

Strategies for Controlling Dye Liquid Waste Pollution in Sasirangan Village, Sungai Jingah Village, Banjarmasin City

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Abstract

Water pollution increases every year even though water has an indispensable role for every human activity and other living things. Pollution is caused by chemicals or other substances. Consequences of irresponsible environmental management Poor environmental management can lead to a decrease in available water supplies. The function of the river is very important for the community in Banjarmasin City so that it is vulnerable to pollution because most community activities are carried out in the river, be it household activities, industry, domestic, agriculture, mining, and the like. This study aims to analyze the control strategy of colored liquid waste pollution in Sasirangan Village, Sungai Jingah Village, Banjarmasin City. The variables in this study are related to the control of internal and external pollution factors. Determine the sample using non probability sampling, namely purposeful sampling. The data types used are primary data and secondary data. Primary data was collected through field observations and distribution of questionnaire. Secondary data were obtained from institutions, literature studies and document studies. The type of research used by researchers is quantitative descriptive research. The data processing technique used consists of: editing, coding, scoring, and tabulating then analyzed using SWOT. From the results of tabulating and SWOT analysis in the Grand Strategy Matrix, it can be seen that the most appropriate strategy is in the position of Devensif Strategy (Defense Strategy).

Keywords: Strategy, Control, Pollution, Jingah River

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1. Introduction

The quality of water is determined by every activity of living things in line with the development of knowledge and increasingly sophisticated times and the higher number of population growth which results in increased water demand (Alkhair, 2013). The increase in various activities is influenced by population growth around the river, human activities can cause pollution and reduce water quality. The control of water resources in Indonesia is still poorly monitored and the impact of human activities and waste released by humans, the status of the quantity and quality of available water decreases over time, even though

water is an important element in the continuation of human life (Amelia Ika, 2021). Water quality can be degraded by pollution from concentrated sources such as industry, animal waste, lodging facilities, medical facilities, and domestic sewage. Pollution from non-centralized or unfixed wastes, including household, industrial, and agricultural wastes (Puspitasari et al., 2020). Some areas certainly also have a source of livelihood, especially in South Kalimantan, rivers are seen to play a significant role in the daily lives of its inhabitants in daily community activities.

This fact is also reinforced by the location of Banjarmasin City which is bordered by large rivers and has many rivers in South Kalimantan which are very important for shipping (Yati, 2021). The many rivers that flow through Banjarmasin, earning it the nickname the city of a thousand rivers, give it a distinctive look for the Banjar people, as rivers have been important since ancient times. The river functions as a means of transport and a source of livelihood for its citizens in addition to providing basic needs as a source of life is used mostly to carry out daily activities including bathing, cooking and washing, and other activities carried out in the river. and as a means of support and channel for the movement of people and objects (Budiman, 2020).

The behavior of human activities is the main trigger for environmental pollution (Putra et al., 2016). According to the Ministry of Environment, South Kalimantan is a highly polluted area due to the waste that comes from the results of all community activities that are still very minimal in paying attention to the impact of waste and disposal from local community activities (Herliwati, 2020). This condition can be concluded that there is a need for government and community evaluation in river management (Alviawati et al., 2022). There is a control strategy for waste pollution caused by home industries that do not have permits and are outside the supervision of the Banjarmasin City Environmental Service. Banjarmasin City, South Kalimantan Province, has one of the leading commodities that characterizes the traditional banjar community, namely Sasirangan fabric, which is a home industry-scale business, most of the people depend on this work to fulfill their needs, namely as Sasirangan fabric craftsmen. The sasirangan industry in Banjarmasin City partly uses chemical dyes that cause the emergence of liquid waste so it becomes one of the causes and affects the lives of people around the river in Banjarmasin City (Nasruddin et al., 2018).

Waste control in Banjarmasin City is still not optimal, seen from the data above, the Environmental Service requires effective and appropriate control stages so that control can be successful so that the production of each home industry business, especially sasirangan, remains high and environmentally friendly. The existence of control measures will undoubtedly facilitate and provide the best results for organizational supervisory control. This is what control means if the increasing density of settlements and development and population growth can have a greater impact on the environment (Angriani et al., 2021). Many implications can harm the ecosystem. If waste management practices are not improved, the environment, public health, and organizational sustainability may be threatened. Endangering the existence of humans and other living things, the environment, and the well-being of the environment. Both human life and other forms of life.

Considering the results of interviews conducted on Monday 20 February 2023 conducted at the Banjarmasin City Environmental Service agency, one of the Heads of Supervision, namely Mr. Ir. M Khuzaimi, gave a statement "that there are still many people who establish businesses without environmental permits so that supervision and control cannot be carried out, it turns out that from the data of the founders of home industry businesses, there are still many similar businesses that do not have permits". But now licensing can be obtained easily, so if you have a permit, it does not necessarily mean that

the craftsmen or those who own the business comply with the rules and policies that have been set, such as the need for management before the coloring waste is disposed of. He also said that the river in Banjarmasin City is classified as heavily polluted.

2. Method

Sampling this study using non-probability sampling type purposive sampling. The sampling technique is only carried out on certain people according to the research sample criteria so that not everyone has the opportunity to be part of the population. Purposive sampling is defined as a sampling technique carried out with a full special review of sample collection and the selection has a specific purpose. If the population has been found to have a total group and a confidence level of 95%, the sample determination uses the criteria set in the study to be sampled, namely the sasirangan craftsmen in Sungai Jingah village who are recorded in the Banjarmasin City Trade and Industry Office with a total of 30 sasirangan craftsmen (Disperindag, 2022).

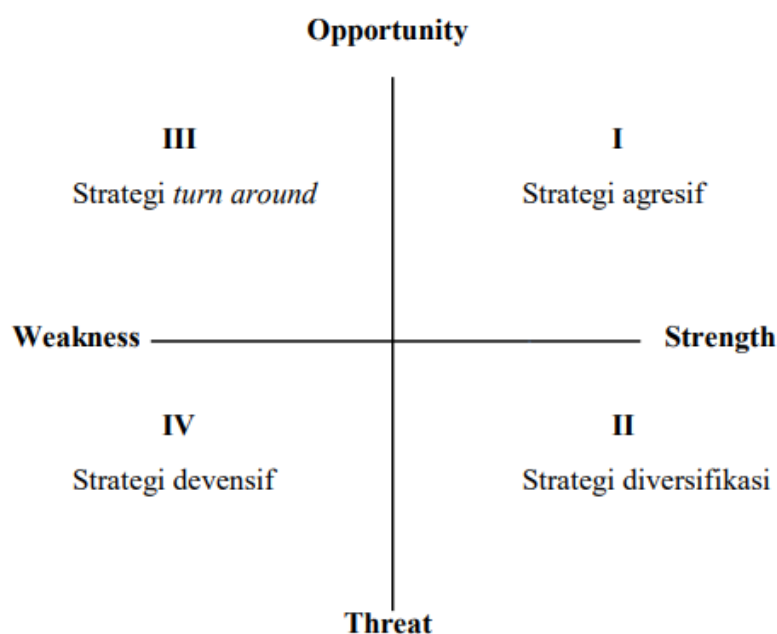


Figure 1. SWOT Analysis

Source: Rangkuty (2011)

SWOT analysis is the systematic identification of various factors to develop the necessary strategy. This SWOT analysis is based on the reasoning that can be applied to maximize strengths and opportunities while minimizing weaknesses and threats. SWOT analysis is a strategic planning tool used to evaluate the strengths, weaknesses, opportunities, and threats (SWOT) of a business, project, or individual. It helps to identify internal and external factors that may impact the success or failure of a given entity. The analysis is typically presented in a matrix format, with strengths and weaknesses listed under internal factors, and opportunities and threats under external factors. The purpose of a SWOT analysis is to provide a comprehensive understanding of the current situation and to develop strategies that leverage strengths, address weaknesses, capitalize on opportunities, and mitigate threats (Shinde et al., 2023; Yusuf et al., 2022; Ławińska et al.,

2022).

Citations:

[1]

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3. Results and Discussion

A. Results

The results of weighting, scoring, and tabulating are known to be obtained from internal strategic factors by considering and taking into account the results of distributing questionnaires to craftsmen, each item of which has been validated by experts, namely the Head of the Environmental Supervision Division of the Banjarmasin City Environmental Service, namely Mr. Ir. M Khuzaimi as a questionnaire validator.

Table 1. Internal Strategic Factors Table

Component	Questionnaire score	Score (Si)	Weight (Bi)	Total Weight (Si x Bi)
Strength				
Existence of Banjarmasin City Regional Regulation on Liquid Waste Disposal and Management Permit	14	0.035	4	0.139
Establishment of wastewater quality standards	14	0.035	4	0.139
Implementation of periodic water quality monitoring	57	0.142	3	0.425
The existence of water pollution countermeasures through supervisory measures	53	0.132	3	0.396
Existence of Environmental Permits	24	0.06	4	0.239
Subtotal				1.338
Weakness				
Knowledge of waste pollution from sasirangan dyes	68	0.169	4	0.677

Selection of colouring materials (natural or chemical)	157	0.391	4	1.562
Waste management budget	15	0.037	3	0.112
Subtotal	402	1		2.351
Difference between total strength and weakness (X)				-1.012

The data above is the result of calculations with subtotal Strength is 1,338 and subtotal Weakness is 2,351 then subtracting the difference in total strength and weakness (X), the result is -1,012.

Table 2. External Strategic Factors Table

Component	Questionnaire score	Score (Si)	Weight (Bi)	Total Weight (Si x Bi)
<i>Opportunity</i>				
Grants from the association or other sources	25	0.134	3	0.403
Community participation (providing suggestions and solutions)	30	0.161	3	0.484
Institutional optimisation (providing support and following the direction of government plans)	24	0.129	3	0.387
Subtotal				1.274
<i>Threat</i>				
Environmental Conditions (changes caused)	22	0.118	3	0.355
Impact on the Environment	18	0.097	3	0.290
Waste Management Methods (ecoprint, electrolysis, and water hyacinth phytoremediation)	67	0.36	4	1.441
Subtotal	186	1		1.731
Total (Y)				-0.457

The data above is the result of calculations with subtotal Opportunity is 1,274 and subtotal Threat is 1,731 then subtracting the total strength and weakness (X), the result is -0,457. Based on the results of calculations carried out using SWOT analysis, obtaining the final value of strengths, weaknesses, opportunities, and threats that the right strategy is implemented in controlling liquid waste pollution in the Jingah River Sasirangan village, namely, as follows

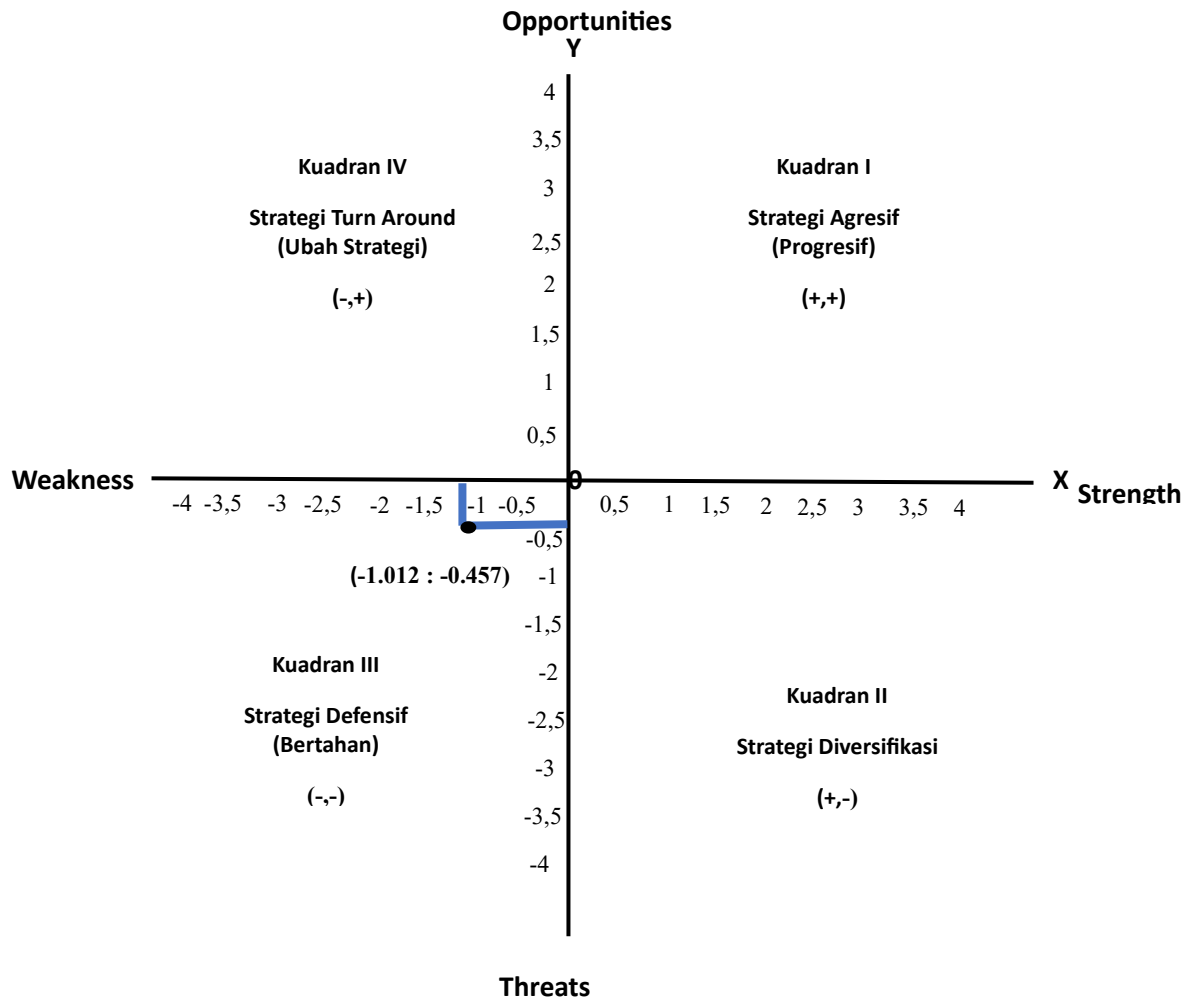


Figure 2. Matrix Strategy

It can be concluded that in the Matrix Grand Strategy, the quadrant position can be seen, namely the most appropriate strategy applied to the Sasirangan Dye Liquid Waste Pollution Control Strategy in Sungai Jingah Village is in the Survive Strategy position with the position (-,-) indicating that weak institutions are facing major challenges. The recommended strategy is a defensive strategy, that is, the internal company is in a dilemma choice, must use a defensive strategy, effectively controlling internal operations so as not to be further mired. Maintained by continuing to strive for improvement. This is an unfavourable situation where the company faces many internal threats and weaknesses. One of the appropriate strategies in dealing with this situation is to survive and move to minimise internal weaknesses and avoid threats by continuing to look for opportunities.

B. Discussion

The control of sasirangan dye wastewater pollution can be overcome with the right strategy by using SWOT analysis combining strengths, weaknesses, opportunities and threats classified as internal factors and external factors. The results of the SWOT analysis of the Dye Liquid Waste Pollution Control Strategy in Sasirangan Village, Sungai Jingah Village, Banjarmasin City are located in Quadrant IV (Survival Strategy), meaning that it is in a defensive position to optimise strengths and opportunities, making weaknesses to continue to improve themselves and these weaknesses can be improved so that they can become strengths in order to survive. Likewise, opportunities must be utilised and

maximised properly so that any threats will not reduce the value of strengths and opportunities. It can be concluded that from the past until now, the survival of the jingah river sasirangan village with management and dyeing methods without regard to the impact on the environment so that it is necessary to take advantage of all strengths and opportunities as much as possible and make weaknesses and threats as self-improvement to turn them into strengths.

The Survival Strategy that can be done in order to move up to a progressive strategy is quadrant I: This strategy can be implemented by using strengths to take advantage of opportunities, namely: increase environmental law enforcement based on Banjarmasin City Regional Regulation No. 7/2010 regarding Liquid Waste Discharge and Management Permits, routinise the implementation of periodic water quality monitoring and supervision, increase commitment to the management and availability of environmental information to strengthen the role of the Banjarmasin City Environmental Agency (DLH) in controlling pollution of sasirangan dye liquid waste.

The defensive strategy that can be taken to bring about change with the implementation of moving up to a diversification strategy is quadrant II: This strategy can be applied by using existing strengths to deal with various threats, namely: asserting the government's authority in the environmental sector to control environmental pollution/damage owned by the Banjarmasin City Environmental Agency (DLH) to overcome the threat of pollution that has an impact on environmental conditions experiencing changes in colour, smell and water quality, realising the discourse of the Environmental Agency program in environmentally friendly waste management (ecoprint, electrolysis, and phytoremediation). Quadrant II strategy, also known as the "Defend and Exploit" strategy, is a defensive approach that focuses on utilizing existing strengths to address various threats. In the context of implementing a diversification strategy to bring about change, this strategy can be applied by the Banjarmasin City Environmental Agency (DLH) to deal with environmental pollution and damage. To overcome the threat of pollution that is causing changes in colour, smell, and water quality, the DLH can assert its authority in the environmental sector. This can be done by enforcing regulations and guidelines to control environmental pollution and damage. By doing so, the DLH can protect the environment and maintain its health, which is essential for the well-being of the city's residents. In addition to asserting its authority, the DLH can also realize the discourse of the Environmental Agency program in environmentally friendly waste management. This can be achieved through the implementation of eco-friendly waste management practices such as eco-print, electrolysis, and phytoremediation. These methods can help reduce the environmental impact of waste and promote sustainable practices within the city.

By employing the Quadrant II strategy, the DLH can effectively defend against environmental threats while also exploiting its existing strengths to promote positive change in the city's environmental sector. This approach can help bring about sustainable and long-lasting improvements in the city's environmental conditions.

The defensive strategy that can be taken to bring about change by applying up to the turn around strategy is quadrant III: This strategy is a step to minimise weaknesses in order to take advantage of existing opportunities increase socialisation and routine training with the aim of increasing the knowledge of craftsmen how important the management of liquid waste used for sasirangan dyes, provide awareness that the importance of choosing the right dye and environmentally friendly so that sasirangan productivity is high and environmental pollution is low, provide and provide a special budget by the government as a form of concern for the management of waste generated from sasirangan dyeing by providing tools,

materials, routine environmental quality monitoring and infrastructure facilities for craftsmen in Sasirangan Village, Sungai Jingah.

As a result of these internal and external factors, the policies that can be taken in the Survival Strategy in the strategy of controlling liquid dye pollution in sasirangan village, Sungai Jingah village, Banjarmasin city are:

1. Improving the knowledge and awareness of craftsmen in waste management Improving the knowledge of craftsmen in choosing the right dyes and managing waste is done by conducting regular training, awareness or socialisation activities and ongoing with 3 methods which are programs from the Environmental Service, namely, as follows:
 - a) Ecoprint dyeing method (A technique to colour sasirangan fabric in a natural way that is quite simple but creates unique and realistic patterns, the principle of production is direct contact between leaves, flowers, stems or other parts with the fabric medium.
 - b) The electrolysis management method is a direct current (DC) circulation method from the anode to the cathode. These two electrodes will attract contaminated materials into a floc that can be easily decanted and separated.
 - c) Phytoremediation method, which is plant management, includes the use of plants to decontaminate waste. One of the plants that can be used to sterilise waste is water hyacinth (*Eichhornia crassipes*). Water hyacinth is a water grass because it grows very fast. Due to its rapid growth rate, water hyacinth can cover the water surface and cause environmental problems. But on the other hand, water hyacinth is very useful because it has the ability to absorb organic substances, inorganic substances and heavy metals that are contaminants.

The need for craftsmen's awareness to care for the environment needs to be improved. This needs to be done to minimise waste pollution to prevent craftsmen from disposing of waste used for dyeing directly into the river coupled with chemical dyes.

2. Establishing the pollution load capacity limitation in the discharge of chemical dye effluents. Determination of pollution capacity can be used as a consideration and policy in determining spatial planning, granting business licences/activities that affect water quality either directly or indirectly. Providing wastewater environmental permits to water sources and used as the basis for allocating the load obtained by entering water sources from various pollutant sources so that appropriate control measures can be implemented so that established water quality standards can be met or target water quality can be achieved.
3. Improved monitoring of wastewater discharge water pollution can be minimised by monitoring of wastewater discharge into waterways. Monitoring is carried out to ensure the fulfilment of the requirements set out in the river discharge environmental permit and the technical requirements for water pollution control as outlined in the AMDAL or UKL/UPL document. The results of monitoring can be the basis for encouraging the development or implementation of laws and regulations.
4. Monitoring the improvement of river water quality river water quality monitoring efforts can be carried out routinely by measuring river water quality parameters and examining the waste produced by industrial activities, namely dye waste from the former sasirangan in Sungai Jingah Village.

4. Conclusion

The strategy of controlling liquid dye pollution in the sasirangan village of Sungai Jingah urban village in Banjarmasin city can be concluded that the most appropriate

strategy to be applied is a devensive strategy (defensive) this strategy is maintained by continuing to improve itself. The situation is unfavourable, as it experiences many internal threats and weaknesses. One of the strategies that can be done in dealing with this situation is to survive and act quickly in minimising internal weaknesses and avoiding threats by continuing to look for opportunities that exist. The defence strategy is supported by internal and external factors. The control strategy is as follows: a) Increase knowledge and awareness of crafters in waste management, b) Establishing pollution load capacity limitation in chemical dye effluent discharge, c) Strengthen monitoring of wastewater management that is the cause of water pollution and, d) Strengthen river water quality monitoring with routine and systematic targeted monitoring.

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