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Empowering Sukorame Village Community Through the Sukorame Waste Processing Management System (SIMPOSKO)

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ABSTRACT

Overcome the waste in Indonesia are one of the government's concerns, one of which is the establishment of Waste Banks in Indonesian regions through the Ministry of Environment. Kediri city have 110 waste banks recorded but not enough to solve the waste problem. 140 tons of waste is thrown in the Kediri landfill every day. The Waste Bank in Sukorame Village, Kediri City, East Java has a commitment to solving the waste problem by waste management. So far, waste management efforts are still limited to selling waste to collectors at low prices, whereas from observations it is known that administrators have the skills to process waste into recycled craft products. With these skills, waste bank productivity should be able to increase further so that customer welfare also increases. The aim of this community service is to develop a web-based application called SIMPOSKO (Sukorame Waste Processing Management System) with 3 main features : education, promotion and information. The existence of this system is expected to help market waste recycling products so as to increase waste bank productivity and income. Activities are carried out through outreach through training and education to all sub-district administrators and officials, technical guidance and intensive assistance in using the system, mass media publications, mentoring and evaluation of activities to ensure the sustainability of system management.The results of the service show that the system has succeeded in disseminating information and education regarding waste processing, the dangers posed by waste, marketing platforms and branding for waste recycling products, as well as waste bank profiles so that it can increase the productivity of the Sukorame waste bank in overcoming the waste problem in Indonesia and can also increase people's income and welfare.

A. Introduction

Indonesia is recorded as the second largest contributor of plastic waste to the sea after China with an estimate of 0.48–1.29 million metric tons per year with 80 percent of marine waste coming from waste produced on land from human anthropogenic activities (Abdila, 2021). The Ministry of Environment and Forestry (KLHK) admits that in 2020 total national waste production will reach 67.8 million tons. This means that around 185,753 tons of waste are produced every day by 270 million people. Or each resident produces around 0.68 kilograms of waste per day (Setiawan, 2021). This figure has increased compared to previous years. In 2018, national waste production reached 64 million tons from a population of 267 million. This waste ultimately contributes greatly to increasing stockpiles in final disposal sites (TPA). Increased economic growth encourages an increase in the standard of living of the population, indicated by increased production and consumption activities. However, on the other hand, this increase has an impact on increasing the diversity of types and amounts of waste piled up if it is not managed properly.

Waste that is not managed properly can cause various problems such as environmental pollution and harm to health. Accumulation of rubbish and careless dumping of rubbish in open areas will result in soil pollution which also has an impact on groundwater channels. Meanwhile, burning waste will

cause air pollution. It doesn't stop there, dumping rubbish into rivers also causes water pollution and clogged waterways which can cause flooding in the rainy season, as well as unpleasant odors.

Data in Kediri City, as of 2022, the Klotok Final Management Site (TPA) receives 140 tons of waste per day, both organic and inorganic waste. This number could continue to increase every year if society still relies on the principle of collect, transport and dispose (Saichu, 2022). To overcome this problem, the Kediri city is intensifying the Waste Bank program. There are 110 waste banks recorded in the city of Kediri, but this has not been optimal in reducing the amount of waste piled up.

According to the Republic of Indonesia Minister of Environment Regulation Number 13 of 2012, waste banks are institutions regulated by the Ministry of Environment and Forestry to manage money and waste. The waste bank collects waste from customers to sell to collectors, creating works in the form of new items which will later be sold and make money, which can also be exchanged for gold, buying basic necessities, paying for electricity, and even health costs. Customers are also allowed to borrow money and return it with waste for the amount of money borrowed. This waste will be handed over for processing to factories, recycling agents, or PKK women. One of the waste banks that has a high commitment to reducing the waste problem in Kediri City is the Melati waste bank in Sukorame sub-district. With a limited number of administrators and having other jobs besides being an administrator, the Melati waste bank still regularly carries out waste collection activities. Several achievements have been achieved, both at city and provincial levels. The collected rubbish is then collected to collectors to become money, some of which is recycled into crafts for collections. The customers of this waste bank are not only from the surrounding RT area but from outside the area as well.

Figure 1. Process of Sorting and Weighing Melati Waste Bank Waste for sale to Collectors
Source: primary data

The efforts made by the Melati waste bank are quite good in processing waste, but not yet optimal in improving customer welfare because the prices given by collectors are quite low. This waste bank can be more optimal in improving customer welfare by producing recycled products for marketing. From the results of observations carried out for 1 month through the Thematic KKN program, it is known that the management of the Melati waste bank has the ability to make craft products from recycled waste, but only keeps them for collection. If sold, the price of recycled products is much more expensive than if the waste is sold directly to collectors. This waste bank can also be more optimal in reducing the waste problem by providing education about waste processing to everyone from children to the elderly. Marketing of waste recycling products and education on waste processing can be more effective through web-based applications.

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Figure 2. Results of Waste Recycled Craft Products which are only for display.
Source: primary data

The main problems found during observations were:

1. The waste bank in Sukorame sub-district has so far only sold waste from customers directly to collectors at low prices even though it has great potential in producing recycled crafts from waste which can be sold at a higher price.
2. There is still a large amount of waste being deposited in landfills, dumped in rivers and in random places, indicating a lack of public education about the dangers of waste.

The aim of this service activity is to develop the SIMPOSKO application to overcome the problem identification. SIMPOSKO (Sukorame Waste Processing Management System) with one of its features is waste education with interesting infographics regarding how to sort waste, the dangers posed by waste, how to process waste properly and correctly using the 3R principle (Reduce, Reuse, Recycle). Another feature of SIMPOSKO is the marketing of recycled waste craft products. With this feature, it is hoped that the waste bank's productivity will increase so that people's welfare will also increase because it can be connected to the marketplace for a wider marketing reach. SIMPOSKO (Sukorame Waste Processing Management System) can also be a means of information and promotion of waste bank activities in Sukorame Village so that it can attract more and wider customers. SIMPOSKO (Sukorame Waste Processing Management System) also allows customers to check waste savings balances and waste selling prices with access via username and password so that confidentiality is maintained. With SIMPOSKO's output from this activity, it is hoped that it can increase waste bank productivity and help reduce the waste problem in Indonesia.

B. Literature Review

One type of business that pays attention to sustainable environmental aspects is a business that is efficient in using energy, a business that reduces carbon emissions, and manages environmentally friendly waste. This is part of the Green Economy which is oriented towards generating profits by paying attention to environmental sustainability (Permana et al., 2023). The sustainable development paradigm consists of three pillars that must play a role together: social, economic and environmental. If even one pillar does not play a role, it will cause sustainable development to fail (Suciati & Aviantara, 2019). One implementation of the Green Economy is Green Business, which is an effort to achieve environmental economic progress as a pillar of implementing sustainable development for the transition process towards a low-carbon and green economy (Kristianto, 2020). In this service, Green Business is demonstrated by waste-based production as an effort to reduce and overcome problems caused by waste that threaten environmental sustainability.

Efforts to develop Green Business currently really require an information system. Due to the demands of technology that must be applied in all fields, information systems have become an important medium for business success. An information system is a combination of people, hardware, software, communication networks, and resources to collect, transform, and disseminate information (Yuniva et

al., 2018). The development of information technology encourages the development of information systems that are increasingly fast, efficient and accurate (Pamungkas et al., 2020). Currently, web-based information systems are widely used for efficiency in various aspects of management, including operations/production management, HR, finance and marketing. (Soedrijanto et al., 2019; Yuniva, 2016). In this service activity, a web-based information system was developed for Green Business media, namely the waste processing business. Waste is leftover material from human activities that is no longer used. Waste will continue to increase and will never stop during human life (Putra & Yuriandala, 2010). Therefore, it is necessary to process waste, especially plastic waste because it is difficult to decompose. If waste is not managed it will continue to accumulate and damage the environment. One waste processing business that can generate additional income is the business of making crafts from plastic waste.

C. Method

This community service activity was carried out in Sukorame sub-district, Kediri city for 6 months from June to November 2023, with the following stages:

1. The preparation stage is carried out with FGDs and coordination with related parties and agencies, including the Sukorame sub-district, the Kediri city environmental cleanliness and landscaping service, the Kediri City Communication and Information Service, the Kediri city education service, and the Sukorame waste bank.
2. The system development stage is carried out by the IT team by considering needs and input from the results of previous FGDs.
3. The Socialization and Mentoring stage is carried out by socializing the system to the Sukorame community. Next, carry out promotions so that SIMPOSKO is widely known nationally and internationally in stages.
4. The monitoring and evaluation stage is carried out by the service team by providing recommendations on activities that have been implemented and follow-up plans according to the monitoring results.

The following are the steps taken so that the goal of service can be achieved:

1. Conduct outreach to schools throughout Sukorame sub-district. This is because SIMPOSKO has educational features that are suitable for all ages.
2. Socialize SIMPOSKO through community meetings, especially waste bank customers because there are features regarding waste bank information.
3. Train and assist in marketing waste recycling products, especially in the use of marketing platforms in SIMPOSKO.
4. Paid promotion of SIMPOSKO through social media so that its existence is widely known.
5. Promotion through government media in the city of Kediri

D. Results and Discussion

From the results of the FGD, the service team received a lot of input regarding the system that will be developed with the following flowchart:

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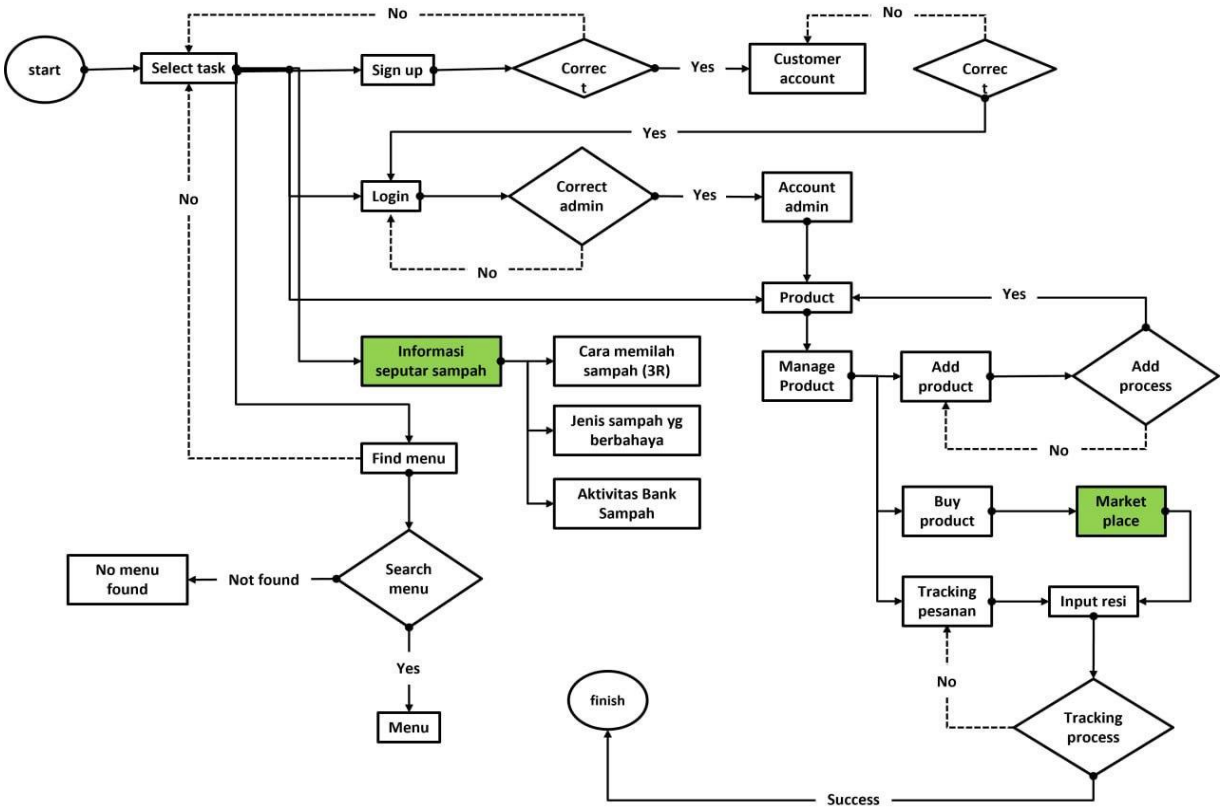

Figure 3. Results of Waste Recycled Craft Products which are only for display.
Source: primary data

Development continues to be carried out with intensive coordination with the Kediri City Communications and Information Office. After the system meets security standards, the communications and information services department provides a domain and hosting with the kedirikota.go.id website. So the system can currently be accessed via the web page: http://simposko.kedirikota.go.id .

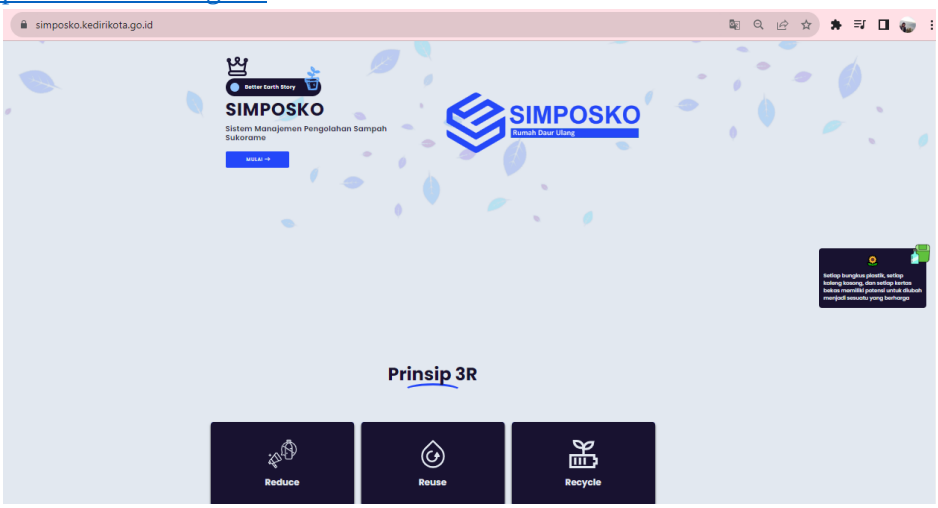

Figure 4. Simposko educational features display
Source: SIMPOSKO's web

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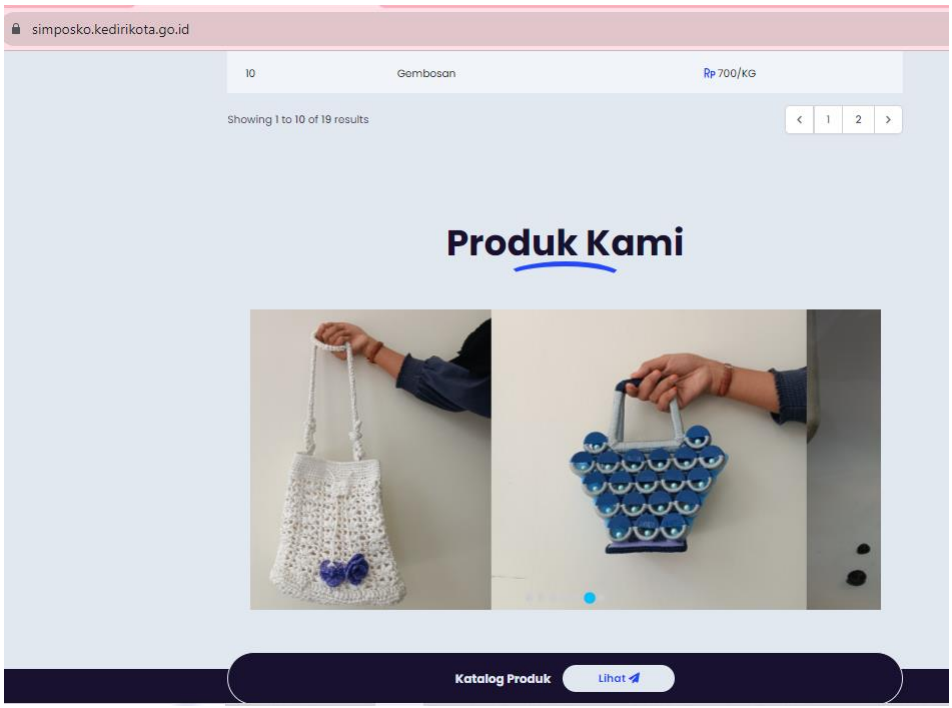

Figure 5. Simposko marketing features display
Source: SIMPOSKO's web

Figure 6. Simposko Waste Bank Profile features display
Source: SIMPOSKO's web

The target community consisting of 20 waste bank administrators has a commitment to preserving the environment through waste management and also the skills to make waste recycling products that have high economic value and artistic value. Through this community service activity, the target community is given training to optimize promotion and information on waste recycling products so that they can increase product sales and waste bank income. Previously, the waste bank's income was still limited from selling waste to collectors at very cheap prices. After marketing training through this service, income increases from sales of waste recycling products, the value of waste can be even higher. For the sale of plastic waste, if it is sold in ordinary plastic form it is only priced at IDR 800 per

kilogram, but after making songket bag crafts from plastic using less than 1 kilogram of material it can be sold for IDR 25,000.

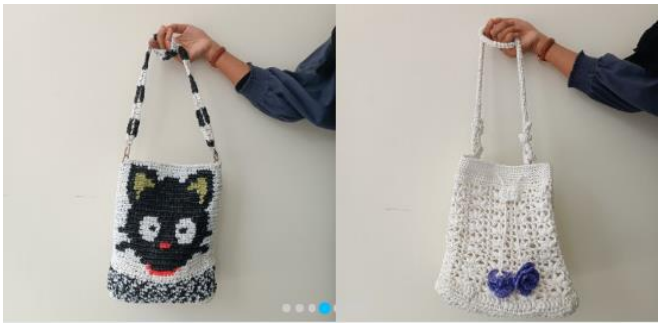

Figure 7. songket bag crafts from plastic
Source: SIMPOSKO's web

For paper waste, if it is only sold in paper form it will only sell for IDR 2,000 per kilogram. After making a vase craft using less than 1 kilogram of paper, it can be sold for IDR 30,000 per piece.

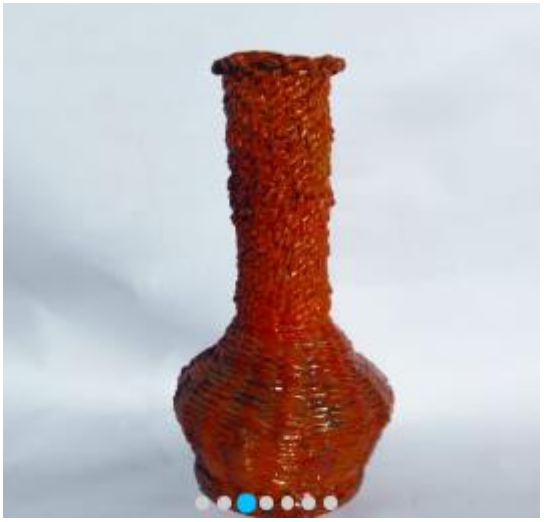

Figure 8. vase craft from paper
Source: SIMPOSKO's web

For household waste, for example cooking oil that can no longer be used, previously there was no selling price. By processing it into aromatherapy candles it can sell 15,000 per unit.

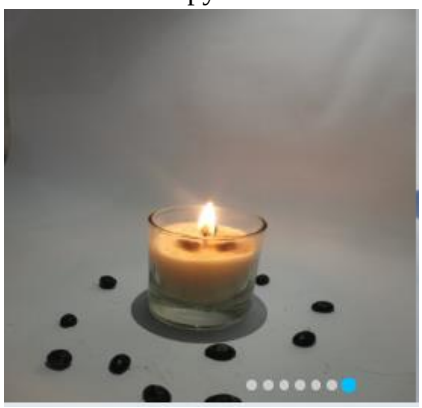

Figure 9. aromatherapy candles from cooking oil waste
Source: SIMPOSKO's web

There has been an increase in productivity and income of waste banks in Sukorame sub-district. It is hoped that this will also motivate other waste banks in the city of Kediri.

E. Conclusion

Through this community service activity, a web-based information system has been created that suits the community's needs to optimize the community's potential in making waste recycling products with high economic and artistic value. Through this system, called SIMPOSKO, waste bank administrators can inform and promote their products so that they can increase waste bank productivity and income. The Sukorame community is increasingly empowered in waste management and producing waste recycling products that can increasing their productivity and income. It is hoped that these results will motivate other waste banks to also produce products and use SIMPOSKO for their profile and marketing so that the benefits of SIMPOSKO can be felt not only in Sukorame sub-district but also in all sub-districts in Kediri city.

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