

Circular Economy Business Model in the COVID – 19 Pandemic Era in Local Communities



Imam Mukhlis¹, Muhammad Alfian Mizar², Yuniadi Mayowan³, Andik Pratama⁴,
Isnawati Hidayah⁵

¹Faculty of Economics, Universitas Negeri Malang, Indonesia

^{2,4}Faculty of Engineering, Universitas Negeri Malang, Indonesia

³Faculty of Administrative Sciences, Universitas Brawijaya, Indonesia

⁵PhD Candidate in Economics, La Sapienza University of Rome, Italy

⁵ROTASI Institute (Institute of Rural Development and Sustainability), Indonesia

ABSTRACT: This study aims to map business opportunities with a circular economy model in Karangwidoro Village during the COVID-19 pandemic era. The methods used include the Participatory Rural Appraisal (PRA) Model which emphasizes community participation in all activities starting from planning, implementing and evaluating program activities. Moreover, the Community Development Model, which is an approach that involves the community directly as the subject and object of the implementation of research activities, is also employed. The results of the study show that there is a lack of public awareness of a business opportunity in agriculture, especially in the use of agricultural waste, but with the application of a circular economy business model, these problems can become new opportunities to increase the economic value of the local community.

KEYWORDS: Circular Economy, Community Development, Participatory Rural Appraisal, Sustainable Business

INTRODUCTION

As we know, the world is currently experiencing shocks due to the COVID-19 virus pandemic and Indonesia is no exception. The COVID-19 phenomenon has given various retributions to many sectors other than health, as well as education, economy, tourism, agriculture and others. The general impact that occurs due to the COVID-19 pandemic is the economic impact where the economic cycle is disrupted due to restrictions on community mobility activities. This is also aggravated by the many cases of Termination of Employment (PHK) for formal and informal workers. This means every individual affected by the impact of layoffs must have a strategy to meet the needs of daily life, especially in rural communities which incidentally are dominated by informal workers and even tend to have lower-middle incomes.

Karangwidoro Village is one of 15 villages located in Dau District, Malang Regency, East Java Province. The village consists of three hamlets, 32 RT (*Rukun Tetangga* or Neighborhood Association), and 7 RW (*Rukun Warga* or Citizens Association). The three hamlets include Karangampel, Karangtengah and Karangwidoro hamlets. Based on the existing village potential varieties, the agricultural sector is the most prominent/dominant sector where most of the villagers make a living as farmers. Agricultural conditions in Karangwidoro Village are dominated by commodities of rice, corn, oranges, cassava, chilies, and vegetables. Agricultural processing is carried out by utilizing modern equipment such as a plowing machine and there is also the use of cattle to plow the land. To fertilize the soil and increase agricultural productivity, the use chemical fertilizers is the most popular. There are still few communities/farmer groups that use organic waste as fertilizer for soil enrichment and crop productivity.

Figure 1. Organic Waste



Source: Author

Figure 2. Organic Waste



Circular Economy Business Model in the COVID – 19 Pandemic Era in Local Communities

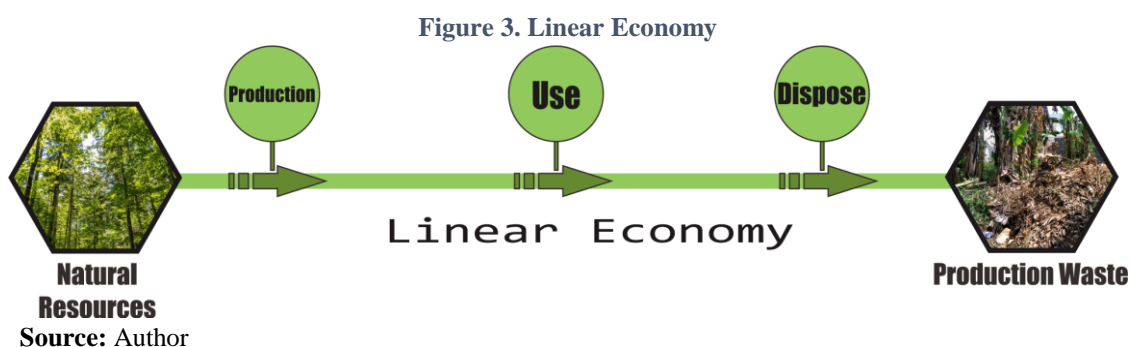
In terms of environmental conditions (See Picture 1), it can also be seen that there is still a lack of public awareness of their responsibilities to the surrounding environment. This can lead to new problems for the environment in the future, for example, the accumulation of waste, flooding and so on. This contradicts the desired direction of sustainable development policies, even though this situation can be circumvented by applying several concepts to overcome problems and simultaneously turn the situation into an opportunity. In turn, it helps to improve the economy of rural communities in a sustainable manner.

In line with efforts to increase sustainable economic value, one of the economic models that can be applied is the circular economy approach. Circular economy is formed by taking into account the conditions and quality of the environment that will encourage inclusive welfare for the community and the environment. In the study of Henrysson & Nuur (2021), they argue that as a strategy for the transition to sustainability, the circular economy model is a substitute for the linear economic model which tends to be unsustainable. In the study conducted by Welfens et al., (2017), they also argue that circular economy focuses on resource efficiency. The circular economy concept and power offer a perspective on the dynamics of sustainable green growth (*Green Economy*).

Following the strategy of creating opportunities for the people of Karangwidoro Village, the application of a circular economy can be implemented in sustainable business development in order for the community to increase economic capacity and on the other hand, be responsible for environmental sustainability. This is considered one of the manifestations of sustainable development efforts. Based on the mentioned background of the paper, this study aims to develop a business model with the implementation of a circular economy and to map the opportunities that exist in Karangwidoro Village, thus increasing achieving sustainable economic value and in the long term, being able to encourage people's welfare.

LITERATURE REVIEW

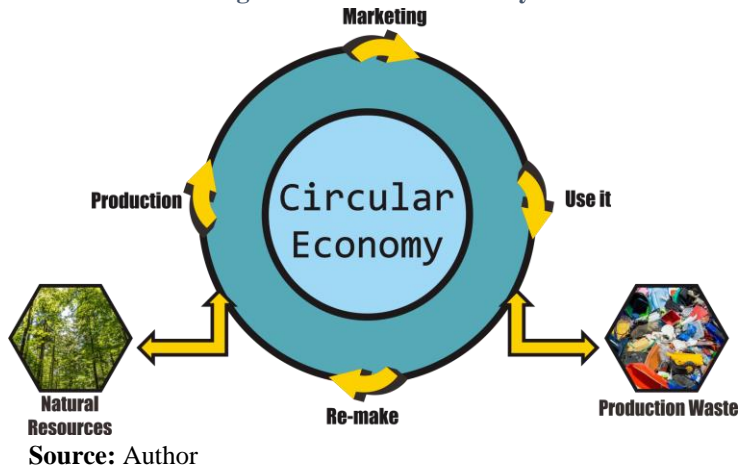
The discussion on the circular economy has recently become a topic that is often discussed in this specific scope and also the global consensus, both in the concept of sustainability in general as well as in the economy and the environment in particular. The term circular economy has a contrasting meaning with linear economy (Murray *et.al.*, 2017), who in his study also explains that the popularity of linear economy began to emerge in line with the development of circular economy. The concept of a circular economy is a concept that is currently being introduced by the EU and several large countries, for example China, Japan, Britain, France, Canada, the Netherlands, Sweden and Finland, as well as several business sectors in the world (Korhonen et al., 2018). According to Korhonen (see Chizaryfard et al., 2020), circular economy is one of the concepts that has potential, because of its urgency to mitigate climate change. According to Jiao and Boons (see Chizaryfard et al., 2020), the circular economy concept is a holistic concept that includes reducing, reusing, and recycling activities in the production and consumption processes. On the other hand, Henrysson & Nuur (2021) argues that the circular economy model prioritizes resources and energy efficiency obtained from radical innovation with solutions. It aims at minimizing waste and maximizing profits. From some of these opinions, a circular economy system is the opposite of a linear economic system, where a linear economic system is a concept/scheme of economic activity that converts natural resources into a product and then the results of the production process produce production waste. This will cause problems for the environment, for example pollution, pollution, excessive exploitation of natural resources and so on, a linear economic scheme can be illustrated in the following illustration:



To overcome this problem, the concept of a circular economy was developed, which is considered to have more responsibility for the environment. The concept of circular economy is becoming popular among academics and practitioners (Kirchherr, et.al, 2017; Schroeder, 2019). In addition, many researches related to the circular economy have been developed with the concept of SDGs (*Sustainable Development Goals*) (Hammersley, 2001)

An economic system that aims to optimize economic output without neglecting environmental sustainability is a concept of a circular economy system (EC, 2014). The circular economy has shown significant results in various economic sectors (Stahel, 2016), one of which is in the agricultural tourism development sector. At the end, the outline of a circular economy is to increase economic values while simultaneously minimizing the amount of unused waste in these economic activities.

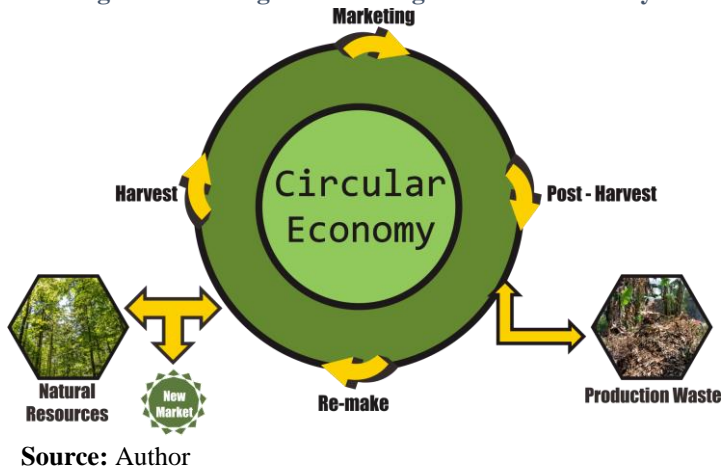
Figure 4. Circular Economy



In the illustration above, it is illustrated that the process of economic activity begins with the availability of natural resources. With the presence of natural resources, each individual tries to use them into goods of sale value through the production process, which in nature also adopts modern technology to assist the production process. Then, the output of all production processes will be fall into the hands of consumers. There are two points that became the forerunners of the emergence of residues or production waste. The first is the result of the direct production process (coming from the company), in which the process uses a production machine from the results of these wastes. This will later be reused into valuable economical products. This is also a form of corporate responsibility toward the environment. While the forerunner of the two sources of waste is household, where consumers get a product from the producer (company), the product will be disposed after it has been used. It will become household waste, most of which is inorganic waste.

Meanwhile, in this study conducted in Karangwidoro Village, the context experienced is quite different, namely in terms of the different types of waste generated. The circular economy is defined as an action and implementation of environmentally friendly programs, such as *reuse, refurbishment, remanufacturing, repair, product sharing* activities (Lombardi and Laybourn 2012; Chertow and Ehrenfeld 2012). This applies to the context of Karangwidoro Village where there is *recycling* of household waste and agricultural residues. The type of waste is mostly organic waste, namely dry leaves, grass and twigs, considering the characteristics of the village are dominated by agricultural land, as well as the livelihoods of the people of Karangwidoro Village which are dominated by farmers. Therefore, the illustration of the circular economy of Karangwidoro Village is as follows (See Figure 3).

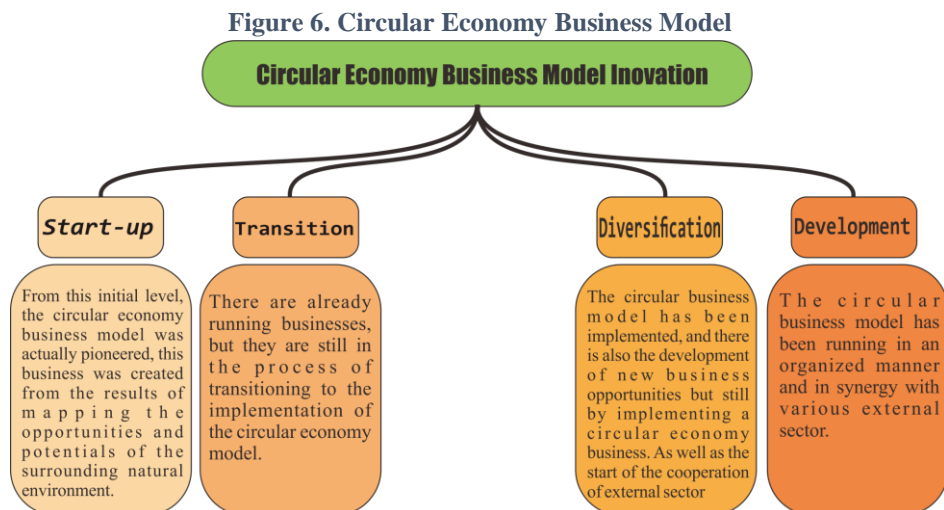
Figure 5. Karangwidoro Village Circular Economy



In the illustration above, it can be explained that waste comes from the agricultural production process, where the organic wastes appear after harvesting activities (post-harvest). The waste can be reprocessed to be used as agricultural fertilizer, but there are new opportunities/new markets that can be used to optimize for aa value-added factor, where it will also be able to provide economic value for the local village community. Considering the new opportunities/new markets due to the implementation of a circular economy, it is very possible to apply a business model. In the context of this research, the circular economy system includes sustainable management of agricultural land cultivation as well as creating business opportunities, especially those related to the agricultural sector. The following below is an illustration of the application of the circular economy to business opportunities (See Figure 4). From the point of view of developing a circular economy-based business model, several studies have

Circular Economy Business Model in the COVID – 19 Pandemic Era in Local Communities

(as seen in Friends of Europe 2014; Yuan et. al., 2006; Gower and Schroeder 2016; Ellen MacArthur Foundation, 2015) stated that the circular economy-based business model approach in both developed and developing countries has proven to provide several important benefits in running a business, such as: running businesses more efficiently, helping to absorb labor, being more innovative, productive and resource efficient. Thus, large to small, medium and micro scale business activities have begun to realize the importance of a circular economy-based business model (Lewandowski 2016). This happens where business model is also classified as a sustainable business model, especially in the technology aspect (Bocken et al. 2014).



Source: Author

RESERCH METHOD

To achieve its aim, this research applied few approach methods relevant to the characteristics of Karangwidoro village. The methods were namely Participatory Rural Appraisal (PRA) model, which emphasizes people's participations in all activities including the planning, implementation, and evaluation of the program and the Community Development model, which directly engages people as both subjects and objects of the study. The program was conducted on a local community in Karangwidoro Village, Dau District, Malang Regency, East Java Province, Indonesia. The community comprises of youngsters, college students, farmers, and housewives. The program implementation lasted from July until September 2021.

RESULT AND DISCUSSION

To implement circular economy, a continuous process is required. Furthermore, the concept design of circular economy business needs to be reviewed and identified with the issues among Karangwidoro people. There are a number of basic issues related to waste management in Karangwidoro village, particularly farming waste. The lack of people's awareness of the waste management strategies, along without the cooperation with private sectors, has led the farming waste management in Karangwidoro village into an awful state (see Picture 3)

Figure 7. Organic waste



Source: Author

Due to its poor management, the organic waste would be an utter waste of space. Thus, a strategy is required to enhance the economic value of it. For instance, the organic waste can be manufactured into compost, which benefits the farming activities in Karangwidoro Village. In addition, local people can either directly sell the compost to their customers or market it through the private sectors. In the era of COVID-19, particularly, circular economy model is expected to be an alternative breakthrough to aid the economy growth such as creating more of green employment, boosting the efficiency, and managing the nature resources.

Recycle

Recycle has become a crucial concept in the sustainable economy practice. In other words, it functions as the basis of circular economy scheme. Circular economy focuses on the better use of nature resources and the control of high consumption level. High consumption level, such as increase in waste or trash, negatively impacts the environment further. Recycle aims to narrow the number of wastes by increasing or prolonging the lifetime of a product through a better manufacture or management. This aim is in line with the stance of Murray et al., (2017), which stated that waste has a great potential as resources by utilizing the unwanted remains from the production as another raw material. As true as it is to the recycling goals, Karangwidoro's farming waste also has potentials to be processed back into raw materials or create new products.

Sustained Business and Circular Economy

The idea of the systems and needs of business substance as one of broader stakeholders has been reviewed by some previous literature on business. In Karangwidoro's case, fertilizer is an essential in daily farming activities. Fertilizer is included in the production cost. To improve the economic values, circular economy business model is vastly relevant to the characteristics of Karangwidoro village. On Figure 4, there are four stages of circular economy business implementation. Currently, Karangwidoro village still has no platform for the circular economy business, as shown by the left-over farming waste that is not utilized further for compost. Compost utilization is also an implementation of circular economy that reflects sustainable farming system. This implementation is considered crucial since further use of chemical fertilizers negatively affects the production output in a long term, especially when the output is a staple.

The identification result indicates that putting away chemical fertilizers as a sustainable farming strategy is recommended. From the necessity aspect, the current reliance on chemical fertilizers is the root of the issues. Meanwhile from the business aspect, organic waste can be manufactured into compost which does not result only in personal advantages, but also in being mass produced and marketed with a proper trademark. This will gradually affect the economy of Karangwidoro people positively as another source of income for the village. To reach these transitioning stages (see Figure 4), contributing factors such as training, provisions, and assistance for local communities are required.

Organic Fertilizer Production

Utilizing compost works well on agricultural lands. For instance, it increases the productivity of the cultivated commodities. Lately, the popular type of fertilizers among both farmers and companies is the inorganic one. Due to its negative effects, inorganic fertilizer is no longer recommended as the primary type. Hence, to substitute the inorganic, there needs to be another means such as replacing it with organic fertilizer that is compost. Below are the steps of organic fertilizer/compost production in this study.

Materials and tools:

- 1) Grass or farming waste
- 2) 100ml of EM-4 (Effective Microorganism 4)
- 3) A pail
- 4) A tarpauline
- 5) A shovel
- 6) Grass chopper machine

Steps:

- 1) First, chop the organic waste by the machine.
- 2) Next, mix the EM-4 with the chopped waste.
- 3) Before putting a sack over it, deposit the mixture first.
- 4) Last, put over a burlap sack or plastics for the mixture to ferment.

If the fermentation works, the mixture should tepid to touch. If the temperature is too hot, open the cover and turn over the mixture before covering it again. After around six to ten days, compost is ready for use. The last step is packaging the fertilizer as an implementation of the business opportunity mapping of circular economy business. Aside from the package, it is also necessary to place a trademark on the output. At the end, the output of circular economy business implementation is not only beneficial to the Karangwidoro's local farmers, but it can also be continuously produced and marketed.

Figure 8. Chopping Process



Source: Author

Figure 9. Fertilizing



Business Innovation

Currently, Karangwidoro Village is in the stage of business transition as it has discovered the business opportunity of compost production. To develop the business, further contribution in the production is required. For instance, there should be a collaboration between parties such as academics, technicians, researchers, and other relevant experts. Next, to sustain the business cycle, there should be a platform for the production, in which the village stakeholders play their part. Large-scale production also requires structured production system and professional management. Responding to this, the village government is expected to create a local business community such as Village Owned Enterprises (BUMDesa) or other relevant communities. This community can facilitate the cooperation with external sectors in developing the professional and sustainable circular economy business.

CONCLUSION

The COVID-19 pandemic has significantly affected various sectors including the economy. Pandemic has obstructed individuals in pursuing their needs as the work termination (PHK) is also frequently occurring these days on both formal and informal workers, particularly non-formal workers with lower middle income. This forces individuals to arrange new strategies in their economic pursuits such as sustained business opportunities.

The implementation of circular economy business is considered as the best concept. Circular economy refers to the strategy to improve sustainable economic values, aligning with the national sustainable development agenda. In Karangwidoro's case, circular economy is implemented through the process of manufacturing farming waste into organic fertilizer or compost. The manufactured compost can be utilized either for personal use by the local farmers of Karangwidoro or as a business opportunity for the people of the village, who can mass produce the fertilizer and register a trademark on it. Hence, the revenue earned from the large-scale marketing will improve the village's income, which will result in a long-term impact on Karangwidoro people's prosperity and wellbeing.

REFERENCES

- 1) Bocken, N. M. P., S. W. Short, P. Rana, and S. Evans. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production* 65: 42–56.
- 2) Chizaryfard, A., Trucco, P., & Nuur, C. (2021). The transformation to a circular economy: framing an evolutionary view. *Journal of Evolutionary Economics*, 31(2), 475–504. <https://doi.org/10.1007/s00191-020-00709-0>
- 3) Chertow, M. and J. Ehrenfeld. (2012). Organizing self-organizing systems: Toward a theory of industrial symbiosis. *Journal of Industrial Ecology* 16(1): 13–27.
- 4) EC. (2014). Towards a circular economy: a zero waste programme for Europe. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, 398
- 5) Ellen MacArthur Foundation. (2015). Delivering the circular economy: A toolkit for policymakers. Cowes, UK: Ellen MacArthur Foundation.
- 6) Friends of Europe. (2014). Circular economy: Scaling up best practices worldwide. Brussels: Friends of Europe. www.friendsofeurope.org/event/circular-economy-scaling-best-practices-worldwide. Accessed 4 October 2021
- 7) Gower, R. and P. Schroeder. (2016). *Virtuous circle: How the circular economy can save lives and create jobs in low and middle income countries*. London, UK: Tearfund and Institute of Development Studies.
- 8) Hammersley, M. (2001). On 'systematic' reviews of research literatures: A 'narrative' response to Evans & Benefield. *British Educational Research Journal* 27(5): 543–554.
- 9) Henrysson, M., & Nuur, C. (2021). The Role of Institutions in Creating Circular Economy Pathways for Regional Development. *Journal of Environment and Development*, 30(2), 149–171. <https://doi.org/10.1177/1070496521991876>
- 10) Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114

Circular Economy Business Model in the COVID – 19 Pandemic Era in Local Communities

definitions. Resources, conservation and recycling, 127, 221-232.

- 11) Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular Economy: The Concept and its Limitations. *Ecological Economics*, 143(January), 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
- 12) Lewandowski, M. (2016). Designing the business models for circular economy—Towards the conceptual framework. *Sustainability* 8(1): 43.
- 13) Lombardi, D. R. and P. Laybourn. (2012). Redefining industrial symbiosis. *Journal of Industrial Ecology* 16(1): 28–37.
- 14) Murray, A., Skene, K., & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, 140(3), 369–380. <https://doi.org/10.1007/s10551-015-2693-2>
- 15) Schroeder, P., Anggraeni, K., & Weber, U. (2019). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, 23(1), 77-95.
- 16) Stahel, W. R. (2016). The circular economy. *Nature*, 531(7595), 435-438. 952-961.
- 17) Welfens, P., Bleischwitz, R., & Geng, Y. (2017). Resource efficiency, circular economy and sustainability dynamics in China and OECD countries. *International Economics and Economic Policy*, 14(3), 377–382. <https://doi.org/10.1007/s10368-017-0388-0>
- 18) Yuan, Z., J. Bi, and Y. Moriguchi, (2006). The circular economy: A new development strategy in China. *Journal of Industrial Ecology* 10(1–2): 4–8.