



Product Innovation from Used Tires, Efforts to Increase Revenue of Jati Village BUMDes, Gatak District, Sukoharjo Regency

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Abstract— Community empowerment is the right step in village development. There needs to be cooperation between the Village Government and external parties in developing human resources. Jati Village is a village with a high potential for waste processing. Jati Village is the location for community service activities. The service activity aims to increase the income of BUMDes Jati Village, Gatak District, Sukoharjo Regency, Central Java, through increasing creativity and product innovation from waste tires. The methods used in this activity are socialization, training, and mentoring carried out by the community service team to the people of Jati Village, especially those who are members of the Jati Village BUMDes. Waste processing is essential for waste that is not environmentally friendly so that it doesn't just become waste that has the potential to disturb and pollute the environment. With this increase in creativity and innovation, products from processed used tires become more attractive, encouraging sales and ultimately increasing the income of the Jati Village BUMDes. In the future, continued development by BUMDes Jati Village will be essential to improve the standard of living of the people of Jati Village, Gatak District, Sukoharjo Regency.

Keywords— innovation, old tires, income, Jati Village

I. INTRODUCTION

Empowerment is essential in improving community welfare Industrial Revolution 4.0 can affect rural economic activity [1]. Rural development is a paradigm oriented towards improving the welfare of rural communities, including developing and improving infrastructure, economic systems, and technology [2]. The pattern of utilization is more in the physical development of the village, while the contribution to community empowerment is still not optimal [3]. The community is the subject of development in carrying out development in an efficient and independent village through the concept of community empowerment-based

development [4]. Community empowerment is vital in village development.

Village-owned enterprises (BUMDes) are liaisons between the Village Government and the community in managing the village's potential for the greatest prosperity of the people, which is established through village deliberations based on Village Regulations [5] [6] [7]. Sukoharjo Regency has 151 villages, of which 131 have BUMDes, including Jati Village in Gatak District. Jati Village has the potential for a cottage industry in the form of old tires that have added value in improving the local community's economy and strengthening the tourist village as well as a souvenir center for tourists. This scrap tire cottage industry still needs to improve product innovation, product quality, and product marketing due to the limited knowledge of scrap tire product artisans. The positive side of scrap tires is that the primary constituent materials of tires are resistant to water, have sufficient stability high resistance, and have a relatively good level of flexibility and flexural properties. Rubber has vibration-absorbing properties [8] [9]. There are at least four methods of utilizing waste tires that are the trend of processing scrap tires in the world, namely alternative fuels in the cement industry, derivative products, tire pyrolysis, recycling into art products, swings, and furniture, [10] as well as used by craftsmen ropes, chairs, pots, doormats, industrial fuels, [11] It can also be improved by providing opportunities and expertise in terms of increasing family economic income [12].

Regional economic development is a process by which local governments and communities manage existing resources and form a pattern of partnership between local governments and outsiders to create new jobs and stimulate economic development in the regions [13]. The optimization of Jati Village BUMDes products to increase income is to focus on innovating used tire products to improve community welfare further. Another purpose of innovation is

to support tourism and environmental preservation in Jati Village. BUMDes optimization activities through collaboration with universities through community service programs that help strive for changes in community attitudes in the tourism village environment, in optimizing the potential of waste tire production through socialization and training related to innovation, business management, financial management, modern marketing and the importance of maintaining business sustainability.

The Jati Village community service program has the advantage of combining the concept of community economic empowerment through the use of existing resources, namely the potential of used tires, as well as the idea of environmental preservation through the use of waste tires that are not simply thrown into the environment or burned. The innovation proposed in this community service program activity is product innovation to reduce problems that exist in the community. The activities carried out through this community service program are expected to solve existing problems, namely the need to improve community welfare, especially in Jati Village, Gatak District, Sukoharjo Regency, to encourage community economic improvement. The primary purpose of the service activity is to provide additional knowledge and skills to Jati Village, Gatak District, Sukoharjo Regency, to improve production management through the innovation of old tire products to create an innovative and productive Jati Village.

II. METHOD

A. Study Area

Service activities are in Jati Village, Gatak District, Sukoharjo Regency, Central Java Province. Jati Village is located in Gatak District with an area of 19.47 km² of Gatak District, while the size of Jati Village is 1.05 km² or 5.28% of the area of Gatak District. Jati Village is one of 14 villages in Gatak District. Residents in the Gatak sub-district generally work in agriculture and plantations. The existing rice fields in Jati Village cover an area of 79 ha from a total area of 115 ha. The area of this rice field is two times that of non-rice fields, which is only 36 ha; this shows a very high agricultural potential. The population of Jati Village at the end of 2021 was 1,350 men and 1,273 women [14].

B. Method of Study

They are optimizing the Jati Village BUMDes to increase income through innovation in used tire products packaged as community service with several activity stages. The first activity is preparation, which includes the formation of a working committee, coordination meetings, funding applications through TOR, preparation of materials, and initial surveys to determine the existing conditions of Jati Village. Preparations will be carried out from August to early September 2023. The second stage is the implementation stage, offline at Jati Village Hall, Gatak District, Sukoharjo Regency, Central Java. The implementation stage includes socialization and training to create innovations from the existence of used tire products and how to market them on September 10, 2023; then, there is assistance to BUMDes Jati Village. The last stage is evaluation and reporting; the team prepares activity reports after implementing activities until September 2023. Indicators of program success are the emergence of new, more innovative, and creative products.

The sustainability of this activity is an evaluation of community service activities and an evaluation of the implementation of the academic climate

III. RESULT AND DISCUSSION

Jati Village is one of the centers producing products from processed old tires—the need for tires increases along with automotive developments [10]. Tire production will undoubtedly be closely related to waste, including post-use waste from tires. As a waste producer, the community must manage waste [15]. One type of waste with a high volume is transportation tire waste or transportation tire waste [16] [17] [18]. Jati Village has recycling supplies from several areas, so the potential for used tires is significant. Processing waste tires into fuel oil, tire powder, or other things is difficult because the processing must be correct. If you burn waste tires carelessly, it will result in dangerous pollution. Waste tires are included in the class of materials that cannot be decomposed by organisms (non-biodegradable) and are persistent and will not decompose. (non-bio-degradable), And are persistent and will not decompose. [17][18][8] Because it takes 50-80 years to decompose completely in the wild [19] [11]. The potential waste of old tires supplied to Jati Village is presented in Figure 1.



Figure 1. The Potential of Used Tires in Jati Village

The accumulation of waste tires can result in standing water, potentially becoming a nest for mosquitoes and disease-carrying animals. Waste tires can be recycled, meaning that old tires can be processed again into raw materials that can be reused. The purpose of recycling old tires is to reduce the use of new raw materials and reduce waste discharged into the environment.

Waste tires can be reused, meaning old tires can be reused without changing shape for different uses. One way to do this is to innovate using used tires for crafts with high economic value. About the art of old tires, innovation can be interpreted as a process to combine an idea / creative idea tailored to market needs to get a new form of product. The results of recycling used tires can be handicraft products, chairs, pots, mats, works of art, swings, furniture, and the like. [10] [11]. The results of existing products from waste tires in Jati Village are presented in Figure 2.



Figure 2. Processed Products from Old Tires Produced by Jati Village Before the Activity

Figure 2 shows a processed, used tire product with the original tire structure; the original shape and color of the tire on the product are still visible. In addition to developments in chairs, trash cans, and swings, as shown above, many products are still produced with original shapes but have

been added with modifications to paint patterns and colors, including flower pots presented in Figure 3.



Figure 3. Product Creation from Old Tires

Waste tire craft innovations include shape innovation, finishing innovation, and production process innovation, that is:

1. Form innovation, which is changing the original shape of old tires into handicraft products that are new in condition so that they have a higher commercial value than simple shapes without changing the original shape
2. Finishing innovation is changing the original shape of old tires into handicraft products whose finishing is new, either by adding other auxiliary materials such as slaps and water hyacinths or mixing paint colors that cause a more attractive effect.
3. Production process innovation is closely related to skills, creativity, and work equipment intended to simplify and speed up production. In general, the production process of using used tires is complicated and requires high creativity and patience.

The existing innovations were then applied in Jati Village through Jati Village BUMDes by conducting socialization and training activities in collaboration with a team from UNS. Participants gain additional knowledge regarding innovations in processing products from used tires with a more elegant appearance, resulting in a higher selling value, which, in the end, can increase the income of BUMDes Jati Village. Service activities are presented in Figure 4.



Figure 4. Processed Products from Old Tires Produced by Jati Village Before

There are several results obtained in socialization and training presented in Table 1.

TABLE I. COMPARISON OF HOW TO PROCESS WASTE TIRE PRODUCTS

Subject	Before	Innovation
Substitution	1) Finishing and painting are carried out with a paintbrush 2) Manual drill 3) Tacks 4) Hacksaw	1) The paintbrush was replaced with an electric spray compressor 2) Electric drill 3) Automatic stapler 4) Tyre cutting machine
Adaptation	Waste tires were previously more widely used for swing products, plant pots, and trash cans.	Used tires are used as various functional products that are more attractive and have higher selling points, such as tables, chairs, sofas, interior products, wall hangings, etc.

The product results in higher quality and higher selling value from the innovation process. Product innovation functions to create new products that can meet consumer needs and desires so that interest in purchasing these products arises. Innovation can increase creativity in product design and have a positive impact on the environment. The benefits of innovation for society in general are:

1. Increase in people's income.
2. Increased human resource capacity
3. Lower the amount of waste
4. The rise of entrepreneurs
5. Ease, speed, and progress
6. Competitive and sustainable community-based products.



Figure 5. Processed Products from

Figure 5 shows an increase in product quality after innovation compared to no innovation (Figure 3). Regarding increasing sales, product innovation is in harmony with marketing to maximize. In the era of 5.0, marketing activities will not succeed without uniting with the development of information technology. Marketing innovation is an effort to create new ideas in marketing strategies that can increase the company's competitiveness; help introduce new products or services, improve the quality of existing products or services, expand market share, and increase efficiency and effectiveness in the marketing process. Related to technological developments, marketing strategies include creating creative and exciting advertising campaigns and using social media to promote products.

1. Marketing activities include product packaging, promotion, price competitiveness, and networking. Marketing activities aim to:
2. For the target market to know the product, in this case, promotion is needed; the role of BUMDes is also as a promotional agent.
3. For products to reach customers or more expansive marketing areas, marketing channels are needed so BUMDes can act as partners in strengthening sales of marketing products.
4. Long-term relationships with audiences are essential, so it is necessary to use information technology applications (social media marketing: websites, YouTube, Instagram, Facebook, Twitter, TikTok, video, vlogs, etc.), e-commerce.
5. Cooperation with the community and business groups or similar supporters is necessary for business sustainability.
6. For competitiveness excellence to be sustainable, creative, innovative marketing, human resources are needed, so BUMDes can take a role in strengthening the capacity of marketing human resources.

The activity results in BUMDes, and the people of Jati Village can apply innovations to process waste tires. The community is the subject of development in carrying out

development in the village [4]. Development is physical and can be in the form of Human Resources Development. People with high capacity can increase the prosperity of a village. Empowerment is essential in improving community welfare [20]. Regional economic development is a process by which local governments and communities manage existing resources and form a pattern of partnership between local governments and outsiders to create new jobs and stimulate economic development in the regions [13]. Using used tire products in Jati Village will improve the regional economy and create new jobs that support the village's economic development.

IV. CONCLUSION

Development is blessed with physical development and can be in the form of community empowerment. Community empowerment can be a support for growth in the village. People with high capacity can process the surrounding potential to an advantage. Jati Village, through BUMDes, has managed the possibility of recycling waste tires into valuable products. Applying innovations adds to the use and aesthetic value of these products. BUMDes can be the primary support of the village economy if community empowerment is successful. Village government is the most crucial role holder in determining development direction policies.

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