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The Effectiveness Of Circular Economy Implementation On Electronic Waste Processing Management Based: Towards The Welfare Of Jombang Community

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Abstract:

Background: Garbage or household waste has become a problem in Indonesia. Population growth and economic activity are thought to be the promoter of the increase in the rate of waste generated by household economic activity. There are opportunities to create prosperity through circular economic activities by good waste management. Alternative ways of waste management must be effective that can generate trust and the community becomes easier to do it. Having an application is a challenge in itself. This is due to the various different characters of society, including age, knowledge related to technology, and also motivation in technological literacy. So, in this study the researchers tested how the effectiveness of the use of applications in the management of electronic waste processing.

Materials and Methods: this research uses qualitative descriptive method. The strategy used in this research is phenomenology. The location determination is done deliberately with the consideration that the village community is a customer of Santri Bank. Testing the validity of the data in this research uses source triangulation technique.

Results: based on the customer's opinion, it can be seen that the availability of ATASI application will make customers more understand about the system which is run by Santri Bank and increase trust in the management that is managed by Santri Bank

Conclusion: based on the results of the research, it can be concluded that the use of ATASI application as a form of circular economy application based on electronic waste processing management can be said to be effective because the application that implemented can have an impact on people who increasingly understand the working system of Santri Bank so that customers' trust increases. By using the ATASI application, the community can easily get information related to the development of the value or price of waste or household waste in each type and customers can also find out directly the development of product prices provided by ecomart Santri Bank. With the application can also show details of transactions made by customers with Santri Bank. The effectiveness of ATASI application is also seen in customers who become easier to access and control their savings and customers can also immediately find out the price of products wherever customers are. Customer monitoring can be done anywhere because of ATASI application that is based on Android and also web-based.

Key Word: Effectiveness, Circular Economy, Waste Management, Community Welfare..

I. Introduction

Garbage or household waste has become a problem in Indonesia. Population growth and economic activity are thought to be the promoter of the increase in the rate of waste generated by household economic activity. Household waste or garbage that accumulates will have a negative impact on health, environment and socio-economics. Pollution of groundwater and air due to the presence of waste reduces the quality of the environment (Saribanon, 2007). Garbage becomes a medium for transmitting parasitic infections, disturbing the aesthetics of the environment, and can even cause flooding when discharged into water bodies. In general, waste that is not handled properly will have consequences on the high cost of Environmental Management and economic losses in the form of hindering the development of the tourism sector, hindering the development of regional autonomy and reducing the flow of investors (Mulasari, Husodo, & Muhadjir, 2016). From a social point of view, this accumulation of waste comes from people's lifestyles and poor waste management. People's increasingly consumptive lifestyles also contribute to the amount of waste that will be produced. Public awareness to dispose of waste in its place is still lacking. Jayawati et al (2019) stated that the root of the problem in waste management is that the culture of clean and healthy living behavior (PHBS) has not been formed. The

waste management chain is still a challenge because there is still waste accumulation, expensive costs in the process of transporting waste, accumulation of waste that exceeds landfill capacity, effectiveness and efficiency of waste management.

Garbage or also commonly called household waste can be resolved if there are efforts started by the village government to overcome and manage properly so that it has economic value. Indartik et al (2020) argue "the waste management chain is still a challenge in itself because there is still waste accumulation, expensive costs in the waste transportation process, accumulation of waste that exceeds landfill capacity, effectiveness and efficiency of waste management." In relation with the condition of the community who are still worried about meeting the needs, it is important that there are efforts also start from the village to improve the community's economy through the utilization of household waste. Community welfare issues that have arisen in several regency especially in Jombang regency, are challenges that must be solved by the Indonesian government from the central government to the regional governments. The phenomenon that has occurred so far is still a lot of household waste that is wasted and not utilized so that it is taken by scavengers to be deposited to collectors. In this case, the community does not receive benefits from the existence of household waste that is created by themselves, while garbage or household waste can be managed to be more useful and have higher economic value and can be a substitute for goods that are needed and must be fulfilled. With the replacement goods made from garbage or household waste, the community will minimize spending on purchases and can use the budget to meet other needs. The existence of alternative solutions in each village namely the waste bank will be able to minimize the pile of garbage and can be replaced into needed items. People who are mostly farmers with seasonal income can also take advantage of this. Buhani et al (2018) stated that the waste bank program aims to enable people who mostly work in plantations and agriculture to independently have the ability to process and utilize waste/garbage into compost as fertilizer in increasing their business productivity.

Waste management to support government programs in the adipura program with the aim of saving the environment is important to do. The existence of climate change, waste and pollution in the era of globalization is a challenge for every country including Indonesia. An activity that can currently be done with the globalization of the world which is full of waste pollution is to reduce environmental risks through recycling of waste production from consumption to reduce negative impacts. (Titova, 2020) argues that it is important to transition from a linear economy to a circular economy. The transition is also carried out by European countries to the European Union's development strategy. (Llorente-González & Vence, 2019) explains that "in recent years, the shift to a circular economy (CE) has become an increasingly important component of the European Union's development strategy". Based on this also in supporting a healthy environment in the future, it is important to maintain environmental sustainability for the next generation through the application of a Circular Economy. (Suwignyo et al., 2021) stated that the Circular Economy (CE) is "a concept that encourages the use of circular resources to achieve sustainable development. The circular economy is important because it can be the main economic model in facing world challenges related to environmental issues and solving economic problems. (Avilés-Palacios & Rodríguez-Olalla, 2021) argue that "the circular economy (CE) is considered the main economic model to meet the challenges of sustainable development. Strenuous efforts are focused on transforming waste into a resource that can be reintroduced into the economic system through proper management. In this way, linear and waste-generating value chain problems are solved, making them circular and more sustainable of the solutions proposed in the chain already get benefit from Circular processes, so that production waste and garbage are reduced on the one hand, and on the other hand, inefficient consumption resources decreases". The existence of community participation is needed in waste or garbage management by applying the principles of a circular economic system". (Wiratih et al., 2021) revealed "the economic principle of the circular economy is one of the economic systems is used as a method to address the challenges of global change such as climate change, waste, pollution, and loss of biodiversity". Creativity in waste management is needed in order to save the environment and create a sustainable environment. Circular economy activities can be carried out through households, namely by processing household waste into healthy goods that have economic value. (Wicaksono et al., 2022) argues "household waste management can take the form of food waste into drinks that are healthy and have economic value". The relationship between the economy and the environment is included in the circular economy, which is a branch of economics that identifies trade-offs between economic activity and the quality of the surrounding natural environment ecosystem. (Kuku & Biswas, 2014) argued that the circular economy is also known as a product in the form of goods that have a longer life and economic value than products in non-circular economies. (Kirchherr et al., 2023) argues that "society as a consumer has a role not only responsible and awareness but also practices towards circular consumption". The existence of practices that are directly carried out by the community through circular consumption included in the circular economy circle scheme will directly impact on each or person and society in general, namely the existence of environmental pollution which can be in the form of air pollution. (Kismanto, 2020) argues that "to generate the local economy, increase energy security and reduce air pollution, implementation of the circular economy concept, for example, using biogas to replace LPG, will face many challenges". In Indonesia, the

practice of circular economy can be carried out at the village community level with the hope that the environment becomes healthier and the community can continue to meet their needs and desires to be prosperous. The existence of Santri Bank program in Jombang Regency that implements a circular economic system contains 3R activities (Reduce, Reuse, Recycle) is the purpose of waste management which consists of three elements, namely reducing, reusing and recycling waste. The existence of santri bank can be an alternative solution for the community and district government in waste and economic problems.

The solution to the problem of community welfare is solved by the E-WPM (Electronic Waste Processing Management) System which is the result of university innovation, namely STKIP PGRI Jombang with the application name ATASI. Applications that arise due to problems or complaints of Santri Bank customers for not being able to monitor savings generated through waste or garbage exchange, customers also being unable to check the goods available at ecomart Santri Bank, and about the disclosure of information directly on what customers have regarding the amount of savings and savings balances. With ATASI application, it contains waste bank management starting from recording the amount of waste sent by the community and then recording the results or savings, transactions that can be done directly online and checking savings balances. So that with the application of innovation results, it is hoped that the community will be easier to transact and fulfill daily needs generated through the results of waste exchange. 1

Based on this, this research will reveal about how the effectiveness of the application of a circular economy based on electronic waste processing management towards the welfare of the community in Jombang Regency.

II. Material And Methods

The researchers examined "the effectiveness of the application of circular economy-based electronic waste processing management towards the welfare of the community in Jombang Regency". This research uses descriptive qualitative methods. The strategy used in this research is phenomenology.

The location determination is done intentionally (purposive) with the consideration that the villagers are customers of Santri Bank from Sumberagung Village, Megaluh District and Mojongapit village, Jombang District, Jombang Regency and Santri Bank branch of STKIP PGRI Jombang. Santri Bank customers are lucky because they get the benefit from the results of university innovation, namely STKIP PGRI Jombang, in the form of ATASI application.

The informants in this research are divided into two, namely key informants (Key informants), and supporting informants. Key informants in this research are the code names MA and AR of Santri Bank unit Sumberagung Village, Megaluh District, UR and PM of Santri Bank Mojongapit Village and AB and WHY of Santri Bank Unit STKIP PGRI Jombang or Sengon Village Jombang District.

Based on the data sources, data collection in this research is using primary sources and secondary sources. Primary data collection techniques in this research were conducted through observation and in-depth interviews. Observations and in-depth interviews are aimed at seeing directly about the effectiveness of the application of a circular economy based on electronic waste processing management towards the welfare of the community in Jombang Regency. Effectiveness in the research among others are viewed from the perspective of customer opinions related to trust, information disclosure, ease of access to savings, ease of checking products at ecomart.

Data analysis techniques can be seen in the following chart of data analysis techniques according to Patton:

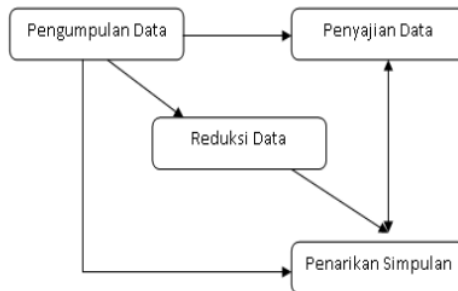


Chart of Data analysis techniques according to Patton in Moleong (2000: 280)

The data collection phase is to search, find and record what is so that a clear, detailed and systematic picture can be obtained about the effectiveness of the application of a circular economy based on electronic

waste processing management towards the welfare of the community in Jombang Regency. The next step is data reduction. Data reduction is summarizing, choosing the main things, focusing on the important things obtained during interviews with informants who are customers of Santri Bank.

The next stage is the presentation of data. Presentation of data can be done in the form of a short description in the form of a narrative as a result of data acquisition from information in the field. Last is the conclusion.

Testing the validity of the data in this research uses triangulation techniques.

III. Result

The importance of waste management resulting from household production can overcome the problem of waste and welfare in an area. The role of the village government in overcome waste so that it does not become useless is something that must be done through increasing public awareness related to environmental cleanliness and by increasing public understanding related to the circular economy that can support the need to create prosperity. Applications can be an alternative solution to motivate people in creating prosperity through the utilization of waste or garbage into goods that have economic value and or can be used as a medium to fulfill their daily needs.

The effectiveness of using the application of circular economy based on electronic waste processing management towards the welfare of the community in Jombang Regency.

A. Effectiveness viewed from the perspective of customer opinions related to trust

Trust is one of the basics for people to be able to join and actively participate in an organization or group. Santri Bank is a social and environmental organization that facilitates the community to care for the environment and create prosperity. Santri Bank's activities related to the implementation of the circular economic system are containing 3R activities (Reduce, Reuse, and Recycle), namely reducing, reusing and recycling waste. In addition, Santri Bank also provides savings facilities and ecomart which is a store that provides daily needs for people who become customers. With the existence of these facilities, a media is needed that can build customer trust so that customers can be motivated to actively participate in the Santri Bank program. The role of information technology is very important to build customer trust. With the existence of an application resulting from the innovation of the Santri Bank management system by STKIP PGRI Jombang, namely the ATASI application with android-based and web-based, it can be an alternative solution to increase customer trust. This is in accordance with the opinion of the customer 1, namely MA who comes from Santri Bank Sumberagung village Unit, Megaluh District, said:

"With the ATASI application, I have more confidence in the management of santri bank because the application is on my own cell phone. So it is very good for me". ww1.IKN1Mglh.

A similar opinion was also expressed by customer 3, namely UR who come from Santri Bank Mojongapit village, he said:

"Thank God! With the existence of ATASI application, it makes me more excited to sort and set aside my own household waste for me to send to Santri Bank". ww1.IKN3Mjpt.

AB one of the customers from STKIP PGRI Jombang unit also said that:

"This ATASI application has made me closer and trust with Santri Bank because I know more about the system run by Santri Bank " ww1.IKN5STKIPJB.

Based on the customer's opinion, it can be seen that with the availability of the ATASI application, customers increasingly understand the system run by Santri Bank and increase their confidence to the management managed by Santri Bank.

B. Effectiveness viewed from the perspective of information disclosure opinion

Information disclosure is the basis of trust that arises from the members of an organization or group. The more there is openness in information, the more it will increase the level of understanding of a goal and trust. The ATASI application that is given to the customers can cause openness of information on transactions with Santri bank. The customer becomes aware of the transactions pattern starting from deposits, direct recording of applications, and the use of customer benefits for their participation in waste treatment.

AR is a customer who became an informant 2 argues that:

"It's true, having this application allows me to be clear in monitoring income and expenditure transactions. And I can know my activities and active role in Santri Bank". ww5.IKN2Mglh.

PM as customers and informants 4 also said that:

"yes, this application is really open because later with this application I will be able to directly access wherever I am, and I can also show my family about the transactions I have made clearly". ww5.IKN4Mjpt.

The same thing was also conveyed by WHY who is a customer and informant 6 from STKIP PGRI Jombang unit, he said:

“The ATASI application from Santri Bank is advantageous because I can directly access what I want to know, for example the price of waste bottles per kilogram or other prices. I can also find out the transaction flow wherever I am and it can be opened online too”.

Based on the opinion of the informant, it can be seen that the ATASI application can provide information and clarity in transaction activities carried out by customers. Customers can access anything they want to, related to transactions with Santri Bank anywhere and anytime.

C. Effectiveness viewed from the perspective opinion of ease of access to savings

Santri Bank customer savings are the result of exchanging household waste stored in a system. Savings can be used by customers to exchange with basic needs. The advantage obtained by the customer is that with the savings stored in the application system. The customer does not need to use cash to get basic necessities. Customers only need to check their savings through the electronic system and make purchases of goods electronically as well.

MA as an Informant 1 coming from Santri Bank Sumberagung village unit sub-district Megaluh said:

“yes, it's right, it's good if use the application system. I can check the amount of my savings wherever I am. I can also estimate what this savings I will use to buy for.” Ww8.IKN1Mglh.

UR informant 3 who come from Santri Bank Mojongapit Village also said:

“This application is good, wherever and whenever you can check your balance through your cell phone, you don't need a savings book anymore because the book can get dirty or damaged”. ww8.IKN3Mjpt.

Based on the opinion of the informants, it can be seen that by this application, it is more effective because customers can see the savings that have been entered. Customers can monitor savings from anywhere because the application is based on android and web.

D. Effectiveness viewed from the perspective opinion of the ease to check the product at ecomart

Ecomart is the embodiment of the existing shops in Santri Bank both central or unit. Ecomart contains products according to customer needs in a region. The existence of ecomart is a facility for costumers to be able to exchange money in saving with available products. The ATASI application bridges between ecomart and customers. In the ATASI application, there are already products that are sold and ready to be taken by customers. So that customers do not need to come to a conventional store in advance to see the availability of goods, but can see in advance the availability of goods and can directly exchange savings with the desired product.

WHY which is a customer and informant 6 of STKIP PGRI Jombang unit argue that:

“This application makes it easier for customers to transact. Customers do not have to come in advance to check the availability of goods, but customers can see through the online application”. Ww11.IKN6STKIPJB

MA as an Informant 1 who comes from Santri Bank Sumberagung village Unit Megaluh district also said:

“By this application will make customers more comfortable because they can make transaction and see the amount of goods available. After the customer has made a transaction of exchanging savings for goods, it can be taken according to the order”. Ww11.IKN1Mglh.

From the results of information from the informants, it can be seen that the customer considers that ATASI application is an effective application because in the application provides features or menus for purchase transactions and checking the availability of goods or products.

IV. Discussion

The circular economy is now an event for every independent society in creating its prosperity. People who have been accustomed to using linear economic patterns must now change their pattern of economic activity into circular economy with the 3R principle (Reduce, Reuse, Recycle), namely reducing, reusing and recycling. This circle should be created so that every human being can maximize the potential of their products to get economic value and achieve prosperity. There are many steps to implementing a circular economy include the management of waste or household waste properly. Household waste is a major issue in environmental pollution. (Sunismi et al, 2022) the handling of waste problems is closely related to environmental problems (Widiyanto et al., 2019). This of course becomes interesting when household waste can be resolved by being diverted into opportunities **1** create prosperity. Santri Bank in Jombang regency, East Java province of Indonesia has implemented **the concept of circular economy**. **The implementation of a circular economy** is important because with proper management will also have an impact on society. The target community gets opportunity to send household waste that has been sorted independently and then can be exchanged for savings that can be taken in the form of basic material needs. Of course, being a new breakthrough with one step can have an impact on the welfare of society and also on the environment in the form of accumulation of waste and

environmental pollution. In the era of Industrial Revolution 4.0, it is important to have information technology to support these activities. The existence of an application with the name ATASI will be able to increase public confidence about the management or management of santri bank. The public can be more understand about the working system of Santri Bank activities. In the ATASI application, people who become customers can directly get data on garbage deposits and savings transactions and the community can also support welfare by easily seeing online on cell phone or web about basic necessities that can be exchanged for savings from household waste utilization. This is one of the efforts to form a circular economy that exists in the community to be more prosperous. People no longer spend money to buy basic necessities. The community can set aside a basic needs budget to be diverted to savings or fulfill other needs.

4

V. Conclusion

Based on the results of the research, it can be concluded that the use of ATASI application as a form of circular economy application based on electronic waste processing management can be said to be effective. Because the applied application can have an impact on the community who increasingly understand the working system of the santri Bank so that customer trust increases. By using ATASI application, the community can easily get information related to the development of the value or price of waste or household waste in each type and customers can also find out directly the development of product prices provided by ecomart Santri Bank. This application can also show the details of transactions made by customers with Santri Bank. The effectiveness of ATASI application can also be seen in customers who become easier to access and control their savings. Customers can also immediately find out the price of products wherever customers are. Customer monitoring can be done anywhere because ATASI application is based on Android and also web-based.

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