

Building Public Value in Waste Management in the *Gotong Royong* Market in Magelang City

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Abstract. Environmental issues are a critical concern for every country, because they have an impact on sustainable development so that the state is responsible for resolving environmental challenges. The big challenge in overcoming environmental issues is the problem of waste. This study aims to analyze building public value through a strategy that is the first public value is service with a corporate strategy strategy, the second is the outcomes there are 2 strategies namely business strategy and functional strategy and the third is trust with enterprise strategy. The results of this perception are then analyzed by triangulation to create a public value model in waste management. This research is focused on the management of public value in waste management in the Gotong Royong market in the city of Magelang. The review in this paper is carried out with literature study using relevant reading sources. The focus of this study is to build public value in managing waste in the Magelang City Mutual Cooperation Market. Analysis of the data used is to examine the concept of public value management combined with the master strategy theory associated with waste management, processed qualitatively. Furthermore, conclusions are drawn with the deductive thinking method, meaning that the method of thinking of things that are general and then drawn to conclusions that are specific in order to obtain answers to problems.

Keywords: Public Value, Sustainable Development, Waste Management.

1 Introduction

Waste in Indonesia according to Novita and Damanhuri [1], is dominated by organic waste or rubbish that is easy to rot. This type of waste includes food waste. Organic waste or food waste is organic waste that is disposed of from the largest sources of waste including food processing plants, domestic kitchens (households), commercial kitchens, canteens, and restaurants [2].

Garbage is a problem that always appears all the time. The issue of waste is very important to be discussed because the amount and type of waste is increasingly growing along with the increase in population, technological advancements, and changes in social culture or lifestyle, and the consumption patterns of the community resulting in increasingly diverse types and composition of waste. As a result, the types of waste will also be more diverse and complex.

Magelang City as one of the City in Central Java Province, the amount of garbage produced by the people of Magelang City continues to increase. According to the Central Statistics Agency (Central Bureau of Statistics), Magelang City recorded that the population of

Magelang City in 2017 was 125,676 inhabitants. From the total urban population generated 289.32 tons/day of landfill waste, with the amount of garbage transported 249.49 tons/day. With the level of service or transportation of waste 86.23%.

The problem of waste in the City of Magelang is increasingly difficult to solve because the waste management system implemented by the City Government of Magelang has so far not been effective in overcoming the city's domestic waste problem. Although the concept of zero waste has been implemented, one of them is by applying the 3R principle (Reduce, Reuse, Recycle), but the concept is not yet grounded in the community, so that its significance has not yet been felt on the city solid waste settlement. Limited land which is designated as a place for processing waste or landfill is also a trigger.

Many factors cause an increase in the volume of waste in the city of Magelang, one of which is the growth of trade activities. One of the trading activities that take place in traditional markets both directly and indirectly has an impact on increasing the volume of waste in the city of Magelang. Such rubbish can be left over from vegetables and other commodities including organic waste, food and beverage packaging, plastic waste and others. If the traditional market waste is not managed properly, it will have an impact on many things, including the impact on aesthetics, health, natural disasters and limited capacity.

One of the traditional markets that still exists today is the Magelang City Mutual Cooperation Market. Gotong Royong market area is 1,800 m². With this area the Mutual Cooperation Market can accommodate 171 stalls and 860 booths of traders. The number of traders in the Mutual Cooperation Market has now reached 1,411 traders from Magelang and surrounding areas. Until now, waste management in the Mutual Cooperation Market has not been maximized. Since morning the garbage is only swept away and then collected in the depot. Furthermore, the collected garbage is transported to the Banyu Urip garbage dump, all of which have not yet been sorted.

There are so many methods applied to overcome waste problems, some are applying the concept of 3R (Reduce, Reuse and Recycle), the Trash Bank model, using alternative methods to reduce waste using the Black Soldier Fly (BSF) fly larvae that is easy to grow and develop fertile in piles of vegetable, fruit and other organic waste and so on. Based on data from the Gotong Royong market service Regional Technical Services Unit, the volume of waste piles produced by the Gotong Royong market reaches 10 cubic per day. About 2 cubic dry rubbish, the contents are 8 cubic wet rubbish. The problem of waste is an opportunity, as well as waste management in the neighborhood of Magelang City of Gotong Royong Market can be analyzed using the Public Value Management approach. So the writer is interested in using the Black Soldier Fly (BSF) media method.

This study aims to analyze aspects and build a framework of public value in waste management using the Black Soldier Fly (BSF) method at the Mutual Cooperation Market in Magelang City. The target of the research activity focuses on the development of public values in the community which can be classified as first service, second operational outcomes and third trust.

The results of this perception are then carried out qualitative analysis by triangulation of sources to create a model of building public value in waste management using the Black Soldier Fly (BSF) method as well as in order to revitalize the more representative market functions and roles in the Gotong Royong market in Magelang City.

2 Theoretical Framework

2.1 Building Public Value

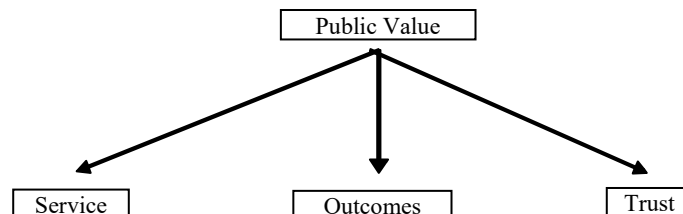
Building public value is preceded by an organizational strategy namely the strategic trilogy (a strategic triangle) popularized [3]. In addition, public organizations are said to have built public value if the benefits received by the community are greater than the costs incurred, including the use of legal aspects that force service users to comply with statutory provisions. According to Spano [4] argues that public value can be achieved when services are produced by public sector organizations to meet the needs of the population, so that the higher the community satisfaction, the greater the public value created.

Whereas, O'flynn [5] describes public value as a multi-dimensional construct which is a reflection of the choice of reality that is collectively expressed politically consumed by citizens created not only through results but also through processes that can produce trust or justice.

The opinions mentioned above by [3] explained that to build public value, policy makers in public services need to understand the three main components of the strategy trilogy. That is:

- a) Services (services), is the most important thing in public services through good service will be met the needs of the community, openness, fair and guarantee legal certainty.
- b) Benefits (outcomes) are the strategies applied to their benefits can really be felt by the community, giving satisfaction, and comfort. The resulting benefits prioritize social benefits, environmental sustainability and public order.
- c) Trust, the strategy adopted by public service organizations is able to increase public trust in government by means of more tangible participation and involvement.

Picture 1. Public Value Mark Moore



2.2 Master of Strategy

Strategy is a way of using the capabilities, abilities and resources of an organization to achieve goals in ways that are effective and adapted to their environment, Higgins [6] explains there are four strategies that can be used by certain organizations or agencies in carrying out their activities. The four strategies are enterprise strategy, corporate strategy, business strategy, and functional strategy. In general, then he called the four strategies with the term master strategy [7]. The explanation is as follows:

- a) Corporate Strategy. This strategy is related to the mission of the organization, the main tasks and functions that are the affairs of an organization. How the mission is carried out is also important, it requires strategic decisions and strategic planning which

- should be prepared by each organization.
- b) Business Strategy. Strategies at this level describe how to win the market in the community. How to place the organization in the hearts of the authorities, entrepreneurs, donors and so on. All of that is intended to be able to obtain strategic benefits that are at the same time able to support the development of the organization to a better level. In business terms, this strategy focuses on competitive advantage which for nonprofits is preferred to use the term comparative advantage.
 - c) Functional Strategy. This strategy is a supporting strategy and to support the success of other strategies. There are three types of functional strategies, namely:
 - Functional economic strategies that include functions that enable organizations to live as a healthy economic unit, including those related to finance, marketing, resources, research and development;
 - Management functional strategies, including management functions, namely planning, organizing, implementing, controlling, staffing, leading, motivating, communicating, decision making, representing, and integrating;
 - Strategic issue strategy, its main function is to control the environment, both environmental situations that are already known and situations that are not yet known or that are always changing. These strategic levels are a unified whole and are a sign for every highest decision maker that managing an organization should not be seen from the point of administrative neatness alone, but should also take into account the health of the organization from an economic perspective.
 - d) Enterprise Strategy. This strategy is related to community response. Every organization has a relationship with the community. Society is a group outside the organization that cannot be controlled. In that uncontrolled society, there are governments and various other groups such as pressure groups, political groups and other social groups. So in the enterprise strategy looks the relationship between organizations and outside communities, as far as the interaction will be carried out so that it can benefit the organization. The strategy also shows that the organization is really working and trying to provide good service to the demands and needs of the community. The response to the wishes of the community needs to be given attention with ethical considerations.

2.3 Black Soldier Fly (BSF) Method

Black Soldier Fly (BSF) is an insect originating from America and spread also to subtropical and tropical regions in the world [8]. BSF larva culture itself is easy to develop on a mass production scale and does not require special equipment. Considering that BSF larvae can live in tropical regions, Indonesia, with its tropical conditions, is ideal for developing BSF larvae cultivation.

At present, BSF larvae are used as an organic waste treatment strategy and have great potential as a sustainable treatment. BSF larvae are very active in eating a variety of organic materials, such as fruits and vegetables, market waste, kitchen waste, fish waste, oil palm cake, and livestock and human waste [9][10][11]. The ability of BSF larvae to reduce organic waste has also been reported as 66-79% [10], 44-94% [3]; and 85% BB and 70% BK [12]. With its activeness, it is highly possible that organic waste heaps, especially in the market, can decompose quickly.

Another advantage of using the BSF method in breaking down waste, namely adult insects BSF has no role in transmitting diseases and bacteria. And the final stage of larvae

called prepupa contains 40% protein and 30% fat which is used as fish food and livestock substitutes for fish meal [9][10]. Residues produced by BSF larvae can be used as compost and soil amendments [11][13][14].

3 Methodology

The method used in this research is qualitative with a case study approach. Data collection through in-depth interviews, observation and documentation. The data validity technique uses triangulation. Data analysis uses flow model analysis. [15] further explains the three activities undertaken, namely: (1) Data reduction, which is the process of selecting, sorting, simplifying and classifying data arising from written records in the field, which take place continuously during the research activities; (2) Presentation of data is a compiled collection of information that provides the possibility of drawing conclusions and taking actions, and; (3) Drawing conclusions or verification after the data is collected, then analyzed qualitatively. The focus of the Research Study is as shown in the table below:

Table 1. Focus of Research Study

No	Public Value	Strategy	Aspect	Sub Aspect
1	Service	Corporate Strategy	Stakeholder support and synergy of stakeholders and politics	a) Support and participation of market traders b) Government, stakeholder and CSR support c) Political Support
2	Outcomes	Business Strategy	With a business strategy, it will gain profit and increase PAD	a) The ability to benefit economically b) Financial ability
		Functional Strategy	Maximizing the functions of production, management, human resources, governance	a) Ability to manage resources b) Technological ability
3	Trust	Enterprise Strategy	Providing community needs in the availability of fertilizer and animal feed and fish, cheap and affordable prices. It is possible to become a subsidy.	Build value: a) Satisfaction b) Social and Culture c) Ecology d) Education

4 Discussion

Based on the references of the above theories, the development of public value in waste management in the Gotong Royong market using the Black Soldier Fly/BSF method in Magelang City, what steps need to be taken are:

4.1 Service

The implementation of Corporate Strategy through aspects of stakeholder support and synergy with stakeholders and politics.

a) Market Trader Support

The application of the BSF Method needs to be socialized to market traders and non-traders but has an important role in activities in the Mutual Cooperation market that the BSF method will be implemented. It is expected that all traders can participate in supporting the program. The application of BSF can provide additional income for traders. The simple thing is if traders get money from waste management, traders will automatically support the program.

b) Stakeholder resource support

In the context of collaborative governance between the Government, Public Colleges-Private Colleges, Stakeholders, Corporate Social Responsibilities and traders. Need to get legitimacy from the parties concerned by:

1) Coordination

- The Government and Public Colleges-Private Colleges as a follow-up to the signed MOU of cooperation are a form of the implementation of the Tri Dharma of Higher Education in the field of Research Development and Community Service.
- Listen to the aspirations of traders and consumers what are their complaints and desires and input.
- After obtaining these inputs, the government conducts FGDs with Public Colleges-Private Colleges, Development Planning Agency - Development Research, related technical Regional Apparatus Organization and stakeholders to conduct economic / cash-flow analysis, formulate an Action Plan and compile concrete steps instruments, which are then outlined in the Master Plan

2) Facilitation

- Every activity item needs assistance by parties who work together, so that it does not deviate from the planning so that the objectives can be achieved properly.
- Considering that the condition of waste management and facilities and infrastructure is inadequate, a waste processing infrastructure needs to be reorganized, in the short term a master plan needs to be made to revitalize the Mutual Cooperation Market to further increase its Public Value values.

c) Political support

Legislative support is needed as a legal umbrella for the implementation of waste management by the BSF method in the form of a Regional Regulation followed up by a Mayor Regulation as a technical guide for its implementation.

4.2 Outcomes

a) Business Strategy through business strategy aspects will benefit and increase Locally-generated revenue

1) The ability to benefit economically

Based on the research results of the application of BSF cultivation in the Rejowinangun market in Magelang City, the economic calculation results of BSF cultivation are as follows: a) 45 days of life cycle from BSF; b) Within 3 days the BSF flies were put in a tight wire mesh enclosure; c) Within 3 days the mating process takes place, after the marriage of the male BSF dies, d) 3 days laying eggs

in a container that has been prepared, (3). 3 days later the larvae / maggot net incubation process, (4). 18 days the larvae eat and poop, and (5). 15 days become a cocoon (pupa). Back again becomes a fly. It is recommended that maggot cultivation starts from a cocoon or pupa, so the breeding cycle is more easily controlled. Pupa price per 1 kg is 100,000 Rupiah

- 2) In the fourth cycle the growth process occurs by eating large portions, any waste that will be eaten. In the BSF installation of Rejowinangun market, 1 kg pupa takes 1 quintal of mixed waste (vegetables and fruits) within 1 month to produce maggot of approximately 300 kg, the selling price per kilogram of maggot is 20,000 Rupiah. So, within 1 month to get the results of 300 kg = 300,000 gr X 20,000 Rupiah = 6,000,000 Rupiah. So only with a capital of 1kg for 100,000 Rupiah will generate a profit of 6,000,000 Rupiah.

Note:

- From the description of the results of the calculation of the benefits mentioned above, the application of BSF cultivation can be applied anywhere, both on a household scale and in all traditional markets throughout Indonesia. Estimated profits to be generated can be predicted from the BSF production costs multiplied by the results of the waste generated by the market per day will be obtained a substantial profit.
 - BSF cultivation constraints: apparently not all types of organic waste can become maggot feed, because not a few vegetables and fruits contain pesticides. Handling is waste vegetables and fruits need to be washed in running water or through the boiling process, after the new cold is given to the maggot.
 - Organic waste that is not consumed by maggot can be processed into organic fertilizer.
 - Males who die from the marriage process can be mixed in the process of making organic fertilizer.
- 3) Economic value or increase in public value resulting from the application of BSF, namely:
 - Can be used as animal feed, bird feed, fish feed or fishing bait including male flies that die from marriage.
 - In cooperation with Indonesian Peasants Association maggot larvae and compost produced can be marketed to farmers who are members at very cheap prices.
 - Able to be an alternative to overcome the scarcity of fertilizer in the market.
 - Can also be the result of maggot cultivation used for subsidies by the government to farmers and freshwater fish farmers or poor residents.
 - Organic fertilizers can be used to fertilize plants and flowers to decorate the city. This becomes a cost-effective and efficient budget for the maintenance of municipal plants.
 - 4) Financial ability
Funding is all costs arising from activities related to waste management in the Mutual Cooperation market in sharing the Magelang City Government's APBD funding and Corporate Social Responsibilities as well as legitimate sources/grants.

- b) Functional Strategy through aspects of maximizing production functions, HR management and governance.

- 1) Ability to manage human resources
The waste management groups need to be formed in accordance with the lot of market plots, this is to form awareness and facilitate the implementation of the program because it is carried out cooperatively. The groups work in scheduled schedules in turns. Each group will be accompanied by officers from the Regional Technical Services Unit Gotong Royong market to direct and supervise the BSF program in order to achieve the set goals. Collaborating with Public Colleges-Private Colleges in Research and Service activities as a manifestation of the Higher Education Tri Dharma, jointly providing assistance, monitoring and control in order to achieve the success of the BSF program.
- 2) Technology Capability
To minimize losses and obstacles as well as accelerate the realization of the action plan, it is necessary to benchmark to other regions and / or BSF managers in other regions that have proven successful and have been able to produce high value benefits for the public especially in the economic field. The author has conducted a survey in the Rejowinangun City of Magelang market that has successfully conducted BSF cultivation. Automation of waste processing, for example with containers running and will stop automatically at every stall trader, after full will go directly to the depot and carry out the process. The traders only need to sort out the types of organic and inorganic waste then pour it into the container running according to the type group. Need to carry out rehabilitation and renovation of infrastructure for the smooth running of the BSF program. Create an organic waste treatment plant and BSF aquaculture plant. For inorganic waste can be distributed to garbage banks.
- 3) Trust
Enterprise Strategy through providing aspects of community needs in the availability of fertilizer and animal feed and fish, cheap and affordable prices.
Build value:
 - Satisfaction
Indicators of community satisfaction and response are to contribute realistically (tangible) and responsive (responsiveness) at a time when scarcity of fertilizers that often occur can be anticipated by processing market waste into organic fertilizer by the BSF method, other than that cheap and affordable prices by the community. It is very possible to become a subsidy by the Government to the community of farmers and ranchers and community groups.
 - Social and Culture
Build a culture of mutual cooperation in the merchant group to maintain the continuity of BSF cultivation. Besides that, BSF cultivation can be applied in people's homes, so that it can provide additional income. A sense of concern among fellow traders. Collaborative participation of traders, OPDs, stake holders, CSR
 - Ecology
The creation of a clean, neat and hygienic market. The beauty of the city is even more beautiful.
 - Education
Educate households not to throw garbage in the landfill. Educating traders to care about environmental cleanliness with obedience and order. Motivating and encouraging cleaning staff by continuously accompanying them in collecting

waste, this process is the initial key to the success of the BSF implementation because when collecting garbage, traders have directly sorted organic and inorganic waste. With continuous and continuous it will become a habit of sorting. Furthermore, the collected garbage is pooled to the waste treatment location and processed by the BSF method.

5 Conclusions

Building public value in waste management in the Mutual Cooperation market has a new novelty. This research uses an approach to build public value combined with strategies in waste management in the Mutual Cooperation market.

In the concept of public value creation, the main strategies introduced [3] are services (Outcomes), Benefit (Outcomes), and Trust (Trust). The important values of strategic public value creation developed [3] produce something of value from the collaboration with the concept of master strategy, namely corporate strategy, functional strategy, business strategy and enterprise strategy.

Regarding waste management in the Mutual Cooperation market there are several values that are substantially valuable. Among them in terms of economic value, waste management in the Mutual Cooperation market can increase economic added value for traders. Political values will be supported by a legal umbrella in administering program implementation and budgeting. From the cultural values the involvement of various stakeholders and traders will ultimately strengthen the existing social capital, community commitment and participation in policies related to environmental hygiene can be improved through the management of the surrounding waste. The educational value of waste management in the Mutual Cooperation market serves to educate the community to protect the environment around them, especially traders who sell at traditional markets. In addition, ecological value will also have a very significant effect, considering that waste management methods in the Mutual Cooperation market can also contribute to sustainable development programs that have a wide impact on the environment.

All aspects of public value created in waste management in the Gotong Royong market offered by researchers are inseparable, in other words interrelated to produce public value. In implementing this framework, at least policy makers can implement this concept to support Good Governance.

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