Impact Analysis of Plastic Waste for Social Economic of Coastal Communities in the Lantebung Mangrove Tourism

Yusuf M*, Husain FP, Riana AD, Malik and Emakarim LR

Cokroaminoto University, Indonesia

*Corresponding author: Muhammad Yusuf, Cokroaminoto University, Indonesia, Email: yusufhalim2014@gmail.com

Abstract

Mangrove ecosystems provide a variety of ecological and economic functions, such as environmental services as ecotourism areas. This research aims to; 1) Know the factors that affect plastic waste to the socio-economic life of coastal communities in the Lantebung mangrove area, and 2) Know the impact of plastic waste on the socio-economic life of coastal communities in the Lantebung mangrove area. This research was conducted in the Lantebung mangrove ecotourism area, Bira Village, Tamalanrea Subdistrict, Makassar City, South Sulawesi Province. The study time was conducted for 3 months, namely May to July 2021. The type of data in the study is primary data. Primary data obtained is the results of interviews from respondents with a number of questions and statements that have been arranged in a structured manner. The data collection method carried out is a survey method with a structured interview technique. The data analysis method used in this study is an inferential statistical method with the SEM approach. Research results obtained; 1) Factors that affect plastic waste significantly in the ecotourism area in Lantebung are the volume factor of waste, while the factors that affect socio-economic community are health factors, 2) Plastic waste has a significant effect on socio-economic community, with the direction of the relationship is negative (-0.240), which means the higher plastic waste, the impact on public health decreases (worse).

Keywords: Volume; Plastic; Health; Mangrove; Lantebung

Abbreviation

SEM: Structural Modeling Equation.

Introduction

Indonesia is an archipelagic country, consisting of about 17,504 islands with a coastline length of approximately 95,181 km [1]. Coastal areas have huge potential for biological and non-biological resources. Biological resources are in the form of fishery products, mangrove forests, coral reefs, and others, while non-biological resources are in the form of mining and petroleum products as well as environmental services that are very important for people's lives and basic capital for national development [2]. These resources, in addition to having physical potential, also have high biodiversity potential.

Biodiversity is characterized by the many species found, such as; mangrove diversity in coastal areas, including; mangrove species (rhizopora), api-api (avicenia), prepat (sonerratia) and nipah species (nypa).

The diversity of these types forms and arranges formations in a coastal area. Ecologically, the mangrove ecosystem provides various ecological functions and

economic functions, such as environmental services as an ecotourism area [3]. According to Utina R, et al. [4] mangroves are the main ecosystem that supports important life in coastal and ocean areas, which in addition to having an ecological function as a nutrient provider for aquatic biota, spawning and nurturing grounds for various kinds of biota, abrasion resistance, hurricane and tsunami protection, waste absorption, seawater intrusion prevention, and so on, also has an economic function, such as livelihoods, and ecotourism areas.

Ecotourism is a typical tourism activity, where only activities that contain "eco" elements can be grouped into ecotourism, namely; paying attention to ecological, economic and community perception aspects, even in particular, ecotourism activities must involve educational elements [5,6].

Meanwhile, according to Yoeti OA [7], ecotourism is a type of tourism that is environmentally friendly with the activity of seeing, witnessing, learning, admiring nature, flora and fauna, local ethnic socio-culture and tourists who do it participate in fostering the preservation of the surrounding natural environment by involving local residents. Furthermore, John F [8] said that basically ecotourism in its implementation is carried out with simplicity, maintaining the authenticity of nature and the environment, maintaining the authenticity of art and culture, customs, living habits, creating tranquility, silence, maintaining flora and fauna, and preserving the environment so that a balance is created between human life and the surrounding nature. The concept of natural tourism is based on the scenery and natural uniqueness of ecosystem characteristics, cultural arts and characteristics as the basic strength possessed by each location [9].

In addition to the benefits obtained from the mangrove ecosystem as an ecotourism area, there is also an impact in the form of a large amount of plastic waste produced by visitors or tourists. The waste includes: mineral water bottles, cracker packaging, biscuit packaging, glass drinking water packaging, bread wrapping packaging and cracker bags Deayu [10]. The impact of the large amount of waste produced causes the emergence or occurrence of socio-economic impacts on the community around the mangrove ecotourism area, for example; the impact of declining health, the impact of declining income, reducing the type of livelihood and decreasing levies due to fewer visitors or tourists [11-13]. Plastic waste pollution can have an impact on marine ecology and mangroves, because plastic waste is the main factor that causes damage to mangrove vegetation, namely disturbances to air aeration in the mangrove root system [14]. Apart from ecological impacts, marine debris has an impact on the community's economy [15].

Because it can reduce the aesthetic value of the mangrove ecosystem, resulting in a decrease in the attraction of tourists to visit mangrove tourist attractions so that the levy is reduced due to the decrease in visitors (BPLHD DKI Jakarta Province, 2006 in Waryono [16]).

For this reason, it is very important to conduct this research to determine the influence of plastic waste on the socio-economy of the community in the Lantebung mangrove ecotourism area.

Research Methods

Time and Place: This research was carried out in the Lantebung mangrove ecotourism area, Bira Village, Tamalanrea District, Makassar City, South Sulawesi Province. The location was chosen, considering that the Lantebung area is one of the areas for the development of mangrove ecotourism in Makassar City. The research was conducted for 3 months, namely from May to July 2021.

Types and sources of research data: The type of data in the study is primary data. The primary data obtained is the results of interviews from respondents with a number of questions and statements that have been structured and prepared. According to Yusuf M, et al. [17], primary data is data obtained or collected by researchers directly or for the first time. Primary data is generally obtained directly from the research object, such as data from measurements, observations or interviews with respondents. Meanwhile, according to Yusuf M, et al. [17] that primary data is data obtained from the first source, either from individuals or individuals, such as the results of interviews or the results of filling out questionnaires that are usually carried out by researchers. The data source of this study is sourced from respondents consisting of people around the ecotourism area, visitors (tourists) and managers of the Lantebung mangrove ecotourism area. The number of respondents in the study was 60 people.

Data Collection Methods: The data collection method carried out is a survey method with structured interview techniques. According to Arikunto, survey research is a study that takes samples from one population and uses questionnaires as the main data collection tool. Meanwhile, according to Sugiyono, the survey method is a research method that aims to collect a large amount of data in the form of variables, units or individuals at the same time, data is collected through certain individuals or physical samples with the aim of generalizing what is being researched. The variables collected can be physical or social. Structured interviews are used as a data collection technique, when the researcher or data collector already knows for sure what information will

be obtained. Therefore, in the interview, the data collector has prepared research instruments in the form of written questions whose alternative answers have been prepared.

Data Analysis Method: The data analysis method used in this study is an inferential statistical method with the SEM approach. Structural Modeling Equation (SEM) is a common cross-sectional statistical modeling technique, especially linear, factor analysis, path analysis, and regression. SEM includes confirmatory techniques, rather than exploratory, which means that researchers are more likely to use SEM to determine whether a particular model is valid by using SEM to find the ideal model [18].

According to Hox JJ, et al. [19] that SEM is a combination of factor analysis and regression analysis or path analysis. Furthermore, it is stated that the preparation of latent variables is based on the oretical constructs which are also calculated based on the regression method. Furthermore, the structural model is based on the covariances between exogenous variables, intermediate variables, and endogenous variables. SEM is also known as Analysis of Covariance Structures or causal modeling.

Results & Discussion

Factors that affect plastic waste and community socio-economics in the management of the Lantebung mangrove ecotourism area. The factor that affects plastic waste is the volume of waste with a loading factor value of 0.966. According to Bergman, the large number of activities in coastal areas causes marine debris that accumulates in mangrove areas, the increasing volume of waste has an impact on the ecology of the region and the community's economy. The ecological impact is the disruption of marine life and the destruction of the mangrove ecosystem, while the economic impact is the decline in aesthetics in the coastal environment so that there are fewer tourists visiting mangrove tourist attractions. The existence of the waste is the result of human activities that are no longer used and are thrown around their residences. The existence of waste here is closely related to human behavior itself. There are some people who are aware of the environmental damage caused by garbage, so the waste they produce is thrown away or thrown into the trash. However, there are still many who are not aware of the impact of waste that can damage the environment, so the waste produced is disposed of carelessly in the environment around where they live. This human behavior affects the existence of waste and the volume of waste [20].

The volume of waste is increasing from year to year. The increase in the volume of waste is not only due to the increase in the number of people, but also due to the increase in the economy and activities of the population.

The high population growth in developing countries has also increased the amount of waste produced. From the results of Hariyanto's [21] research, it is known that the volume of waste generated from a resident activity is influenced by; a) Number of population, b) type of activity, c) population density, and d) level of economy/income. The number of residents or visitors is correlated with the volume of waste produced, because all activities/activities will cause waste so that it greatly affects the volume of waste. To reduce the volume of waste in the Lantebung mangrove ecotourism area, the awareness of visitors and the local community is needed, so that the volume of waste can be reduced, and the impact is also reduced, both on the ecotourism area (environment) and on the health of the surrounding community.

The source of waste/plastic waste in the Lantebung ecotourism area, broadly speaking, consists of two sources, namely:
- Plastic waste generated from community activities in the Lantebung ecotourism area, both sourced from visitors and the community around the area, and
- Plastic waste which is innate from rivers and sea currents. Waste sources in ecotourism areas consist of waste from the mainland arising from activities around ecotourism areas, the amount of which depends on the amount of visitors and residents in ecotourism areas, types of supporting facilities such as hotels/lodgings, places to eat and also garbage from the sea that is affected by the seasons [22]. According to Subekti S [23] that in the rainy season, garbage will enter the water body so that the river water discharge increases, this condition results in the drifting of the garbage, the drifting garbage will be carried towards the river mouth and finally spread to the coast and sea. Furthermore, according to Asia, et al. [24] that the source of waste that is an indication of waste production is from household activities, ecotourists, fishermen, traders, industry, and transportation, types of waste such as plastic packaging and household appliances are types that are often found in daily life with their nature that is difficult to degrade in nature, this waste is categorized as the largest contributor to waste.

According to Wijaya, one of the things that affects waste sources is the lack or low public awareness of environmental cleanliness so that garbage is thrown out of place, therefore the community must prioritize a disciplined attitude to dispose of waste in its place. To build public awareness and visitors in waste management in the Lantebung mangrove ecotourism area, it is carried out in the form of providing information boards to dispose of garbage in its place, and to make it easier for visitors to dispose of garbage in its place, garbage can points that have been grouped based on the type of waste are provided.

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Meanwhile, in socioeconomic variables, the influencing factor is the health factor. Health is one of the important factors in the success of development, especially to improve social welfare. People who have a good level of health will have a high level of work productivity, a high level of income, a higher level of education and a number of other positive things. Low levels of health and nutrition cause low physical endurance, thinking and initiative [25].

According to Arum D, et al. [26] that at the micro level, namely at the individual and family level, health is the basis for work productivity and the capacity to learn in school. A physically and mentally healthy workforce will be more energetic and strong, more productive, and earn high incomes. This is especially true in developing countries, where the largest proportion of the workforce still works manually. In Indonesia, for example, male workers who suffer from anemia cause 20% less productive when compared to male workers who do not suffer from anemia. Furthermore, healthy children have better learning abilities and will grow into more educated adults. In a healthy family, children's education tends to be uninterrupted when compared to an unhealthy family. At the macro level, a population with a good level of health is an important input to reduce poverty, economic growth, and long-term economic development. Several major historical experiences have proven the success of the economic takeoff, such as rapid economic growth supported by important breakthroughs in the fields of public health, disease eradication and nutrition improvement, There is a strong correlation between good health and high economic growth. Health affects economic factors because if health is disturbed, community performance will also be disturbed, where if performance is disturbed, the income generated will be reduced. For example, it is known that the average coastal community in the Lantebung ecotourism area has the main job as fishermen, if the health of the fishermen is disturbed, the catch will also decrease.

The impact of plastic waste on the socio-economic life of the community in the Lantebung mangrove area. Plastic waste has a significant relationship with the socio-economy of the community with P-values of 0.018, less than 0.05 thus H1 is accepted and H0 is rejected. In other words, there is an influence of plastic waste, in this case, the volume of waste on the socio-economic condition of the community, especially health factors, with the direction of the relationship being negative, which means that the higher the volume of plastic waste, the socio-economic condition of the community, especially the health of the community, will decrease.

According to Notoadmodjo S [27] that plastic waste/ waste is closely related to public health, because the garbage/ waste will be a place to live/protect various disease-causing mycoorganisms (pathogenic bacteria), and also insect animals that move/spread diseases (vectors), so that if there is a lot of garbage/waste in the environment, then the health of the surrounding community will also be more widespread.

Conclusion

The factors that affect plastic waste are the volume of waste with a loading factor value of 0.966 while the factors that affect the socio-economic conditions of the community are health factors with a loading factor value of 0.732.

Plastic waste has a significant relationship and influence on the socio-economic condition of the community with a P-value of 0.018 less than 0.05, where the higher the volume of waste, the worse the public health will decrease.

Acknowledgments

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