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Empowering Rural Youth in the Production of Creative Tote Bags Based on Textile Waste

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ABSTRACT

Background: Household textile waste and garment industry residues, such as used clothing and fabric scraps, are often underutilized and can pollute the environment. The youth in Tambak Asri Village show enthusiasm for developing creative enterprises; however, they require guidance in innovation and production.

Purpose of the Study: This Community Service Program aims to foster awareness of the green economy, emphasizing that creativity, innovation, and environmentally based entrepreneurship can sustainably enhance community welfare.

Methods: The program is implemented by empowering village youth through the production of creative tote bags made from textile waste. The approach includes training, production mentoring, and marketing assistance. Four (4) youth groups in Tambak Asri Village each received grants consisting of sewing machines and other equipment.

Results: The outcomes of these community service activities include reducing environmental pollution, empowering youth, creating employment opportunities, and providing new sources of income, ultimately contributing to the improvement of community welfare in the village.

Keywords

Empowerment; Green Entrepreneurship; Textile Waste; Tote Bag; Village Youth.

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Introduction

Textile waste, whether in the form of scraps of fabric from the garment industry or used household clothing, is a serious problem that has the potential to pollute the environment if not optimally utilized. The volume of this waste continues to increase with the growth of the fast fashion industry and high consumer patterns. Without proper management, textile waste contributes to the accumulation of waste in landfills (TPA), air pollution due to open burning, and soil and water pollution due to textile chemical residues. Therefore, a sustainable management strategy is needed that not only minimizes environmental impact but also adds value to society.

Recent studies have shown that utilizing textile waste through circular economy approaches, such as recycling and upcycling, not only reduces environmental burdens but also opens up micro-entrepreneurship opportunities and adds value for stakeholders, which in turn improves community well-being (Abrishami et al., 2024; D'Itria & Aus, 2023). Studies have shown increased capacity and income for vulnerable groups: a used clothing upcycling program in South Africa empowered elderly women through skills training and access to income, while an initiative in Ghana transformed an abundance of used clothing into dignified creative work for local workers, particularly women (Khumalo et al., 2025; Islam et al., 2025). Similar practices have been found in Latin America, Asia, and India, where thousands of kilograms of textile waste have been successfully recycled into high-value creative products and created new jobs (Mezei,2025; Rahman, 2025; Arbi, 2025).

The concept of circular economy has emerged as a transformative approach to sustainability by emphasizing the continuous use of resources through strategies such as reuse, recycling, and regeneration, thereby reducing environmental degradation and resource depletion. According to Kirchherr et al. (2017), the circular economy represents a systemic shift that replaces the traditional linear "take-make-dispose" model with a restorative and regenerative framework. This perspective is further reinforced by Geissdoerfer et al. (2017), who position the circular economy as a new sustainability paradigm that integrates economic, environmental, and social dimensions into a cohesive development model. In parallel, Cohen and Winn (2007) highlight that market imperfections-such as inefficiencies in resource allocation and environmental externalities-create opportunities for sustainable entrepreneurship to emerge as innovative solutions that address both ecological challenges and economic needs. Therefore, integrating circular economy principles with sustainable entrepreneurship provides a strategic pathway for developing environmentally responsible and economically viable business models, particularly in the context of community-based initiatives.

In Indonesia, the utilization of textile waste through upcycling, fiber recycling, and waste-based craft production has been proven to generate added economic value for MSMEs and creative village communities, while simultaneously reducing pressure on landfills. Research by Christine (2025) found that transforming waste into creative products can strengthen the technical skills, marketing networks, and organizational capacity of MSMEs. Another study by Nørup et al. (2018) and Dissanayake & Sinha (2015) confirmed that processing textile waste into fashion and craft products can meet market quality standards when accompanied by quality control and product design training. In fact, the practice of local brands utilizing denim waste and factory off-cuts has demonstrated a sustainable business model that can absorb industrial waste while supporting creative jobs.

Several studies in Indonesia also emphasize the importance of ecopreneurship as a strategy for transforming waste into a blessing through a persuasive, educational, and participatory approach (Wahyuningsih et al., 2024). Patti et al. (2020) demonstrated that scrap fabric can be processed into valuable handicrafts, such as bags and household accessories, effectively reducing pollution caused by waste incineration. Yusvita et al. (2021) highlighted the business opportunities of eco-friendly tote bags as an alternative to plastic bags, while Tambuwun et al. (2022) added

segmentation and targeting strategies to expand the market for these products. From a design perspective, Bestari (2020) emphasized the importance of textile painting to enhance aesthetic value and support the concept of sustainable fashion.

Tambak Asri Village in Tajinan District, Malang Regency, has significant potential for developing creative businesses based on textile waste by empowering village youth to become driving forces for creative economic activities. However, this potential requires mentoring and innovation in production to contribute significantly to village progress. Through community service activities, the development of green entrepreneurship by producing creative tote bags from textile waste is designed to increase awareness, creativity, and the entrepreneurial spirit of village youth.

Despite the growing body of literature on textile waste upcycling and community empowerment, several gaps remain. First, most existing programs focus on general waste recycling without integrating a structured green entrepreneurship framework that combines environmental awareness, production skills, and market-oriented business development at the village level. Second, previous initiatives have rarely emphasized youth-centered empowerment as the main driver of sustainable rural economic transformation. Third, empirical evidence at the village level, particularly in Indonesia, is still limited in demonstrating how textile waste-based creative industries can be systematically developed into income-generating activities.

Preliminary observations conducted in Tambak Asri Village indicate that approximately 15–25 kg of textile waste per week is generated from household and small-scale tailoring activities, yet remains underutilized. In addition, most village youth have limited sewing skills and lack experience in product design and digital marketing. However, there is strong interest among youth in developing creative businesses, particularly eco-friendly tote bags, which are in growing demand as substitutes for plastic bags. Therefore, a green entrepreneurship-based approach focusing on tote bag production is considered highly relevant and necessary in this context.

Method

This community service program employed a pre-experimental design using a one-group pre-test and post-test approach to evaluate the effectiveness of the intervention. The program was implemented through a structured sequence consisting of (1) initial assessment, (2) training, (3) production mentoring, and (4) evaluation.

Data were collected using observation, documentation, and a simple questionnaire to assess participants' skill improvement and entrepreneurial awareness before and after the program. The evaluation indicators included: (1) sewing skills, (2) product design ability, (3) understanding of green entrepreneurship, and (4) readiness for business initiation.

The activity approach is carried out through a series of structured programs, including lectures on tote bags, production training, marketing, and mentoring for youth groups in Tambak Asri Village. The production training aims to improve the skills of village youth in processing textile waste into creative and high-value tote bags. Mentoring is carried out continuously to ensure the effective implementation of the skills that have been acquired, while also providing solutions to challenges that arise during the production process. The 4 (four) youth groups participating in these community service activities each received a grant of production machines and sewing equipment. This approach is expected to not only increase individual capacity but also encourage the formation of community-based creative businesses that are able to contribute to sustainable waste management and local economic empowerment.

This community service integrates simple yet innovative technologies to process textile waste into creative products with high economic value. The technologies used include basic textile

waste processing techniques, such as sorting and cutting fabric, to creative processes such as cutting and sewing techniques and simple design applications for product personalization. Standard sewing machines are used as the main tool in tote bag production, supported by equipment such as special textile scissors and other tools. To increase the product's selling value, digital technology is also integrated into the marketing process, such as product photography using smartphones, visual editing with Android/iOS-based applications, and online marketing through social media and e-commerce platforms. The use of this technology aims to support an environmentally friendly and efficient production process, as well as expand market reach. With simple yet effective technology, this activity not only empowers village youth but also introduces them to sustainable, green economy-based innovations.

The community service activities implementation team consists of three lecturers from various disciplines: one from the management science program, one from the accounting program, and one from the communication science program. The community service activities team also includes five management students, hoping to foster awareness of the use of waste, particularly textiles, for economic value.

Figure 1. Flowchart Method Community Service Program Tambak Asri Village

Result

The program involved 20 village youth divided into four groups. The results are presented based on the four stages of implementation.

Initial Assessment

The initial assessment showed that most participants had low sewing skills, with an average score of 45. Only 20% of participants had basic experience in sewing, while the majority had never been involved in textile-based production. In terms of entrepreneurial awareness, only 50% of participants understood the concept of green entrepreneurship. Textile waste generation was estimated at 15–25 kg per week, mainly from household and small tailoring activities.

Training Outcomes

During the training stage, participants showed high enthusiasm and engagement. Each group successfully learned basic sewing techniques, product design, and material selection. By the end of the training, all groups were able to independently produce tote bags using textile waste.

Mentoring Process

The mentoring stage was conducted through four intensive sessions (once per week). Several challenges were identified, including:

- Difficulty in sewing thick denim materials
- Inconsistent cutting patterns
- Limited confidence in product finishing

These challenges were addressed through repeated demonstrations, simplified design patterns, and peer collaboration within groups. As a result, participants gradually improved both technical skills and teamwork.

Evaluation Results

The evaluation results indicate significant improvement:

Table 1: Improvement of Participants' Skills

Indicator	Before	After
Sewing Skill	45	80
Design Ability	48	78
Green Entrepreneurship Awareness	50%	85%

Each group produced 8–12 tote bags, resulting in a total of 78 tote bags made from textile waste such as used sarongs and denim.

In addition, four youth business groups were successfully established. While all groups showed improvement, two groups demonstrated faster progress due to prior informal experience and stronger internal coordination.

The program also initiated digital marketing activities through social media platforms, although consistency in content creation remains a challenge.

Figure 2. Handover of a grant of sewing machines and other equipment to the Head of Tambak Asri Village, Mr. Teguh Wiyono, to be delivered directly to 4 (four) youthgroups in Tambak Asri Village.

Figure 3. Training in producing tote bags from textile waste.

Figure 4. Two examples of creative tote bags made from textile waste produced by youth groups in Tambak Asri Village.

Discussion

The findings of this study provide empirical support for empowerment theory by demonstrating how capacity building through structured training and mentoring can enhance both technical and entrepreneurial competencies. Unlike previous studies that focus primarily on skill development, this program integrates production and market orientation, enabling participants not only to acquire skills but also to apply them in real economic activities.

The increase in sewing skills and entrepreneurial awareness indicates that empowerment is not merely about knowledge transfer but involves behavioral change and economic engagement. This aligns with the concept of transformative empowerment, where individuals transition from passive recipients to active economic agents.

From the perspective of green entrepreneurship, this program illustrates how environmental challenges can be transformed into economic opportunities. The use of textile waste as raw material reduces environmental burden while simultaneously creating value-added products. This supports the circular economy model, where waste is reintegrated into the production cycle.

Compared to previous studies (e.g., Mulyani et al., 2021; Yusvita et al., 2021), this program contributes a more integrated model by combining environmental awareness, technical training, and digital marketing. This integration is crucial in ensuring the sustainability of community-based enterprises.

The significant improvement in sewing skills, from an average score of 45 to 80, indicates that hands-on learning combined with iterative mentoring plays a crucial role in enhancing technical competencies. This supports the notion that sustainable entrepreneurship is a dynamic and convergent process involving learning, experimentation, and gradual capability development (Belz & Binder, 2017). The mentoring phase, in particular, enabled participants to overcome technical challenges such as working with thick denim materials and achieving consistent product quality, highlighting the importance of experiential learning in community-based programs.

The production of 78 tote bags within the program period reflects the practical feasibility of implementing circular economy principles at the village level. This outcome aligns with circular business model strategies that emphasize value creation from waste through design innovation and resource efficiency (Bocken et al., 2016; Geissdoerfer et al., 2020). By transforming textile waste such as used sarongs and denim into marketable products, the program demonstrates how waste streams can be reintegrated into productive cycles. Moreover, this initiative resembles early-stage circular start-ups, which often rely on local resources, simple technologies, and community engagement to create sustainable value (Henry et al., 2020).

The establishment of four youth business groups represents a significant step toward building sustainable local enterprises. Group-based organization fosters collaboration, shared responsibility, and collective problem-solving, which are essential elements in entrepreneurial processes embedded in social contexts (Lumpkin et al., 2013). This finding is also consistent with social entrepreneurship perspectives, where community-driven initiatives create both economic and social value (Mair & Martí, 2006; Seelos & Mair, 2005). However, variations in group performance indicate that internal dynamics, leadership, and prior experience influence the effectiveness of collective enterprises.

From a broader perspective, this program contributes to the development of small-scale green enterprises that support inclusive economic growth. Small and medium-sized enterprises (SMEs), particularly those based on local resources and environmental innovation, are recognized as key drivers of green and inclusive development (Koirala, 2019). The integration of environmental awareness with entrepreneurial activities in this study also reflects the principles of sustainable entrepreneurship within the circular economy, where ecological and economic objectives are pursued simultaneously (Singh et al., 2021).

In addition, the program aligns with global policy frameworks that promote circular economy practices at the local level. The use of textile waste and community-based production systems illustrates how circular economy strategies can be operationalized in rural areas, contributing to sustainable development goals (OECD, 2021). The initiative not only reduces environmental burden but also enhances local economic resilience through skill development and income generation.

Despite these positive outcomes, several limitations should be acknowledged. First, the relatively short duration of the program limits the ability to assess the long-term sustainability of participants' skills and business activities. Second, although digital marketing has been introduced,

participants still face challenges in maintaining consistent online promotion and expanding market reach. Third, the availability and consistency of raw materials, particularly specific types of textile waste, may affect production continuity in the future.

Overall, these community service activities provide empirical evidence that integrating community participation, skill development, and circular economy principles can effectively transform environmental challenges into economic opportunities. It highlights the importance of youth-centered empowerment in fostering sustainable local entrepreneurship and demonstrates how simple, context-based innovations can contribute to broader sustainability transitions.

Conclusion

The production of creative tote bags based on textile waste offers an innovative solution that combines the principles of green entrepreneurship, economic empowerment, and sustainable waste management. This program not only transforms waste into high-value products but also encourages more responsible consumption and production patterns. With the support of technical training, market access, and local policies that support a circular economy, the utilization of textile waste has the potential to create jobs, reduce environmental pollution, and increase the income of rural communities. Utilizing textile waste is a concrete step in supporting sustainable development in Indonesia.

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Conflicts of Interest

The authors declare that there is no conflict of interest related to this activity. The provision of sewing machines and production equipment to youth groups in Tambak Asri Village was part of the implementation of the Community Service Program. The involvement of village partners was limited to program facilitation and coordination and did not give rise to any personal, financial, or institutional interests that could be perceived as influencing the objectivity of this activity.

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