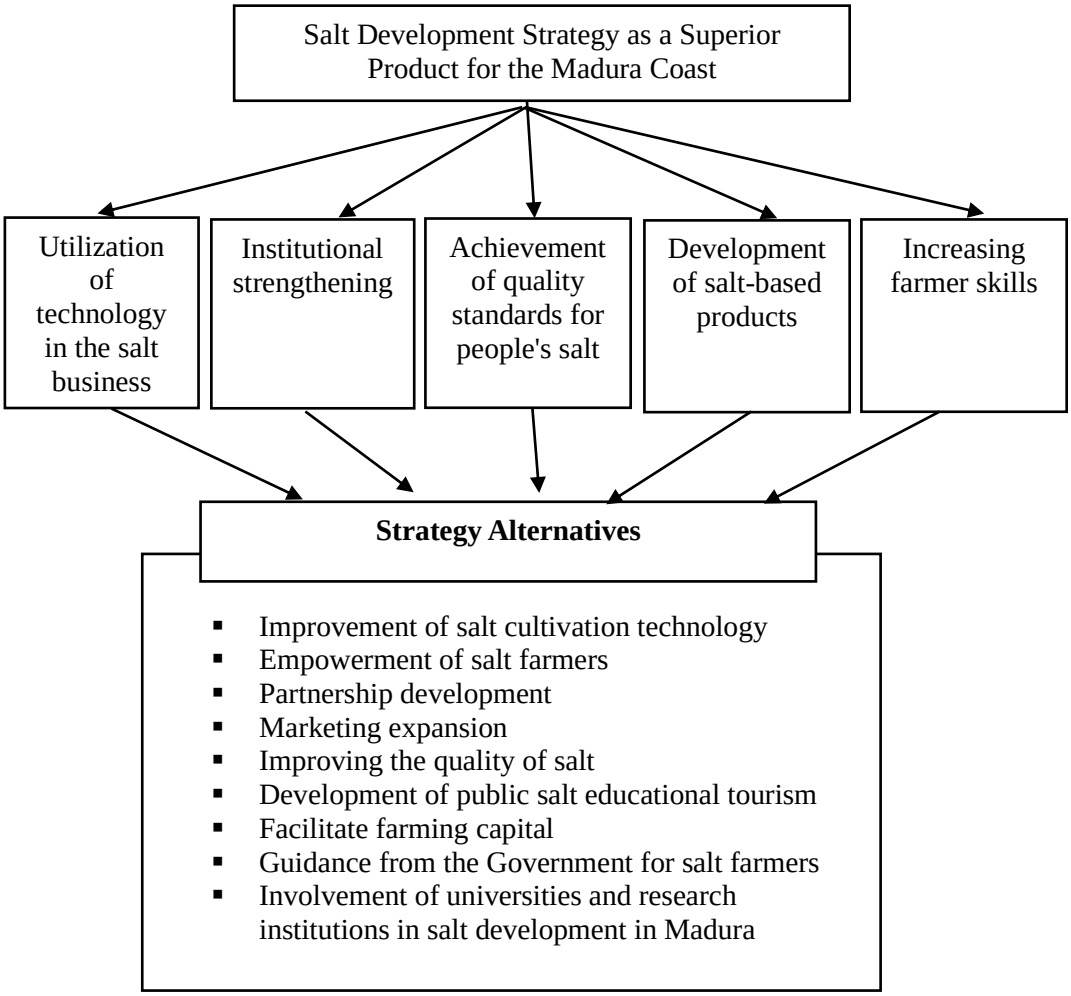

Figure 1. Hierarchical Structure For Determining Strategies For Developing Salt Commodities As A Superior Product For The Madura Coast

RESULT AND DISCUSSIONS

Criteria Evaluation Results

There are five criteria used to determine the strategy for developing the salt commodity as a superior product for the Madurese coast, namely: use of technology in the people's salt business, strengthening of salting institutions, achieving quality standards for people's salt, diversification of salt-based products, and increasing farmers' skills.

From the pairwise combinations, it appears that experts assess the criteria for developing salt-based products as the main priority that must be chosen in formulating a strategy for developing salt commodities as superior products for the Madura coast, with a priority weight value of 45.7%. Furthermore, improving farmers' skills is in second place with a priority weight of 16.3% and the criteria

for strengthening salting institutions is in third place with a priority weight of 15.4%.

TABLE 1. PRIORITY CRITERIA

Criteria	Priority Weight (%)
Utilization of technology in people's salt business	45,7
Strengthening salting institutions	16,3
Achievement of quality standards for people's salt	15,4
Development of salt-based products	13,0
Increasing farmer skills	0,9

Source: Processed Primary Data, 2021

Results of Evaluation of Alternative Strategies

The strategy chosen by experts based on the criteria for using technology in people's salt businesses is improving salt farming technology with a priority weight of 29.6%, improving salt quality with a priority weight of 21%, and developing salt educational tourism with a priority weight of 16%.

Based on the criteria for strengthening salt institutions, it appears that experts consider alternative strategies for involving universities and research institutions as the main alternative, with a priority weight of 25.4%, in second place is government guidance for salt farmers with a priority weight of 19.4%, and in second place is third is the empowerment of salt farmers with a priority weight of 19.2%. The strategy to improve salt quality is the final alternative because it has the smallest priority weight, namely 2.3%.

Based on the criteria for achieving priority salt quality standards, the strategy that received the highest ranking was improving salt technology with a priority weight of 28.3%, then improving salt quality with a priority weight of 18.1%, and developing salt tourism with a priority weight of 15.1%.

Based on the criteria for developing salt-based products, it appears that experts have considered alternative strategies for developing salt educational tourism as the main alternative, with a priority weight of 29.2%, in second place are alternative strategies for facilitating capital for salt farming with a priority weight of 20.9%, and government guidance. towards salt farmers with a priority weight of 16.8%. The strategy to improve salt quality is the final alternative because it has the smallest priority weight, namely 2.1%.

Based on the criteria for improving farmers' skills, experts assess that

government guidance for salt farmers has the highest priority weight with a value of 27.3%, involvement of universities and research institutions is the second alternative strategy with a priority weight of 24.7%, and empowerment of salt farmers is in third place. with a priority weight of 13.9%. Increasing the quality of salt received the smallest assessment and this means that increasing the quality of salt is the last alternative strategy considered by experts based on the criteria of increasing farmer skills.

TABLE 2. PRIORITY STRATEGIES FOR DEVELOPING SALT COMMODITIES AS A SUPERIOR PRODUCT FOR THE MADURA COAST BASED ON CRITERIA

Strategy Alternatives	**Criteria Weight Value**				
	Utilization of technology in the salt business people	Strengthening salting institutions	Achievement of quality standards for people's salt	Development of salt-based products	Increasing farmer skills
Improvement of salt cultivation technology	0.296	0.254	0.283	0.292	0.273
Empowering salt farmers	0.098	0.194	0.122	0.209	0.247
Partnership development	0.038	0.192	0.041	0.168	0.139
Marketing Expansion	0.032	0.108	0.054	0.124	0.106
Improved salt quality	0.21	0.101	0.181	0.062	0.086
Development of educational tourism for people's salt	0.16	0.058	0.151	0.057	0.059
Facilitate farming capital	0.022	0.044	0.024	0.042	0.04
Guidance from the Government for salt farmers	0.081	0.025	0.074	0.023	0.025
Involvement of Universities and Research Institutions	0.062	0.023	0.069	0.021	0.024

Source: Processed Primary Data, 2021

The results of the evaluation of alternative strategies for developing salt commodities as superior products for the Madura coast based on a combination of

the five criteria used in the AHP are presented in Figure 2.

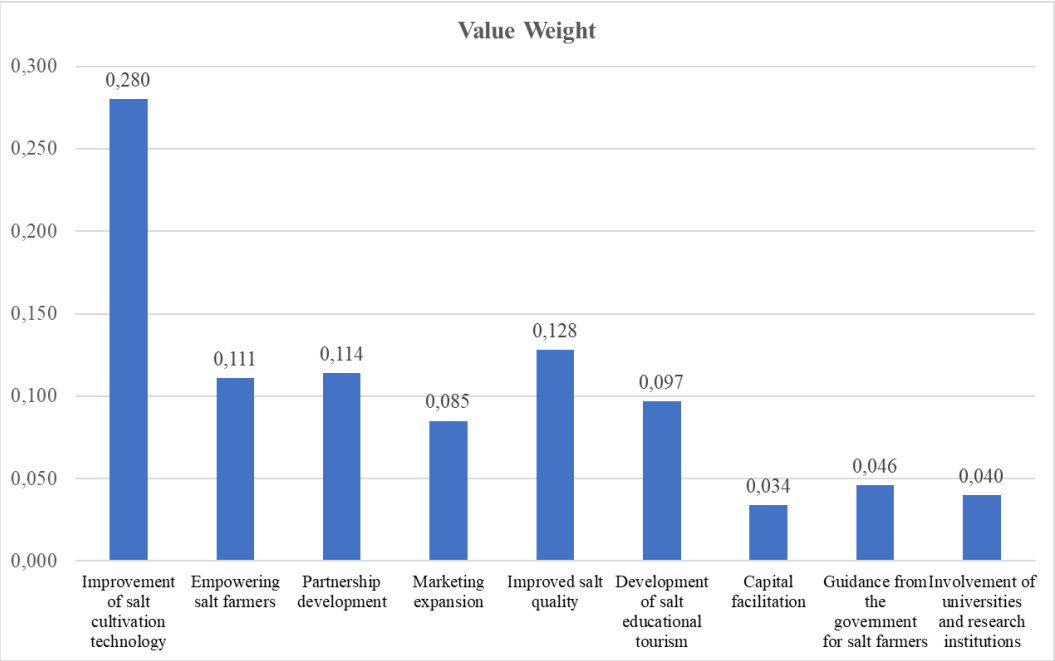

Figure 2. Alternative Strategies For Developing Salt Commodities As A Superior Product For The Madura Coast Based On A Combination Of Criteria

Five strategies for developing the salt commodity as a superior product for the Madura coast based on a combination of the five criteria in sequence are improving salt cultivation technology with a priority weight value of 28%, improving salt quality with a priority weight value of 12.8%, developing partnerships with a priority weight value of 11 .4%, empowering salt farmers with a priority weight value of 11.1%, and developing salt educational tourism with a priority weight value of 9.7%.

Improving salt cultivation technology was the priority strategy chosen by respondents. One of the technologies recommended for increasing salt production in Madura is geomembrane technology (Ariani et al., 2020). Geoisolator technology is a development of traditional Maduris technology, namely using geomembrane/geoisolator media on a salt crystallization table. Initially, geomembrane technology was only used by PT. Garam, but because the production and quality of the salt produced are better than traditional maduris technology, in the end, many salt farmers are implementing this geomembrane technology. Geomembrane technology can accelerate salt crystallization which

can increase the quality and quantity of salt produced (Ruslan et al, 2020; Herlina and Rum, 2022). The advantages of geomembrane technology include that the salt produced is whiter and has a higher selling value compared to non-geomembrane, but the weakness is that the salt tastes slightly bitter (Rosida and Santoso, 2020).

Another technology in salt farming in Madura is Screw Filter Technology (TUF). Currently, there are not many reps in Madura, but there is one salt business group, namely Kukar Matahari in East Pademawu Village, Pademawu District, Pamekasan Regency which is implementing TUF with an area of 5 hectares. TUF is a salt production technology in the form of pond plots arranged in winding threads so that the process of evaporation of seawater by sunlight and wind takes longer so that the process of obtaining old water is faster (Salsabiela and Prayitno, 2022). The application of TUF and geomembrane technology (TUFG) can increase salt production both in quantity and quality. The research results of Salsabiela and Prayitno (2022) show that the application of TUFG increases production by 151.8% compared to traditional technology, where TUFG produces productivity of 140 tons/ha while traditional technology is 92.23 tons/ha. Besides that, the selling price of TUFG salt is relatively higher than traditional technology. In this way, improving salt cultivation technology will be able to increase the income of salt farmers.

Improving salt quality is the second priority strategy chosen by respondents. Increasing the quality of salt can be achieved by implementing good and appropriate salt cultivation technology. Salt quality is influenced by raw material sources, production processes, refining technology, contamination, and implementation of a quality management system. One indicator of salt quality is the NaCl content. The NaCl content is influenced by how concentrated the seawater is to be processed into salt, the production process, and the crystallization site (Hoiriyah, 2019). The application of geomembrane and TUF technology is an alternative to improving the quality of salt in Madura (Ariani et al., 2020). Apart from that, support for research and development of new technology in salt cultivation and salt processing, which can increase efficiency and product quality, is very necessary for the development of salt in Madura.

Partnership development is the third alternative strategy chosen by

respondents. According to respondents, partnerships can be established in the form of collaboration between stakeholders, for example, local governments, industry and the private sector, universities, exporters, and NGOs. The local government can support the development of salt commodities as a superior product for the Madura coast through access to natural resources, infrastructure assistance, and regulatory support. The involvement of research institutions and universities in partnerships can help in developing technology, improving production processes, and implementing sustainable practices. The involvement of industry and the private sector can help in creating added value for salt products, such as consumer salt. The involvement of the private sector can increase investment, technology transfer, and wider market access. The existence of exporters can expand the marketing reach of Madurese salt to the global market. The involvement of NGOs can guarantee the achievement of the concept of sustainable salt commodity development, while still paying attention to the preservation of the environment, culture, and local Madurese communities, as well as paying attention to social aspects. Regional governments must formulate policies that support sustainable salt business management, including salt land management, to ensure long-term production sustainability.

Partnerships in the salt business have been established in Sampang Regency, Madura (Irawati and Sudarsono, 2014). The partnership approach includes: linking all sectors with the principle of mutual benefit, optimizing strategic partnerships between stakeholders to support the PUGAR program, and progressive policies in the form of revitalization, intensification, and extensification of salt fields. As an empowerment effort for salt farmers, PT. Garam also has partnerships with salt farmers in the Madura region. Apart from farmers, partnerships are also carried out between cooperatives and PT. Garam. Partnership terms determined by PT. Garam for individuals includes: having production land with property rights, lease rights, or profit-sharing status; having a KTP and NPWP, and having a bank account. The partnership conditions determined by PT. Garam for cooperatives includes: having a minimum salt stock of 50 tons, having a KTP and NPWP, having a bank account, having a checking account, and having a valid certificate of establishment of the cooperative

(https://www.ptgaram.com/kemitraan).

Partnerships and beautification policies have a positive and significant influence on the competitiveness of salt business sales in East Nusa Tenggara (Nailiu et al., 2023). The competitiveness of salt products in Kupang Regency has a significant effect on farmer performance. The better the quality of the salt produced, the higher the selling price of the salt product, so the agricultural income obtained by salt farmers will also be higher. The results of this research are also in line with Manaf's (2019) findings that salt competitiveness can improve the performance of salt farmers. Apart from that, partnerships in the salt business can increase the bargaining value of farmers, so that farmers' bargaining position regarding prices is stronger (Dianing et al., 2019). This is different from the research results of Fatmawati and Kurdi (2020) which stated that the partnership between the People's Salt Business Group (KUGAR) in Sumenep and the salt cooperative was not effective so a partnership intermediary needed to be implemented. The partnership will be effective if there are three parties involved, namely KUGAR as the salt producer, the cooperative as the intermediary, and the wholesaler as the marketing and management institution (Nida, 2013). The effectiveness of partnerships in the salt business in Sumenep can be increased by increasing the role of cooperatives, such as facilitating working capital for KUGAR and improving the internal management of cooperative administrators (Fatmawati and Kurdi, 2020)

Empowering salt farmers is the fourth alternative strategy chosen by respondents. Empowerment of salt farmers has been carried out by the regional government through the People's Salt Business Empowerment (PUGAR) program. Various policies have been implemented by the regional government to develop salt commodities in Madura, including the Empowerment of People's Salt Businesses (PUGAR) through the PNPM Independent Maritime and Fisheries program, increasing the capacity of salt farmers through cooperatives (Izzati and Permana, 2011; Rintiyani et al., 2022). PUGAR has the objectives of (1) establishing salt business centers at people's salting locations; (2). Improving the abilities and skills of smallholder salt farmers who are members of the smallholder salt business group; (3) increasing access to smallholder salt farmers

in terms of business capital; and (4). increasing access to smallholder salt farmers in terms of marketing, information, science, and technology. The existence of cooperatives is expected to help smallholder salt farmers in terms of capital, facilitate market access, and increase farmers' bargaining power in negotiations with buyers (Rizal et al., 2023). The development of institutional capacity within the PUGAR organization needs to be increased by integrating the roles of the People's Salt Business Group (KUGAR), Salt Cooperatives, and BumDes (Rintiyani et al., 2022).

The Sampang Regency Regional Government issued a policy aimed at protecting salt farmers, namely Regional Regulation Number 1 of 2016 (Fauzin, 2019). Apart from regional governments, there are also several policies implemented by the central government to provide social protection for salt farmers.

Developing salt educational tourism is the fifth alternative strategy chosen by respondents. In Bunder village, Pademawu District, Pamekasan Regency, there is salt education tourism which aims to provide added value, original village income, and a multiplier effect to the surrounding community (Susandini and Islam, 2022). The attractions in salt education include the technical processing and use of people's salt (Efendy, 2012; Siswanto & Nugraha, 2016). Apart from that, visitors can also enjoy the beauty of the mangrove forest with a small boat provided by the manager. To attract more visitors, rehabilitation of salt tourism is needed, such as play areas for children, selfies, and gazebos (Hidayah et al., 2023). Four districts in Madura have the potential to develop salt tourism (Nugroho et al., 2020). The development of educational salt tourism requires support from local governments in the form of providing supporting infrastructure such as roads, accommodation, and worship facilities around tourist attractions (Yuliati & Suwandono, 2016).

CONCLUSION

The criteria for developing salt-based products is the main priority that must be chosen in formulating a strategy for developing salt commodities as a superior product for the Madura coast, followed by improving farmers' skills in

second place and strengthening salt institutions in third place. The five priority strategies for developing salt commodities as a superior product for the Madurese coast are, in sequence, improving salt cultivation technology, increasing salt quality, developing partnerships, activating farmer groups, and developing salt educational tourism.

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