

Training on Selecting Environmentally Friendly Packaging with a Green Tourism Concept for MSME Actors in Denai Lama Tourist Village, Deli Serdang

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ABSTRACT

The tourism industry serves as a vital mechanism for maintaining environmental sustainability through Green Tourism implementation, particularly regarding eco-friendly packaging adoption. MSMEs in Denai Lama Tourism Village continue to encounter obstacles stemming from limited awareness and insufficient access to information about sustainable practices. A Community Service Program was executed through structured training sessions, employing pre- and post-test methodologies to assess knowledge acquisition. Findings revealed substantial improvements in MSME understanding concerning eco-friendly packaging significance, environmental implications, and economic advantages. The program aims to enhance MSME readiness for implementing sustainable practices, strengthen tourist destination appeal, and create pathways for advanced training in waste management and sustainable product development.

ABSTRAK

Industri pariwisata berfungsi sebagai mekanisme vital dalam memelihara keberlanjutan lingkungan melalui implementasi Green Tourism, khususnya terkait adopsi kemasan ramah lingkungan. UMKM di Desa Wisata Denai Lama terus menghadapi kendala yang bersumber dari keterbatasan kesadaran dan akses informasi mengenai praktik berkelanjutan. Program Pengabdian kepada Masyarakat dilaksanakan melalui sesi pelatihan terstruktur dengan menggunakan metodologi pre-test dan post-test untuk menilai akuisisi pengetahuan. Temuan mengungkapkan peningkatan substansial dalam pemahaman UMKM terkait signifikansi kemasan ramah lingkungan, implikasi lingkungan, dan keuntungan ekonomis. Program bertujuan meningkatkan kesiapan UMKM dalam mengimplementasikan praktik berkelanjutan, memperkuat daya tarik destinasi wisata, dan menciptakan jalur untuk pelatihan lanjutan dalam manajemen limbah dan pengembangan produk berkelanjutan.

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1. Introduction

Global environmental conditions present unprecedented challenges, including accelerating climate change, ecosystem degradation, and declining biodiversity (Arida, 2016). The tourism sector occupies a strategic position in sustainability maintenance through Green Tourism adoption, where destinations are evaluated not merely for natural and cultural assets but also for their environmental stewardship commitments (Dinar *et al.*, 2022; Sutopo & Rubiyatno, 2022). What began as a niche market has transformed into mainstream expectations, particularly as travelers increasingly prioritize destinations demonstrating genuine environmental responsibility (Karta *et al.*, 2022). Eco-friendly packaging serves as a tangible indicator of a destination's commitment to reducing environmental footprints, becoming a

practice increasingly valued by sustainability-conscious travelers (Jaelani *et al.*, 2023).

Consumer behavior patterns reveal significant shifts in tourism preferences worldwide. Modern tourists, especially millennials and Generation Z, actively seek experiences aligning with their environmental values (Musfar *et al.*, 2024). Packaging choices directly influence visitor perceptions—single-use plastics and non-biodegradable materials contradict the principles many eco-tourists uphold. Destinations adopting sustainable packaging solutions experience enhanced visitor satisfaction and increased repeat visitation rates (Karta *et al.*, 2023). Beyond aesthetic considerations, packaging decisions carry significant implications for waste management systems, local ecosystems, and long-term destination viability.

MSMEs in Denai Lama Tourism Village, Deli Serdang Regency, demonstrate insufficient awareness regarding eco-friendly packaging significance. The village possesses notable tourism potential—cultural heritage sites, traditional culinary offerings, and natural landscapes attract diverse visitor segments. Yet conventional packaging usage diminishes appeal among environmentally conscious visitors (Musdalifah *et al.*, 2022). Local businesses predominantly rely on plastic bags, styrofoam containers, and other non-degradable materials for food and souvenir packaging. Several barriers impede transition to sustainable alternatives: restricted information access, inadequate technical competencies in sustainable packaging selection, and minimal support from governmental and non-profit entities (Wicaksana *et al.*, 2022; Setiyani *et al.*, 2023). Many MSME operators perceive eco-friendly alternatives as prohibitively expensive or impractical for daily operations, reflecting a knowledge gap rather than unwillingness to change.

Economic dimensions of sustainable packaging deserve careful examination. Initial costs for biodegradable or reusable materials may exceed conventional options, yet long-term benefits include reduced waste disposal expenses, enhanced brand differentiation, and access to premium market segments (Nurul Iman & Zainuddin, 2023). Eco-friendly packaging adoption enhances destination reputation, minimizes plastic waste, and establishes positive cycles of community engagement in environmental preservation (Raharjo *et al.*, 2022; Karta *et al.*, 2023). Village-level implementation creates ripple effects, inspiring neighboring communities and advancing regional sustainability goals. Conventional packaging, by contrast, perpetuates pollution and weakens MSME competitiveness as environmentally aware tourists increasingly avoid destinations perceived as environmentally negligent (Adnyana, 2020; Musfar *et al.*, 2024).

Successful transitions to sustainable packaging systems require collaborative approaches involving multiple stakeholders. Community-based tourism initiatives in Bali and Yogyakarta have achieved measurable waste reduction through integrated packaging strategies combining education, accessible alternatives, and supportive policies (Apriliyanti & Randelli, 2020; Karta *et al.*, 2023). These experiences reveal that behavioral change requires more than information dissemination—practical demonstrations, peer learning opportunities, and ongoing technical assistance prove essential for sustained adoption.

Targeted outreach and training enable MSMEs to integrate sustainable practices within Green Tourism frameworks (Nurul Iman & Zainuddin, 2023). Capacity-building interventions must address both knowledge deficits and practical implementation challenges, providing participants with actionable strategies adaptable to their specific operational circumstances. The Community Service Program enhances MSME knowledge through pre-test and post-test methodologies, supporting environmental sustainability while reinforcing local tourism attractiveness (Apriliyanti & Randelli, 2020). Measuring knowledge gains and behavioral intentions establishes a foundation for ongoing monitoring and iterative improvements in packaging practices across Denai Lama Tourism Village.

2. Methodology

This Community Service (PkM) activity was conducted in Denai Lama Tourism Village, Deli Serdang Regency, with the primary participants being MSMEs who are partners in supporting the implementation of the green tourism concept. The location was selected based on the village's significant tourism potential, though they still face challenges such as low awareness of environmentally friendly packaging use and limited information and technical skills (Raharjo *et al.*, 2022). During the planning stage, MSMEs were directly involved through initial discussions with village officials and community leaders. The activity aimed to identify

the main challenges they face and develop relevant training needs (Yudawisastra *et al.*, 2023). The community organizing process was conducted in a participatory manner, with a team of lecturers acting as facilitators guiding the planning, while the assisted community contributed by providing contextual input to ensure the material was appropriate to local socio-cultural conditions.

The method used in the activity was participatory training, with a pre-test and post-test approach as instruments for evaluating participants' knowledge. A pre-test was conducted before the training to gauge initial understanding of the green tourism concept and environmentally friendly packaging (Adnyana, 2020). A post-test was conducted after the training to assess the extent of knowledge improvement and readiness to implement environmentally friendly practices in their businesses. The results of both tests were compared to objectively assess the program's effectiveness. The program included an opening ceremony with a pre-test, presentation of material on the green tourism concept and the importance of using environmentally friendly packaging, followed by an interactive discussion session, practical training on selecting packaging appropriate for MSME products, and evaluation through a post-test. The entire series concluded with a group reflection, the distribution of souvenirs, and the presentation of training results as a follow-up. The methodology is expected to increase awareness, knowledge, and practical skills among MSMEs in adopting environmentally friendly packaging, thereby strengthening Denai Lama Tourism Village's image as a sustainable tourism destination.

3. Results

The Community Service (PkM) program in Denai Lama Tourism Village demonstrated positive dynamics in the mentoring process for MSMEs. The training employed a participatory approach through material delivery, discussions, and hands-on practice, supported by pre- and post-tests to assess participant understanding. Of the 30 participants, significant improvements were observed in nearly all measured aspects. Participants who initially had only a basic understanding of the green tourism concept demonstrated higher average scores on the post-test, indicating a deeper understanding of sustainability principles and environmental preservation. In addition to cognitive enhancement, the activity also led to changes in social behavior. Participants became more confident in selecting and using environmentally friendly packaging for their MSME products. Group discussions fostered a shared awareness of the negative impacts of single-use plastics on the local ecosystem. This was demonstrated by the emergence of a collective commitment to reduce the use of conventional plastics and switch to alternative materials that are recyclable and biodegradable (Xiong & Zhang, 2021).

Furthermore, the activity also contributed to the emergence of local leaders who serve as drivers of change in the community (Adnyana, 2020). Several MSMEs active during the training were appointed as small group coordinators, allowing them to continue mentoring through peer learning after the program concluded. This social change is an early indication of a transformation toward more sustainable business practices, which aligns with the goal of green tourism to increase sustainability-based tourist appeal (Raharjo *et al.*, 2022).

3.1 Pre-test and Post-test Results

The pre-test and post-test evaluation conducted with 30 participants demonstrated consistent improvement across all ten indicators. The overall findings confirm that the training significantly enhanced participants' understanding, awareness, and readiness to adopt eco-friendly packaging in line with green tourism principles.

Table 1. Pre-test and Post-test Results with Indicators

No	Participants	Total Score Pre-test	Total Score Post-test	Average Pre-test	Average Post-test	Increase
1	30	69	135	2.3	4.5	2.2
2	30	75	150	2.5	5.0	2.5
3	30	72	150	2.4	5.0	2.6
4	30	75	165	2.5	5.5	3.0
5	30	85	175	2.83	5.83	3.0

6	30	90	180	3.0	6.0	3.0
7	30	75	165	2.5	5.5	3.0
8	30	90	180	3.0	6.0	3.0
9	30	105	180	3.5	6.0	2.5
10	30	120	210	4.0	7.0	3.0

Source: Data processed by the author.

For Indicator 1 (Understanding of Green Tourism), the total score increased from 69 (average 2.3) in the pre-test to 135 (average 4.5) in the post-test, showing an improvement of +2.2 points. The result indicates that participants gained a deeper comprehension of sustainability and environmental preservation as essential aspects of tourism. For Indicator 2 (Knowledge of Eco-Friendly Packaging), the total score rose from 75 (average 2.5) to 150 (average 5.0), marking a +2.5 increase. This shows that participants became more familiar with types of eco-friendly packaging and their role in reducing environmental impact. For Indicator 3 (Comparison between Conventional and Eco-Friendly Packaging), the score improved from 72 (average 2.4) to 150 (average 5.0), with a +2.6 increase. Participants gained a clearer understanding of the differences between conventional packaging and sustainable alternatives, as well as their environmental consequences. For Indicator 4 (Awareness of Plastic Packaging Impact), the score rose from 75 (average 2.5) to 165 (average 5.5), a +3.0 increase. This reflects a significant rise in awareness of the harmful effects of single-use plastics on ecosystems and tourism quality. For Indicator 5 (Understanding of Recycling Principles), the score increased from 85 (average 2.83) to 175 (average 5.83), showing a +3.0 rise. This demonstrates that participants are now more aware of recycling practices and their potential application in daily business operations. For Indicator 6 (Readiness to Implement Eco-Friendly Packaging), the score went up from 90 (average 3.0) to 180 (average 6.0), reflecting a +3.0 improvement. This suggests participants became more confident and prepared to integrate eco-friendly packaging into their business strategies. For Indicator 7 (Knowledge of Government Policies), the score improved from 75 (average 2.5) to 165 (average 5.5), also a +3.0 increase. Participants demonstrated a better understanding of existing government support and regulations that encourage green tourism and sustainable packaging. For Indicator 8 (Ability to Choose Appropriate Eco-Friendly Packaging), the score increased from 90 (average 3.0) to 180 (average 6.0), a +3.0 rise. Participants showed improved decision-making skills in selecting the right eco-friendly packaging for their products. For Indicator 9 (Perception of Economic Benefits), the score went from 105 (average 3.5) to 180 (average 6.0), an increase of +2.5. This indicates participants began to recognize that sustainable practices not only benefit the environment but also enhance competitiveness and economic growth. For Indicator 10 (Readiness for Sustainable Business Innovation), the score rose from 120 (average 4.0) to 210 (average 7.0), a +3.0 increase. This shows that participants developed stronger motivation to innovate and incorporate sustainability as a core part of their business strategies. The training successfully improved participants' knowledge and readiness across all aspects, from basic understanding to practical implementation of eco-friendly packaging, contributing to the long-term goal of promoting sustainable tourism in Denai Lama Village.

4. Discussion

The results of this activity strengthen the evidence that participatory training can increase awareness, knowledge, and practical skills among MSMEs in supporting the implementation of green tourism. The increase in scores from pre-test to post-test demonstrates the effectiveness of the approach, where participants gained not only theoretical understanding but also practical skills in selecting and using environmentally friendly packaging (Adnyana, 2020). This finding aligns with previous research that emphasizes the importance of integrating environmental education into the tourism sector to encourage sustainable behavior (Raharjo *et al.*, 2022).

Furthermore, the emerging social changes, such as the formation of collective awareness and the emergence of local leaders, demonstrate that the Community Service Program (PkM) can serve as a catalyst for community transformation. This transformation is crucial because the success of green tourism is largely determined by local community involvement in protecting the environment and practicing sustainability in their businesses. With an increased understanding of the economic benefits of using environmentally friendly

packaging, MSMEs are now better prepared to compete in a market that increasingly emphasizes sustainability issues. This supports the view that environmentally friendly practices not only impact ecology but also provide economic benefits to the community (Adnyana, 2020). From a theoretical perspective, these findings demonstrate a close relationship between outreach, increased knowledge, and changes in community behavior. As the literature suggests, training-based interventions tailored to the local context can enhance the success of environmental program implementation, as communities feel involved and are able to see the direct benefits (Raharjo *et al.*, 2022). Therefore, this program not only results in increased individual understanding but also triggers social transformation toward more environmentally friendly business patterns, supports tourism sustainability, and strengthens the image of Denai Lama Tourism Village as a green tourism destination.

5. Conclusion

Based on the results of the pre- and post-tests administered to 30 training participants on the concept of green tourism, it can be concluded that this community service activity significantly improved participants' understanding across all measured indicators. Each indicator showed a higher average post-test score compared to the pre-test, with the greatest improvements observed in understanding the impacts of plastic packaging, the application of recycling principles, government policies, and the economic benefits of using environmentally friendly packaging. Overall, this training not only strengthened participants' knowledge but also increased their readiness and motivation to implement green tourism practices in their businesses, both through the selection of environmentally friendly packaging and sustainability-based innovations.

To strengthen the results achieved, further training or intensive workshops are recommended that cover waste management, environmentally friendly product innovation, and government policy implementation strategies related to green tourism. Collaboration between the government, private sector, and tourism communities also needs to be strengthened to create synergy in supporting sustainable tourism. Furthermore, providing practical materials in the form of guides or toolkits will significantly assist participants in applying green tourism principles to their daily business practices. Continuous outreach efforts are also recommended so that participants continue to gain the latest insights from experts and practitioners, enabling them to maintain consistency in implementing environmentally friendly practices in the tourism sector.

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