

Ima Fine (Integrated Mangrove, Modern City and Fish Culture Zone) in Coastal Areas

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ABSTRACT

As a maritime country, quite a few Indonesian citizens live in coastal areas. The aim of this research is to describe the latest and innovative model for developing human resources in coastal areas, along with the stages of implementation. This research uses a descriptive modeling method that combines two techniques, namely Literature Review and Training Need Analysis. IMA FINE (Integrated Mangrove, Modern City and Fish Cultural Zone) is a human resource development model which aims to combine three components in the form of a mangrove conservation area (Mangrove Zone), a modern city in a coastal area that is environmentally friendly (Modern City), and a fisheries cultivation (Fish Cultural Zone). There are eight stages to realizing IMA FINE, namely surveys, social approaches, making and drafting regional regulations, establishing technical implementers, counseling, regional mapping, implementation monitoring and implementation evaluation. The main implementer of this model is the Matalima Group (City, Environment and Mangrove Community) which is integrated with the local government. Through IMA FINE, coastal communities can optimize existing natural resources without damaging the environment. Apart from that, IMA FINE can pave the way for developing the quality of human resources in coastal areas in the future.

Article History

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INTRODUCTION

Indonesia is a country that is called the largest maritime and archipelagic state in the world, consisting of 17,508 islands and having a coastline of 81,000 km. (Kadarisman, 2017). According to Qadrini (2022), mangrove forests are a typical ecosystem in coastal areas and are influenced by sea tides. For coastal communities in particular, mangrove forests, whether they realize it or not, have a very strategic function ecologically, socially and economically in their lives. However, along with increasing community activities in coastal areas and high demand, mangrove forests are experiencing pressure that can threaten their existence and function (Onyena *et al*, 2020). This condition can ultimately be detrimental to humans and nature because it is associated with reduced ecological, economic and other functions, as research conducted by Chen *et al* (2021) and Wu *et al* (2022).

Today, coastal areas can be developed as modern cities and productive aquaculture centers. According to Suprpto *et al* (2022), this development can be carried out by considering the impact on the environment and society. Several factors that must be considered in developing coastal areas are maintaining water quality, pollution

control, waste management, natural resource management, and adequate infrastructure development. Apart from that, developing fisheries cultivation in coastal areas also requires careful planning and appropriate technology, so that it can increase fisheries productivity and improve the welfare of local communities. Referring to Lachininskii *et al* (2019); Day *et al* (2021) and Bulakh (2022), coastal areas can become productive and sustainable modern cities, as well as become centers of information, technology and culture that provide benefits to the community and the surrounding environment with proper planning and development.

However, on the other hand, the development of human resources (HR) is very important in the development of coastal areas. Coastal areas generally have different characteristics from other regions, such as high dependence on the fisheries and tourism sectors, as well as relatively low levels of community education (Satria, 2015). So in order to improve the quality of human resources in coastal areas, sustainable efforts are needed, such as increasing access and quality of education, training and skills development, as well as providing decent employment opportunities through human resource development models (Amanah and Farmayanti, 2014). Rusyidi (2018) emphasized that a model is needed that can increase public awareness about the importance of protecting the environment and the sustainability of natural resources. Top of Form

Based on this background, researchers are interested in examining human resource development models in coastal areas. Therefore, the aim of this research is to describe the latest and innovative model for developing human resources in coastal areas, along with the stages of its implementation.

LITERATURE REVIEW

Mangroves

In general, mangroves are vegetation that successfully grows and reproduces in an environment between land and sea water (Rahim, Baderan, 2017:1; Martuti *et al.*, 2019:1; & Douglas, 2020). Mangrove plants live in habitats that are quite extreme for most of the flora on earth. Mukherjee (2014), Hakim *et al.* (2017) and Douglas (2020) explain that we can find the distribution of mangrove habitats in 123 countries, including Indonesia, which have tropical and sub-tropical climates, especially in countries with a latitude range of 25° N and 25° S latitude (Martuti *et al.*, 2019:1). Mangrove habitat in the world is limited by air temperatures of less than 23°C (Djamaluddin, 2018:2). This confirms that the mangrove habitat is at a fairly cool temperature.

According to Douglas (2020), mangrove plant types are divided into 2 large groups, namely western group mangroves and eastern group mangroves, and this opinion is also confirmed by Noor *et al.* (2006:9) and Djamaluddin (2018:13) who say so. The western group of mangrove types are spread from West Africa, South America, Atlantic, Caribbean, Florida, Central America, North Pacific and South America (Djamaluddin, 2018:2).

Table 1. Several Families and Species of Western and Eastern Groups of Mangroves

| Western Group Mangroves | | Eastern Group Mangroves | |
|-------------------------|--------------------------------|-------------------------|----------------------------------|
| Family | Species | Family | Species |
| Avicenniaceae | <i>Avicennia bicolor</i> | Acanthaceae | <i>Acanthus ebracteatus</i> |
| | <i>Avicennia germinans</i> | | <i>Acanthus ilicifolius</i> |
| | <i>Avicennia schaueriana</i> | Arecaceae | <i>Nypa fruticans</i> |
| Bignoniaceae | <i>Tabebuia palustris</i> | Avicenniaceae | <i>Avicennia alba</i> |
| Caesalpiniaceae | <i>Mora oleifera</i> | | <i>Avicennia integra</i> |
| Combretaceae | <i>Conocarpus erectus</i> | | <i>Avicennia marina</i> |
| | <i>Laguncularia racemosa</i> | Bignoniaceae | <i>Avicennia officinalis</i> |
| Pellicieraceae | <i>Pelliciera rhizophorae</i> | | <i>Avicennia rumphiana</i> |
| Preridaceae | <i>Acrostichum aureum</i> | | <i>Dolichandrone spathacea</i> |
| Rhizophoraceae | <i>Rhizophora mangle</i> | Bombacaceae | <i>Campostemon philippinense</i> |
| | <i>Rhizophora racemosa</i> | | <i>Campostemon schultzei</i> |
| | <i>Rhizophora x harrisonii</i> | | <i>Acrostichum aureum</i> |
| | | Pteridaceae | <i>Acrostichum daneifolium</i> |
| | | | <i>Acrostichum speciosum</i> |

Source: Noor *et al.* (2006:10-11) & Spalding *et al.* (2010:2)

Fish Cultural Zone

Intyas and Abidin (2018); Wang *et al* (2020) define aquaculture as a real activity to produce and produce various types of fish that consumers need on a certain scale, which is carried out in an area within a certain time unit. Fishery cultivation includes the activities of stocking, maintaining, raising, harvesting, and distributing fishery products to the market and accepted by consumers.

Aquaculture areas are special areas for fish cultivation. In the aquaculture area, it consists of various activity processes which include seven stages, namely preparing the land, adding lime, fertilizing the soil, managing water, sowing seeds, maintaining and harvesting (Wibowo *et al*, 2015; Mustajib, Elfitasari & Chilmawati, 2018). Traditional cultivation systems are characterized by the dominant use of natural food in the form of phytoplankton (Asbar, Fattah, & Djamal, 2015). Water changes in aquaculture areas are characterized by the ebb and flow of sea water and the use of water wheels to supply oxygen for fish or shrimp (Njiru *et al*, 2019).

Modern City

Modern city is a city that has experienced development and progress in various aspects such as technology, infrastructure and culture, as defined by Ballon and Jackson (2007); Friedrichs (2014). Modern cities have characteristics such as tall buildings, modern transportation, developed communication networks, advanced technology, and various adequate public facilities (Farelnik *et al*, 2016). Apart from that, modern cities also have a lifestyle that tends to be urban and cosmopolitan, with a variety of entertainment, food and shopping options that can meet the needs and desires of its residents. Modern city governments usually also strive to maintain cleanliness, safety and environmental sustainability around the city (Beal and Fox, 2009).

Human Resources Management

Human resource management is very important because it covers all activity management processes from planning, implementation, to control evaluation. Human resource management is related to the planning process to evaluating activities in the

organization (Gesi, Laan, & Lamaya, 2018), strategic human resource planning (Purba, 2018), to auditing human resources in organizational management (Hudin, Mutiara, Ramdhani, & Saputra, 2021). In fact, human resource management is a key factor in the successful management of organizations, companies, movements and communities as stated by Sundiman (2017); Iskandar (2018) and Kareem (2019). The urgency of human resource management as a branch of science is able to integrate human resource management, food needs, and the use of technology and information. Thus producing strong quality human resources (Zaini, 2016; Krismiyati, 2017; Astuti, 2018), the need for sustainable food to meet basic human needs (Rini and Amaliyah, 2019), as well as the use of IT (Information & Technology) that can answer challenges dynamics of the times in order to fulfill human needs (Setiadi, 2016; Karina & Tjou, 2018).

RESEARCH METHOD

This research uses a descriptive modeling method that combines two techniques, namely Literature Review and Training Need Analysis (Normadhi *et al*, 2019). The descriptive modeling method is a method used to describe a model or system in descriptive form. This method is often used in research that aims to gain a better understanding of a complex model or system without recommendations and forecasting (Triwdiastuti, 2016; Fatmasari and Sauda, 2020).

In the descriptive modeling method, researchers collect data and information about the model or system being studied. Then, the data and information are processed and interpreted descriptively to produce a clearer and more detailed picture of the model or system being studied (Manurian *et al*, 2020). The method used in this research combines two techniques, namely Literature Review and Training Need Analysis. The Literature Review method aims to describe the human resource development model. descriptively which focuses on literature studies of needs, quality and processes, so as to increase the profitability of human resources in producing human resource management models (Ripanti, 2020). Literature Review on human resources is used to check the quality of human resources and, as research conducted by Fransiscus *et al* (2014); Halisa (2020).

In identifying the components needed for human resource development, a Training Needs Analysis is required. Ajrina & Yuningsih (2016) stated that Training Need Analysis is an effort to design components and stages in a human resource development model, the abilities (skills) most needed in management, as well as increasing individual capabilities in management. This is because Training Need Analysis has the advantage of being the best method for improving human resource skills (Ningtyas & Sutrisno, 2020), where the stages are collecting needs, analyzing needs, and comparing priority and non-priority needs in order to be able to answer them. specific individual development materials (Bansal & Tripathi (2017).

RESULT AND DISCUSSION

IMA FINE

IMA FINE (Integrated Mangrove, Modern City and Fish Cultural Zone) is a human resource development model that aims to combine three components, namely a mangrove conservation area called the Mangrove Zone, Modern City is a modern city in a coastal area that is environmentally friendly, and a cultivation area fishery called the

Fish Cultural Zone. Based on this model, human resource development in coastal areas is involved in realizing the following three components:

(1) *Mangrove Zone* is a mangrove conservation area in coastal areas. In this component, existing human resource management is empowered to maintain and preserve mangrove ecosystems in coastal areas. Karang Taruna Desa in villages in coastal areas is given training and assistance in planting mangroves, repairing and rehabilitating damaged mangroves, as well as communication skills training so they can work together with various parties, namely stakeholders and the private sector who care about environmental sustainability. On the other hand, existing human resources are empowered to realize the Mangrove Zone as a mangrove conservation area. The planned mangrove zone area is 30% of the beach area of a coastal village. The use of the figure 30% refers to the indicator that the coastal environment is said to be healthy if the area of mangrove land is 30% of the beach area. (2) Modern City is a modern city located in a coastal area which is projected as a center for technological, infrastructure and cultural development and progress. In this component, human resource management is empowered to be able to utilize natural resources in coastal areas by means of training and assistance on how to manage tourism, the use of information technology in collaboration with Artificial Intelligence, as well as the development of cultural and local wisdom promotion applications connected to Google Play. In this way, the indicators of a modern city, namely economic progress with an environmental perspective, can be realized, according to research. (3) Fish Cultural Zone is a fisheries cultivation area in coastal areas adjacent to mangrove conservation and modern cities. In this component, human resource management is empowered to be able to realize fish commodity production activities that have economic value. However, fish that are still fry size will be given the opportunity to breed to maturity, so that fisheries production remains sustainable. The areas planned as Fish Cultural Zones are river estuaries and coastal waters.

In the IMA FINE model, the Fish Cultural Zone and Modern City function as economic areas, while the Mangrove Zone functions as an ecological area. Based on the explanation above, IMA FINE is in line with Burhanuddin's (2016) statement; Rustiadi (2018) states that for sustainable development and to ensure environmental sustainability and human welfare, integration of economic and ecological areas is needed. So human resource management must be directed towards sustainable development, both from an economic perspective and environmental sustainability, as stated by Pongtuluran (2015) and Rahadian (2016).

Stages in Implementing the Human Resources Development Model

The following are the stages in implementing IMA FINE, namely:

(1) Survey of coastal areas that can be used as objects for implementing IMA FINE. The first step in implementing IMA FINE is to survey coastal areas that are suitable to be used as locations for implementing IMA FINE. The survey criteria for determining suitable coastal villages are seen from various fields, namely socio-cultural, economic, security, as well as coastal environmental conditions such as coastal topography and river estuary areas. The survey is an important first step so that you don't make a mistake in choosing a coastal village that will be used as the location for implementing IMA FINE.

(2) Social approach to communities in coastal areas. After carrying out a survey, determine a coastal area that is suitable for implementing IMA FINE. The social approach to society aims to open good relations and good communication bridges. Social approaches that need to be taken include friendships with stakeholders in coastal areas, village youth organizations, community leaders, as well as dialogue with the public. This social approach needs to be taken to obtain support in implementing the model.

(3) Making and Preparing Regional Regulations on IMA FINE. The Regional Head as the initiator in realizing the IMA FINE model together with the community is preparing to make this regional regulation as the legal basis for implementing the IMA FINE model by referring to Law Number 23 of 2014 concerning Regional Government.

(4) Establishment of IMA FINE Technical Implementer. In its implementation, the highest person responsible for the realization of the IMA FINE model is the Regional Head as the highest leader in the region.

Meanwhile, the person responsible for technical work in the field is coordinated by a group called the Matalima Group (Community for the Love of Cities, the Environment and Mangroves) which was formed by implementing regulations under regional regulations regarding IMA FINE. The Matalima group is divided into 3 divisions, namely the Mangrove Zone division, the Modern City division, and the Fish Cultural Zone division, where the main tasks and functions are further regulated by implementing regulations. (5) IMA FINE Counseling. The next step is outreach activities on the IMA FINE concept to coastal communities who are the object of implementing IMA FINE. This activity is an official introduction to the IMA FINE concept to the public, with the hope of gaining wider sympathy and support after the social approach stage. At this stage, socialization is within the scope of responsibility of the Matalima Group (Community for the Love of Cities, Environment and Mangroves). (6) Mapping of the Mangrove Zone, Modern City and Fish Cultural Zone projection areas. This activity is very crucial because it is the initial determination of the three regional components that will be integrated and realized through human resource development. This activity will involve cross-sector stakeholders from the National Land Agency, Ministry of Maritime Affairs and Fisheries, Ministry of the Environment, and Regional Government. The implementer of this area mapping is the Matalima Group, which was previously formed by the authorities. (7) Monitoring the Implementation of IMA FINE. Monitoring is the process of collecting and analyzing data periodically to monitor the implementation of the IMA FINE model. This is done to ensure that the realization of the model does not deviate from the established plan. Then (8) Evaluation of IMA FINE Implementation. Evaluation is a systematic process for evaluating the results of implementing the IMA FINE model after completion or in the final stages. The aim is to assess the effectiveness, efficiency and impact of implementing IMA FINE. Evaluation can provide valuable information about the successes and shortcomings of IMA FINE which can continue to be developed in the future.

Based on the explanation above, the stages of the human resource development model fulfill the principles of regional development management, namely survey, planning, implementation, monitoring and evaluation (Kato *et al*, 2021).

CONCLUSION

IMA FINE (Integrated Mangrove, Modern City, and Fish Cultural Zone) is a human resource development model that is able to integrate mangrove conservation areas, modern cities, and fisheries cultivation. This human resource development model is one of the breakthroughs and innovations in how mangrove conservation, modern cities, and fisheries cultivation can be integrated through 8 stages, namely surveys, social approaches, making and drafting regional regulations, establishing technical implementers, counseling, regional mapping, monitoring implementation, as well as implementation evaluation. On the other hand, IMA FINE can pave the way for developing the quality of human resources in coastal areas in the future as well as further research on the factors that influence the development of coastal areas.

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