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**MANAGERIAL EVALUATION OF THE MARKET'S TEMPORARY WASTE  
MANAGEMENT SYSTEM AND MEASUREMENT OF FLY DENSITY LEVEL  
(Case Study At Pucang Anom Market In 2022)**

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**ABSTRACT**

Pucang Anom Market in Surabaya City, has several waste generations that exceed the volume capacity of its temporary waste shelter. The purpose of this study is to managerially evaluate the market waste management system and measure the level of fly density in Pucang Anom Market, Surabaya City. This research is a descriptive observational study with a cross-sectional approach. Data were collected by interview, observation, and direct measurement at market polling stations. The object of this research is a temporary waste management system and the research subjects are the market manager, waste management, and fly density. The data obtained were analyzed by SWOT analysis. The results of the managerial evaluation of the waste management system showed average waste management of 60.36% with sufficient category. The results of the SWOT analysis with EFAS and IFAS matrices show that the position of waste management while Pucang Anom Market is in quadrant I which means it supports an aggressive strategy. Finally, the results of the measurement of fly density are in the high/density category, so it is necessary to secure the breeding grounds of flies and plan for control efforts. It is suggested that there is a need for an expansion of the temporary waste shelter of the market area, handling the problem of high fly density, maintaining good communication between the two parties, namely the private sector and third parties, updating SOPs, issuing competency standards for officers and making market waste management guidelines.

**Keywords: Swot analysis, market waste management, the density of flies**

**BACKGROUND**

Waste is a waste object from human activities on earth and is very dangerous for ecosystems because it can pollute the ecosystem. Not only animals and plants will feel the bad effects but humans can also be affected by it. Waste can be a major problem and is increasing every day for waste management that only relies on Landfills (TPA) without a prioritization process. This situation makes landfill land full quickly and less effective in the long term because the availability of landfill land is increasingly limited (Ermawati and Sukmono, 2013).

One of the cities in Indonesia, which is located in the province of East Java and dubbed the city of Trade and Services is the city of Surabaya. Where the city makes a great contribution to the economy and has a very strategic position in East Java. There are 67 markets and a market area of 257,725 ha in the city of Surabaya in 2020 which has been managed by the local government through the Pasar Surya Regional Company (Surabaya City Government, 2021). In addition, problems related to waste are also very seriously experienced by the city of Surabaya. This is because the city is included in the category of five major cities that have the largest waste generation (Andina, 2019).

Negative impacts due to poor waste management are characterized by the emergence of disease vectors such as house flies (*Musca domestica*) or rats that can increase the occurrence of infectious diseases. Diseases caused by the presence of vectors are such as *salmonellosis*, *cholera*, *bacillary dysentery* and *amoeba*, *abdominal typhus*, *trypanosomiasis* disease, and *Spirochaeta* disease (Budiman Chandra, 2007). Flies can act as mechanical vectors that cause disease in humans as well as animals. Infection occurs through the consumption of food or drinks that are infested with flies. The event of transmission of diseases spread by flies comes from food originating from food management sites, the processing of which does not meet health requirements (Amalia Aisyah, Rusmiati, 2017).

Descriptive research using a cross-sectional approach by collecting direct observational data on the solid waste management system of the Wonokromo Market in 2019 showed the results that there was a problem in the management system due to the lack of officers or Human Resources (HR), there was no clear process flow related to transportation and composting activities, there was no regular schedule for cleaning the temporary waste shelter location, and there is no SOP for the processing process because there is no briefing to carry out the waste sorting process at the Wonokromo Market. This shows that the lack of management in the market waste management system in its internal and external factors can have a negative impact on the entire management system.

Based on the problems described above, there is a need for evaluation activities on the application of temporary waste management systems and the level of fly density as the main indicators, the researcher is interested in conducting a study on "Evaluation of management application in waste management and flies density levels in Pucang Market, Surabaya City" using the SWOT analysis method approach. The SWOT analysis method is used to obtain the right strategy formulation, besides that the method can describe in detail through external and internal factors of a management system both in terms of strengths, opportunities, weaknesses, and threats that will be faced. The purpose of this study is to evaluate the managerial management system of the temporary waste management market and measure the level of fly density in Pucang Anom Market, Surabaya City.

## **RESEARCH METHODS**

The type of research that will be carried out is descriptive observational research. The research design is an evaluation study using a *Cross-sectional* approach equipped with the results of measurement data directly in the field as well as data obtained from the results of the implementation of activities and the application of management functions.

This elite competition is located in one of the Regional Company branches of Pasar Surya, namely Pucang Anom Market, Surabaya City from January 2022 – June 2022. The subjects in this study included respondents, namely the Head of Pucang Anom Market and the Staff of the Sub.Section of The Cleanliness of The Maintenance Building from Pasar Surya Regional Company, then market waste management, and fly density. The variables of this study included the sorting and shrinking stage, the collection stage, the transportation stage, the processing stage, the evaluation of waste management, and the density of flies. The data obtained were collected through interviews, observations and measurements which were then analyzed managerially using management functions (POAC) as well as through a SWOT analysis approach.

## **RESULTS AND DISCUSSION**

The variables and factors studied in this study can be explained as follows:

**A. Application of Management at the Stage of Sorting and Housing, Collection, Transportation, and Processing of Waste**

The results of the questionnaire interviews that have been carried out based on the stages of sorting and representing until the next stage of processing will be made with a table of details as follows:

Table 1. The results of the interview for a temporary waste management questionnaire at Pasar Pucang Anom, Surabaya City in 2022

No.	Temporary Management Phase	Waste Percentage Results	Category
1.	Sorting and Housing	50%	Enough
2.	Collection	71,43%	Good
3.	Transportation	73,33%	Good
4.	Processing	46,68%	Enough
<b>Total</b>		241,44%	-
<b>Average</b>		60,36%	Enough

Source: *Primary Data, 2022*

Based on the table above, the average results of the entire waste management stage while Pucang Anom Market from the sorting and rental stage, the collection stage, the transportation stage, and the processing stage in terms of management received a score of 60.36%, which means it is included in the "Enough" category.

**B. Evaluation of Temporary Waste Management in Pucang Anom Market managerially**

From the results of the interview, conclusions were obtained related to the SWOT analysis, a SWOT analysis diagram was made to compare between internal factors (strengths and weaknesses) and external factors (opportunities and threats) faced by temporary waste management at Pucang Anom Market, Surabaya City. The diagram can be seen as follows:

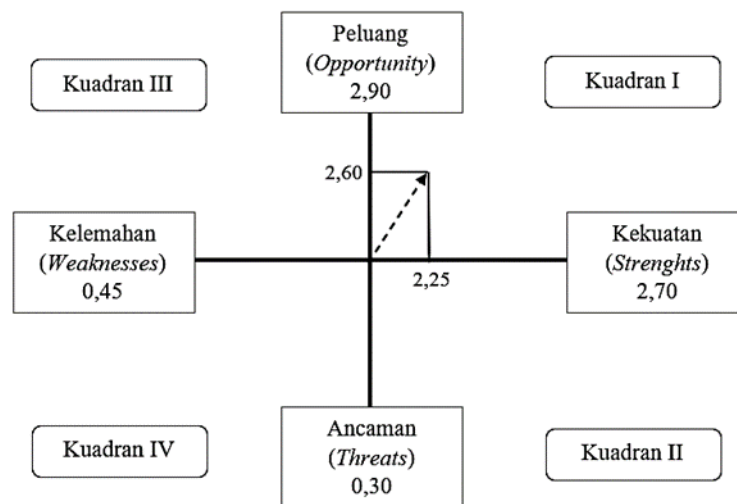


Figure 1. Temporary Waste Management SWOT Analysis Diagram 1at Pucang Anom Market, Surabaya City in 2022

Source: *Data Analysis Results in 2022*

From the results of the picture through the SWOT analysis diagram, it can be seen that the position of waste management in Pucang Anom Market, Surabaya City is in quadrant I which means supporting aggressive strategies.

It is known in the SWOT analysis diagram, namely the location of the waste management position while Pucang Anom Market is in quadrant I, the last stage in the SWOT analysis is the preparation of a SWOT analysis matrix to compile strategic factors for temporary waste management in Pucang Anom Market, Surabaya City. This matrix can describe the opportunities and threats from the external environment faced by the Pucang Anom Market. The SWOT analysis matrix produces 4 (four) sets of possible strategic alternatives. The matrix diagram of the SWOT analysis can be seen as follows:

Table 2. SWOT Analysis Matrix of Temporary Waste Management in Pucang Anom Market

IFAS	<p>Strength(S)</p> <ul style="list-style-type: none"> <li>- Temporary waste shelterlocations are easily accessible</li> <li>- Clearly structured waste management officers</li> <li>- Cooperation with third parties regarding the provision of officers and the completeness of waste management equipment</li> <li>- The existence of a cost budget related to the need for equipment</li> </ul>	<p>Weaknesses (W)</p> <ul style="list-style-type: none"> <li>- Not doing the sorting stage</li> <li>- There has been no update of sops on waste management in Pucang Anom Market</li> <li>- The absence of competency standards for officers who carry out waste processing at the temporary waste shelter</li> </ul>
EFAS	<ul style="list-style-type: none"> <li>- The existence of complete waste management equipment in helping the waste management process</li> <li>- There is a reference to government regulations as a basis for carrying out waste management activities</li> </ul>	
<p>Opportunities (O)</p> <ul style="list-style-type: none"> <li>- There is a development in science and technology</li> <li>- The existence of the Gerakan Indonesia Peduli Sampah program toward a 3R cultured society in 2020</li> <li>- There is a 3R temporary waste shelterprogram from the Surabaya City Government</li> <li>- There was an award for waste reduction and regional incentive</li> </ul>	<p>SO Strategy</p> <ol style="list-style-type: none"> <li>1. Maintaining the quality of the temporary waste shelterlocation that has been expanded and its ease of access by adding insight to waste management officers from third parties related to environmentally sound waste management with the 3R principle</li> <li>2. Maintain good communication with third parties as <i>outsourcing</i> service providers to always provide services and provide quality equipment</li> <li>3. Always adjust to the latest</li> </ol>	<p>WO Strategy</p> <ol style="list-style-type: none"> <li>1. Immediately update the SOP related to waste management at the sorting and rental stage in line with the current advances in science and technology</li> <li>2. There needs to be a policy related to the level of competence possessed by someone who will carry out waste processing work so that the waste that arises can be</li> </ol>

<p>fund(DID) by the Ministry of Environment and Forestry in 2020 to the Surabaya City Government</p> <ul style="list-style-type: none"> <li>- There is an insistence by the Ecoton Institute on the Surabaya City Government regarding the issuance of a ban on the use of single-use plastics</li> <li>- There is an update of Local regulation No. 5 of 2014 to Local regulation No. 1 of 2019</li> <li>- There is third-party cooperation with the private sector as the implementer of waste management</li> </ul>	<p>regulations as a reference in carrying out activities so that the activities carried out progress</p>	<p>overcome optimally</p>
<p>Threats (T)</p> <ul style="list-style-type: none"> <li>- There is an increase in waste generation from outside the market area</li> <li>- There is an assumption that the public considers that the disposal of waste at the temporary waste shelter of Pucang Anom Market is made for the public</li> <li>- Slow government attention to aid in procuring new tools that have been damaged</li> </ul>	<p>ST Strategy</p> <ol style="list-style-type: none"> <li>1. Expanding temporary waste shelter land to expand waste storage capacity</li> <li>2. Provide signals to the government by making written reports regarding the need for tools to support the waste management process</li> </ol>	<p>WT Strategy</p> <ol style="list-style-type: none"> <li>1. The renewal of the SOP for waste management following the latest reference related to waste disposal in line with the addition of waste generation, so that problems related to waste can be immediately overcome</li> <li>2. Issuing competency standards for officers so that they can hire waste processing officers who have insights to be able to innovate in overcoming excessive amounts of waste capacity so that the absence of new tools does not become a big problem for waste management in</li> </ol>

Source: *Data Analysis Results in 2022*

From the results of table 2. It can be seen that the results of the analysis of external and internal factors linked in the SWOT analysis matrix can determine an alternative strategy, by combining strengths (S) with opportunities (O) can create SO strategies, weaknesses (W) with opportunities (O) can create WO strategies, strengths (S) and threats (T) can create ST strategies, and weaknesses (W) and threats (T) can create WT strategies.

### C. Measurement Results of Fly Density as Bio Indicators

Researchers took measurements for one time, namely on Thursday, April 21, 2022, at 06.09 WIB, and the following results were obtained:

Table 3. Fly Density Measurement

Location	Date of Activity	Measurement 30 seconds to										Average number ovulates
		1	2	3	4	5	6	7	8	9	10	
Temporary waste shelterof Pucang Anom Market	April 21, 2022	16	7	13	7	8	2	2	3	23	8	13.6 ~ 14

Source: *Primary Data, 2022*

From the table measuring the density of flies, the average number of flies at the temporary waste shelterof Pucang Anom Market was 13.6 when rounded to 14. These results according to Regulation of the Minister of Health No. 50 of 2017 are included in the "Tinggi /solid" category, which means that the fly population is dense and needs to be secured against the places where flies breed and if possible planned control efforts (Regulation of the Minister of Health No. 50, 2017)

The results of the first observation, interview and measurement activities are the sorting and renting stage getting a calculation result of 43.57% and categorized as "Sufficient" based on the lack of planning value including the absence of waste sorting activities carried out in the market, then there is no written schedule, there are no provisions or standards for officers, and there are no details of activities at the sorting and rental stage. Based on the lack of organizing value, there is no division of duties and no special competency assessment for officers, but although there is no division of duties, a third party, namely CV. Riski is responsible for the availability of an adequate number of officers. This is following the statement of Arifin and Hadi W in Abd. Rohman (2017) related to the steps in organizing, namely grouping the activities to be carried out and dividing the tasks into the elements that compose them, according to their specifications and expertise (Rohman, 2017). Based on the lack of implementation value, includes not updating the SOP and the implementation of activities is not clearly known.

The second is that the collection stage gets a calculation result of 71.43% and is categorized as "Good" based on the lack of planning value including no written schedule and no details of activities. Based on the lack of implementation value, includes not updating the SOP and the implementation of activities is not known.

The third is that the transportation stage gets a calculation result of 73.33% and is categorized as "Good" based on the lack of planning value including no written schedule and no details of activities. Based on the lack of implementation value, includes not updating the SOP and the implementation of activities is not known.

The fourth is that the processing stage gets a 46.68% yield and is categorized as "Sufficient" based on the lack of planning value including the absence of an activity plan-making process, no written schedule, no latest budget details, and no activity details. Because non-optimal waste management has resulted in the ineffectiveness of the waste management process which will have a bad impact on the quality of environmental health. To the results of research conducted by Mutia Arda, et al (2020) because the lack of optimal waste management results in the ineffectiveness of the waste management process which will have a bad impact on the quality of environmental health. So from this reference, there should be a clear breakdown of activities so that the goal of improving the quality of a healthy market can be realized immediately (Arda, Andriany and Manurung, 2020). Based on the lack of organizing value includes the absence of assessment and the absence of an increase in competence for officers. Based on the lack of implementation value, it includes not updating the SOP and the implementation of activities is not known. The total results from the implementation of management from the sorting and processing stage to the processing stage got a score of 60.36%, which means it is included in the "Enough" category.

From the results of making a SWOT analysis diagram, it is known that the X-axis is at a value of 2.25 while the Y-axis is at a value of 2.60, it is known that the location of the waste management position in the Pucang Anom Market, Surabaya City is in quadrant I which means supporting aggressive strategies. According to Freddy Rangkuti (2015) quadrant, I am a very favorable situation for a company. The company has opportunities and strengths so that it can take advantage of existing opportunities. An important strategy to be implemented in this condition is to support an aggressive (Freddy Rangkuti, 2015).

Then after the picture is carried out through the analysis diagram, it is determined by determining the strategy by making a SWOT analysis matrix consisting of strategic factors that can be applied by the market manager following the external and internal environment of the Pucang Anom Market, Surabaya City.

The results of the measurement of fly density carried out at one time located at the temporary waste shelter of Pucang Anom Market Kota Surabaya showed an average result of the number of flies of 13.6 when rounded to 14, when compared to the standard from Regulation of the Minister of Health No. 50 of 2017 the value exceeded the Quality Standard Value of  $>2$  (more than). This value is included in the "High/solid" category so it is necessary to secure the places where flies breed and if possible, control efforts are planned.

## **CONCLUSION AND RECOMMENDATION**

The results of the average assessment of management implementation include the sorting and processing stages, the collection stage, the transportation stage, and the processing stage are included in the sufficient category, with a note that there is a need for a new budget for the procurement of human resources (HR) and the procurement of activities for the sorting of Hazard waste (Hazardous and Toxic Materials), then it is necessary to make clear details of activities and update the SOP (*Standard Operational Procedure*) waste management, there is a need for a new budget for land expansion from the temporary waste

shelterof Market, then it is necessary to conduct an assessment and increase special competence of officers who carry out waste processing at Pucang Anom Market, Surabaya City.

The results of the research on measuring the density of flies at the temporary waste shelterof Pucang Anom Market obtained the results of a rounding number of 14 which is included in the high/solid category, so it is necessary to secure the breeding grounds for flies and planning is needed for efforts to control them.

It is recommended for Pucang Anom Market to expand the temporary waste shelterland by utilizing vacant land around the temporary waste shelter, then immediately deal with the problem of fly density by making security efforts for the place where flies breed, and it is necessary to maintain good communication with private sectoral parties and third parties. for Pasar Surya Regional Company, namely immediately updating the existing SOPs complete with details of activities and cost budgets, needing to issue competency standards for officers, making guidelines related to waste management, and is expected to prioritize the development of waste management in the aspects of sorting and renting and processing at thetemporary waste shelter of Pucang Anom Market.

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