



Implementation of Organic Waste Management through The Concept of Social Entrepreneurship to Increase Environmental Intelligence

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Abstract. The waste problem in Indonesia remains a significant challenge. Many people are still undisciplined in disposing of waste in its proper place. Rivers, which should function as channels for water flow from one area to another, have been turned into dumping grounds. This issue is a collective responsibility. The lack of public awareness about the negative impacts of waste, especially plastic waste, poses risks to health and the environment. In fact, plastic waste can be processed by all levels of society to create valuable products and even open up business opportunities. This research aims to identify talent, creativity, and innovation in creating new marketable products from plastic waste to reduce its negative impacts. The research method used is a quantitative approach with a one-shot case study design. Data collection techniques include questionnaires, interviews, and observations, involving 10 informants as samples. Data analysis techniques used include validity tests, reliability tests, normality tests, homogeneity tests, hypothesis testing, and descriptive analysis. The research results show: (1) the presence of environmental intelligence values that can be applied through inorganic waste management to reduce waste; (2) the existence of social character values in social entrepreneurship that emerges from waste management activities, such as concern for others and solidarity; and (3) a relatively adequate level of efficiency based on the prerequisite test analysis. Therefore, efficient inorganic waste management can foster social entrepreneurship by enhancing environmental intelligence and creating a clean, comfortable environment that supports improved social life.

Keywords: Organic Waste, Social Entrepreneurship, and Environmental Intelligence.

1 Introduction

Problems regarding environmental issues in various parts of the world have become the full attention of environmental activists and observers who are worried about the earth's future, which is experiencing bleak times due to environmental pollution, forest

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fires, and global warming. This condition should be used as an extraordinary spirit in critically reflecting on environmental conditions which are very worrying [1]. In the study of this research, environmental issues have become a global issue that requires the attention of all parties. Environmental problems and pollution due to the accumulation of waste that cannot be utilized as potential natural resources cause increasingly widespread environmental problems. Human daily life cannot be separated from the necessities of life, which, in the end, leave behind waste. Waste is a significant problem faced by society, especially in Indonesia today. The waste problem is very difficult to solve. Even today, Indonesian people cannot apply discipline in throwing away rubbish in the right place [2]. Not only that, the river, which should function as a flow of water from one area to another, has changed its function to become a rubbish dump. The waste problem is homework for all of us. Lack of public awareness of the negative impacts caused by waste, especially plastic waste, will negatively impact their lives and health. Everyone should be aware of the dangers of this waste.

Based on ecological intelligence in eco-green, which treats waste as items considered obsolete and thrown away by the owner/user previously, but for some people, it can still be used if managed with the same procedures. Inorganic waste, such as plastic food packaging containers, paper, plastic toys, bottles, drinking glasses, cans, wood, etc., do not decompose easily. This waste can be used as commercial waste or other waste sold for use as other products [3]. Some nonorganic waste can be sold in plastic receptacles, wrapping food, bottles, glasses, and used drinks. Learning eco pedagogy in learning can change ecological participants' intelligence and teach them to repair the problem environment through present knowledge. To change attitudes and increase Skills in the environment. Waste management is becoming increasingly important in maintaining environmental sustainability, especially in the current era of globalization, which has become a contextual issue and needs to receive sufficient attention from every element of society [4].

There is a need to increase awareness of ecological intelligence in understanding awareness. Participants must be educated in the environment in which they live. One of them is through social studies learning, which has a role in becoming good citizens and a society with ecological intelligence. It is part of the human mind to be able to filter every human life in the surrounding environment. The higher the individualism in each person, the more disturbed he is in the process of socialization with others [5]. A school is an institution or agency that gives teaching or education to every student, especially in social science education, which provides teaching about social intelligence. Intelligence can happen when each student adapts to a situation. Ecological intelligence is related to daily life activities to maintain survival as the nature of being a social environment that cannot be separated from the environment as a place to live [6]. In and through ecological education, every person is led to habituation of an ecological living mentality that is always aware that its existence can only be meaningful if it exists with the rest of creation.

Thus, learning to manage inorganic waste becomes an entrepreneurial product and a form of effort to form a social entrepreneurial spirit that can be sensitive to the surrounding environment. By planting ecological intelligence in students, it will be realized in life both in educational institutions and society. When students apply ecological

intelligence, they start by managing rubbish in a way that they will be capable of utilizing matter, which no beneficial becomes beneficial and can reduce the accumulation of waste in the environment. Students will begin to realize the importance of guarding the environment because the environment will give comfort to every creature's life and reduce pollution

1.1 Environmental Intelligence

The concept of environmental intelligence, called ecological intelligence, *is* the ability to understand the environmental consequences of our everyday consumer decisions. According to him, ecological intelligence includes awareness of the environmental impact of the products we buy, including the production process, the use of materials used, and how to dispose of the product after use [7]. Ecological intelligence is a person's ability to understand and interact wisely with their natural environment. Ecological intelligence is an understanding that includes ecosystems, natural cycles, biodiversity, and the impact of human activities on the environment. People with ecological intelligence usually have a high awareness of environmental protection and can play an active role in nature conservation. Ecological intelligence certainly involves the ability to understand human dependence on natural resources and the impact of human behavior on ecosystems [8]. People must be aware of the conditions in their surrounding environment, so the ability to be environmentally intelligent is required. Environmental intelligence itself is not just ability in the cognitive realm but also attitudes and skills in how to manage the surrounding environment [9]. This can encourage each individual to be able to have sensitivity and literacy towards the environment [10].

1.2 Social Entrepreneurship

The concept of social entrepreneurship is the ability to do business that does not only take the profit aspect but also the ability to contribute to human life. The context of social entrepreneurship is closely related to the relationship between humans as natural social creatures in providing benefits to the surrounding environment [11]. The realization of social entrepreneurship has a role in building an entrepreneurial spirit that is aware of its social environment and helping and empathizing with others. Social entrepreneurship is the ability of entrepreneurs to build social contributions in the aspect of helping financially in the surrounding environment. Social entrepreneurship is, of course, required to build and evaluate the strengths and weaknesses that occur in the social environment of society. So that we can create innovations to increase creativity in product packaging in entrepreneurship [12]. Social entrepreneurship has a significant role in increasing financial profits and social awareness among communities. The power of social entrepreneurship plays a significant role in the sustainability of the general public [13],[14].

2 Methods

This study employs a quantitative research approach, which is rooted in the philosophy of positivism. Quantitative research focuses on examining specific populations or samples, utilizing research instruments for data collection, and analyzing data through

quantitative or statistical methods to test predefined hypotheses. The research design follows an experimental approach, with data analysis techniques including normality tests, homogeneity tests, hypothesis testing, and descriptive data analysis [15]. Data analysis uses Winistep software with the Rasch model to assess the motivation behind the interest in social entrepreneurship by managing inorganic waste.

3 Results and Discussion

3.1 Results

Research findings indicate that environmental issues and pollution caused by accumulating non-utilizable waste have become increasingly prevalent. Human daily activities inevitably generate waste, necessitating effective management strategies. Addressing this issue requires individuals to develop ecological intelligence—an essential capability that enables people to understand and interact responsibly with their natural environment. Ecological intelligence encompasses knowledge of ecosystems, natural cycles, biodiversity, and the environmental impact of human activities.

To mitigate waste-related problems, efforts should be directed toward managing inorganic waste by transforming it into valuable products with commercial potential. Such initiatives help fulfill individuals’ daily needs and contribute to broader social benefits. The statistical analysis of inorganic waste management in promoting social entrepreneurship provides insights into the effectiveness of its implementation, as demonstrated by the means test results.

Item STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	JMLE MEASURE	MODEL S.E.	INFINIT MNSQ	OUTFIT ZSTD	PTMEASUR-CORR.	AL-EXP.	EXACT MATCH OBS%	Item			
3	12	29	2.87	.79	1.06	.30	1.14	.47	.83	.85	89.5	89.2	R3
1	16	29	1.25	.55	.65	-1.29	.64	-.96	.82	.73	89.5	76.9	R1
4	25	29	-1.20	.60	1.01	.13	2.01	1.53	.33	.40	84.2	80.9	R4
2	28	29	-2.92	1.05	1.14	.44	1.06	.51	.16	.22	94.7	94.6	R2
MEAN	20.3	29.0	.00	.75	.96	-.10	1.21	.39			89.5	85.4	
P.SD	6.5	.0	2.22	.20	.19	.69	.50	.89			3.7	6.9	

INPUT: 29 Person 4 Item REPORTED: 29 Person 4 Item 2 CATS MINISTEP 5.6.0.0

Fig. 1. Results of Measure Analysis (Source: Authors’ Work, Winistep Rasch model, 2024)

Based on the data analysis above, it can be interpreted that the measure item criteria in identifying the application of inorganic waste in fostering a social entrepreneurial spirit can be identified with a measure score of 2.22 in the medium category. Social entrepreneurship is closely related to the humanitarian attitude that is reflected in each individual by providing business opportunities that do not only depend on profit or gain

but far more than that; social entrepreneurship forms the social spirit that exists in each individual to be able to realize and be aware of it. The results regarding the increase in social entrepreneurship are also analyzed using a Rasch scale, which can identify the statement regarding the role of inorganic waste management on social entrepreneurship from each item. The following can be interpreted from the results of the analysis via Winistep software with the Rasch model, namely:

SUMMARY OF 4 MEASURED (NON-EXTREME) Item

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD
MEAN	20.3	29.0	.00	.75	.96	-.10	1.21	.39
SEM	3.8	.0	1.28	.11	.11	.40	.29	.51
P.SD	6.5	.0	2.22	.20	.19	.69	.50	.89
S.SD	7.5	.0	2.57	.23	.21	.80	.58	1.02
MAX.	28.0	29.0	2.87	1.05	1.14	.44	2.01	1.53
MIN.	12.0	29.0	-2.92	.55	.65	-1.29	.64	-.96
REAL RMSE	.80	TRUE SD	2.07	SEPARATION	2.58	Item	RELIABILITY	.87
MODEL RMSE	.77	TRUE SD	2.08	SEPARATION	2.70	Item	RELIABILITY	.88
S.E. OF Item MEAN = 1.28								

Item RAW SCORE-TO-MEASURE CORRELATION = -.99

Global statistics: please see Table 44.

UMEAN=.0000 USCALE=1.0000

Fig. 2. Rasch Measure Summary Analysis Results (Source: Authors' Work, Winistep Rasch model, 2024)

From the data analysis above, it can be interpreted that the criteria for measuring items are to identify the application of inorganic waste in fostering a social entrepreneurial spirit. This analysis shows that the average value of the statements that students have answered is 1.28. The separation index is between 2.7 and 2.8 regarding each statement item that has been responded to by students relating to inorganic waste management towards the spirit of social entrepreneurship. Then, from the summary of the analysis results, it is also known that the correlation value is at the 0.99 level. Therefore, from this interpretation, it is known that implementing inorganic waste management in the spirit of social entrepreneurship has a relatively significant influence.

3.2 Discussion

Efforts are needed to minimize the phenomenon of environmental damage that occurs. One of the efforts that society can make to reduce environmental damage is through the spirit of social entrepreneurship. Inorganic waste management based on social entrepreneurship is a form of effort to raise awareness of the environment; where environmental issues are increasingly growing rapidly in human life, efforts are needed to reduce them [16]. In developing environmentally friendly behavior, environmental concerns need to be realized. Conscious actions taken by humans towards the

environment aim to minimize the negative impact of several human activities on the environment [17]. Realizing environmentally caring behavior by managing inorganic waste is made into a social entrepreneurship product.

Environmental Awareness is an action or attitude directed at understanding the importance of a healthy, clean environment, and so on. Awareness in the living environment can be seen in a person's behavior and actions in a situation where a person feels free from pressure [18]. According to [19] that, ecological intelligence will treat the environment well. From this statement, efforts to take conscious action are needed to manage the environment by maintaining or improving environmental quality so that human needs are adequately met by minimizing negative impacts. This form of environmental awareness is part of the important role of social studies education, especially in preparing citizens with knowledge, attitudes, skills, and values that can solve problems or participate in society [20]. Social studies learning is a way to increase social awareness and concern by fostering a social entrepreneurial spirit. Social studies learning is closely related to patterns of interrelation and interdependence between living things.

Implementation of inorganic waste management among students in fostering a social entrepreneurial spirit as a form of facing today's creative industry, entrepreneurial startups have a central role in giving birth to innovations that can advance the creative economy with a social entrepreneurial spirit [21]. The context of social entrepreneurship is the ability to be creative and innovative, keen to see opportunities, and always open to any input and positive changes that can bring the business to continue to grow and have value [22]. One of the drivers of innovation is change and the need to adapt, such as inorganic waste management, which is applied during learning as a creative effort to encourage social entrepreneurship.

Based on the benefits of social entrepreneurship as an effort to build a business as a solution to socio-economic, educational, and environmental problems and various problems that have become world challenges [23],[24]. As raised this time in the challenge of environmental problems. reading opportunities [25]. Therefore, social entrepreneurship is closely related to strategies in reading the context of a problem, starting from the problem of waste; if managed well, it can become a social entrepreneurship opportunity for people's lives.

4 Conclusion

Thus, based on the research results, it can be concluded that the application of inorganic waste management can foster a social entrepreneurial spirit in students. This is illustrated by the research results showing a significant correlation between the two. From the interpretation of the research results, it was identified that social entrepreneurship is an effort to build a business as a solution to socio-economic problems and then also help solve environmental problems. This form of inorganic waste management, as an effort to take conscious action, is needed to manage the environment by maintaining or improving environmental quality so that human needs are met properly and negative impacts are minimized. Therefore, by providing business opportunities that depend not only on profits but much more than that, social entrepreneurship forms the social spirit that exists in every individual to realize and be aware of life in the surrounding environment and positively impact society. Hopefully, this can be useful for further in-depth research on social entrepreneurship from the management of used goods.

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