

## Model of the Importance of Socio-Cultural in Waste Management on Penyengat Island

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### **Abstract:**

*The main problem of waste management in Penyengat Island is the increasing population growth and increasing volume of waste and limited land so that it is difficult to carry out waste management using the final waste treatment site because it has a large potential for pollution. The low level of public awareness in managing household waste is caused by the community's social, economic, and cultural conditions. This study designs Model of the Importance of Socio-Cultural in Waste Management on Penyengat Island. This research method is an analytical survey with a cross-sectional design, the community subjects who live in Penyengat Island with a sample size of 270 people, taken by random sampling. Data analysis using chi-square test and logistic regression. Logical regression equation model in  $(p/(1-p)) - 1,614 + 0,505$  (place of residence) + 0.642 (local wisdom). Waste management needs cultural values that already exist and should be maintained as part of one's identity and efforts to maintain the balance of nature and the environment. It is also necessary to conduct a policy study regarding the island's waste management program with a socio-cultural value approach.*

### **Keywords:**

*model; socio-cultural; waste management*

## I. Introduction

Waste is a common problem faced by the whole world, especially Indonesia, especially on small islands. If the interaction between humans and nature goes well, it will not cause problems for humans. Nature exists to support human life, but on the other hand, humans explore and exploit nature. Most of the problems that occur in the balance of nature and the environment are human behavior. Penyengat Island is located in Tanjungpinang City, about 3 km northwest of Bintan Island. This island measures 2 KM long and 0.85 KM wide. Penyengat Island is a historical legacy from the Islamic empire as well as a religious tourist spot in the Riau Islands, a Malay land. Based on data on the population of Penyengat Village, the total population of Penyengat Island was 2,803 people with 779 families; this number increased from the previous year (2017), which amounted to 2,577 people with 775 families. The estimated number of landfills in 2018 is 7,988 m<sup>3</sup>/day, and in 2017 it is 7,344 m<sup>3</sup>/day. The amount of waste generation continues to increase, considering that Penyengat Island does not have a waste management system. Limitations of waste transport fleets, especially for transporting waste on small islands and a lack of public awareness of waste reduction, utilization, and handling, starting from the household level. Another difficulty if the recycling process is carried out is often tricky for marketing (Willmott & Graci, 2012a, 2012b)

Based on the research results on 192 coastal countries in 2010 (Jambeck, 2016), Indonesia is the second-largest plastic marine waste dumpster in the world after China, around 3.32 million metric tons/year. Marine debris consists of various kinds of organic and inorganic solid materials (Smith & Markic, 2013; Schernewski et al., 2018). People often burn rubbish in the open and scattered; this will undoubtedly increase CO<sub>2</sub> levels and global warming or throw waste directly into the sea (Ikhwan et al., 2019; Alfons & Padmi, 2019) resulting in marine pollution due to waste (especially waste plastic) and wastewater (leachate). This will have an impact on marine life ecosystems. This study designs Model of the Importance of Socio-Cultural in Waste Management on Penyengat Island

## II. Research Method

This research is a quantitative study using a cross-sectional design. The study population was all heads of households in Penyengat Village, amounting to 779 coconut families. The research sample was obtained based on calculations using the Slovin formula with a confidence level of 5%, a sample of 270 people was accepted. The sampling technique was stratified random sampling, data obtained using a questionnaire. Data analysis using Chi-square test and logistic regression test were used to determine the most dominant variable affecting household waste management behaviour in Penyengat Island. This study uses informed consent and also has proper permission. Ethical clearance issued by Poltekkes Kemenkes Riau number: LB.02.03 /6/35/2019.

## III. Result and Discussion

The amount of waste production is 0.604 kg/person/day (for residents living in the coastal areas of Penyengat Island) and 0.551 kg/person/day (for residents living in non-coastal or land areas on Penyengat Island) this amount is below the average for the waste products of Tanjungpinang City 0.65 kg. The type of domestic waste generated the most was an organic waste as much as 0.375 kg/person/day (64.76%), while for inorganic waste, the most were a plastic waste as much as 0.113 kg/person/day (19.52%).

**Table 1.** The Influence of Socio-Cultural Factors on Waste Management on Penyengat Island, Tanjungpinang City (n=270)

No	Socio-Cultural Factors	Waste management				Total		P	CI 95% (PR)
		Bad		Good		n	%		
		n	%	n	%				
1	Waste Handling								
	Children or other household members	48	69,57%	21	30,43%	69	25,56%	0,513	
	Parents	148	73,63%	53	26,37%	201	74,44%		
2	Population Status							0,022*	2,034
	Husband and or wife are not stingers	74	81,32%	17	18,68%	91	33,70%		1,101-
	The Stingers Husband and Wife	122	68,16%	57	31,84%	179	66,30%		3,757
3	Residence							0,023*	1,881
	Seaside	135	77,14%	40	22,86%	175	64,81%		1,087-
	Not by the sea (mainland)	61	64,21%	34	35,79%	95	35,19%		3,254
4	Consciousness and Desire							0,112	1,546
	Less	106	76,81%	32	23,19%	138	51,11%		0,902-
	Well	90	68,18%	42	31,82%	132	48,89%		2,650
5	Local wisdom							0,015*	2,124
	Less	76	81,72%	17	18,28%	93	34,44%		1,150-
	Well	120	67,80%	57	32,20%	177	65,56%		3,920

\*p<0.05

**Table 2.** Logistic Regression Test Model Influence of Socio-Cultural Factors Against Waste Management on Penyengat Island in 2019 (n=270)

	<b>B</b>	<b>SE.</b>	<b>Wald</b>	<b>Sig.</b>	<b>Exp(β)</b>	<b>95,5% CI for EXP (β)</b>
Residence	0,505	0,287	3,100	0,078	1,658	0,944-2,910
local wisdom	0,642	0,320	4,014	0,045	1,900	1,014-3,559
Constant	-1,614	0,279	33,419	0,000	0,199	

Table 2 shows that the socio-cultural factors that influence waste management on Penyengat Island are residence (p0.078) and local wisdom (p0.045) with the most dominant variable factor is local wisdom (Exp (β)1.9). Logistic regression equation models that can predict waste management through the influence of residence and local wisdom are:

$$Y = - 1,614 + 0,505 (\text{place of residence}) + 0.642 (\text{local wisdom})$$

Local wisdom that grows from the community's character and culture has succeeded in creating harmony between nature and humans for hundreds of years because it has taken root and been passed down from generation to generation as a way of life. Efforts to achieve this sustainable development goal, there are several main things that need more attention, including in terms of natural resource management and environmental management. Local wisdom is a good thing that exists in society. Society is defined as people in general, living together in communities, whereas language is a means of communication to express our feelings, thoughts, ideas, etc. The language and the society are closely related and could not be separated (Ramlan, 2018). Local wisdom is the wisdom or original knowledge of a community that comes from the noble value of cultural traditions to regulate the order of people's lives. Local wisdom can also be defined as local cultural values that can be utilized to regulate the order of people's lives wisely or wisely. Local wisdom belongs to the community whose attitude and personality are mature to be able to develop local potential and resources in making changes for the better (Sembiring, A. et al. 2019). Local wisdom is found in people's beliefs and beliefs, regarding the values and norms that apply to the community itself. This island has an extraordinary role to play in uniting the entire nation. Istana Kantor is the center of activity on Penyengat Island. It was also in this palace that Raja Ali Haji made Gurindam Dua Belas in 1847. The Malay writer who was awarded the title of national hero completed his work of advice to live, to be friends, and to rule a country Penyengat Island can be contaminated with plastic waste, damaged coral reefs, high air pollution levels, and forest exploitation with illegal logging, which will pose a serious threat to sustainable land use, especially the cultural heritage Penyegat Island.

Apart from that, the aspect of local wisdom on Penyengat Island is obtained from the socio-cultural life on Penyengat Island, which is a culture and media for delivering advice or promotion, one of which is the lizard puppet show. Wayang Cecak is acculturation between Chinese culture and Malay culture. This art is an art that uses hand puppets, made of patchwork, played by the puppeteer. The performance of lizard puppets is also used as a medium for conveying information and advice using rhymes and poetry. This lizard puppet art is excellent if it is done in school for students as an effective learning medium. Students can also role-play, and feel for themselves the sensation of empathy arising from the story being told. The story that was told, of course, contained advice on protecting the environment and nature through joint waste management.

The strength of Malay culture is part of the excellence of cultural harmony and national identity. The principles and concepts of local wisdom in Tanah Melayu Pulau Penyangat can be used as a reference for efforts to achieve SDGs through the empowerment of local values and knowledge according to the indicators of SDG's success. The commitment and synergy of indigenous peoples with their local wisdom is a valuable asset that is needed to support the sustainable development process. Not just a target until 2030, but more than that can reach far into the future. As a movement, SDG encourages all parties to participate actively and work together according to their respective functions, roles, and abilities. It is hoped that both central and regional government policies can be optimal in synchronizing policies with various SDG indicators, understanding aspects of local wisdom, and being focused and measurable in compiling any development agenda in the spirit of collaboration. Whether we realize it or not, local wisdom has a significant impact on the environment that creates harmony with nature, which is one of achieving SDGs. Grounding various aspects of SDGs, according to the Indonesian context, is a necessity. The culture towards waste management is real.

The knowledge and skills of residents to recycle when managing household waste are also essential in waste management. Not knowing how to sort waste or where to carry the sorted waste can affect the low level of participation in sorting waste (Miafodzyeva & Brandt, 2013; Hoang & Fogarassy, 2020), as well as remote, inaccessible access. Lack of information provided to communities about resource recovery efforts and waste sorting expertise may be the reason for low participation, given that knowledge can be an incentive to sort waste (Sofia et al., 2021; Hellwig et al., 2019). Communication and language can be barriers; visual and nonverbal communication, such as symbols or color-coding systems, can help waste sorting (Rousta et al., 2020). Community-based empowerment can be used to indicate social change and allow citizens to have social control (Asteria & Herdiansyah, 2020; Miedema et al., 2018). The entire field of cultural policy is fraught with problems finding funds to address the protection, preservation, and revitalization of cultural heritage. For many politicians, the cultural field is recognized as unproductive and a drain on resources. Thus, as a marginal issue, culture has become one of the first areas to be cut when budgets are tight. Malay culture has educated people to behave better towards the environment. Despite the intrinsic importance of cultural heritage and diversity, culture can generate income and employment opportunities when used creatively and managed effectively (Newson et al., 2013; Robinson & Picard, 2011).

There needs to be an effort to increase promotion in promoting the importance of culture to achieve sustainable development. Culture maintains a balance between humans, their society, and their physical environment and helps re-integrate people into society (Akpabio, 2012). It is also held to maintain "global cultural diversity" (Bohensky & Maru, 2011). The Malay cultural family is also owned by the State of Malaysia, Singapore, Brunei Darussalam. It is important to understand the areas where cultural beliefs and practices can be integrated into environmental management programs and to sustain economic activity for sustainable development. The role of culture or more wisely, it is said that local wisdom is essential in the decision to recycle waste. Individuals who always do recycling are characterized by a relatively strong interest in the experience of local wisdom, and in particular, they show an interest in various cultural areas. Not all forms of cultural participation have the same effect on recycling attitudes. It is important to understand the promotional strategies that will be made to increase community participation in waste management from a local cultural point of view on Penyangat Island.

## IV. Conclusion

Waste management needs cultural values that already exist and should be maintained as part of one's identity and efforts to maintain the balance of nature and the environment. Tourists who come will be colored by local wisdom, not the other way around. Suggestions for further research are to conduct research using a mixed-methods approach (combining qualitative and quantitative methods) to evaluate waste management by involving multi-stakeholders. It is also necessary to conduct a policy study regarding the island's waste management program with a socio-cultural value approach.

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