



DIGITAL MARKETING STRATEGY TO INCREASE COMMUNITY PARTICIPATION IN THE WASTE BANK PROGRAM

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ABSTRACT

Waste bank programs are an innovative solution to environmental management that aim to reduce waste accumulation while raising public awareness of circular economy practices. This concept not only emphasizes environmental aspects but also provides social and economic value, as communities can gain financial benefits from waste collection and processing. Nevertheless, community participation remains relatively low due to limited information, lack of education, and insufficient communication strategies that rely heavily on conventional methods. On the other hand, the rapid development of digital technology offers significant opportunities to improve the effectiveness of information dissemination. Digital marketing strategies can be utilized as tools to deliver messages more widely, attractively, and interactively. By leveraging social media platforms such as Instagram, TikTok, and WhatsApp, waste bank programs can be promoted more effectively to diverse audiences. This community service activity employs a structured training method with participatory approaches, interactive discussions, direct mentoring, and practical demonstrations. The findings indicate that digital marketing can expand information reach, foster emotional engagement, and build active digital communities that support program sustainability. Furthermore, these strategies enhance motivation through personalized messaging, collaboration with local influencers, and mobile application integration. Therefore, digital marketing serves not only as a promotional tool but also as an empowerment strategy to strengthen community participation in waste bank programs, while simultaneously supporting sustainable development goals (SDGs) and fostering a broader culture of environmental awareness.

Keywords: Digital Marketing, Waste Bank, Community Participation, Circular Economy, Community Service

INTRODUCTION

The waste problem has developed into an urgent global crisis, especially in developing countries with high rates of urbanization. Based on World Bank data (World Bank, 2022), the world produces around 2.24 billion tons of solid waste every year, and this figure is projected to increase to 3.88 billion tons by 2050 if there is no significant policy intervention. More than 40% of the total waste is not managed in an environmentally friendly way, and low- and middle-income countries bear the brunt of the crisis. The United Nations Environment Programme (UNEP, 2021) notes that poor waste management contributes directly to greenhouse gas emissions, ecosystem damage, and increased public health risks, especially in densely populated urban areas. In this context, UNESCO (2020) emphasizes the importance of environmental education and local community empowerment as the main foundation in building a culture of sustainable waste management. This condition encourages various countries to develop innovative approaches to community-based waste management.

Indonesia, as the country with the fourth largest population in the world, faces very serious waste management challenges. The Ministry of Environment and Forestry (MoEF, 2023) reported that the total national waste generation in 2022 reached 21.1 million tons, with the largest composition in the form of food waste (41.4%), plastic (18.6%), and paper (12.1%). Meanwhile, the national waste handling rate has only reached 68.5%, which means that there is still around 31.5% of waste that has not been managed optimally. Data from the National Waste Management Information System (SIPSN, 2023) noted that DKI Jakarta produces the most waste with a volume of more than 7,000 tons per day, followed by West Java and East Java. Ironically, the waste recycling rate in Indonesia only reaches





around 7-8%, far below the average of other Southeast Asian countries such as Singapore (59%) and Malaysia (23%). This condition shows a very high urgency to develop a more effective and participatory waste management strategy.

The waste bank program is one of the community-based waste management innovations developed in Indonesia since the early 2000s and has now grown rapidly. Based on data from the Ministry of Environment and Forestry (2023), there are more than 12,000 waste bank units spread throughout Indonesia with a total of more than 1.3 million customers. Waste banks work on the principle of savings, where people deposit segregated waste and get economic returns in the form of savings that can be used. Rachman, Komalasari, and Hutagalung (2021) in their research emphasized that the waste bank program has great potential in supporting sustainable waste management through active community involvement. However, the effectiveness of this program is highly dependent on the level of community participation which is still the main obstacle in various regions. Sultan et al. (2025) found that although a participatory approach has been implemented in Serang City, citizen involvement still needs to be systematically increased through more modern and effective communication strategies.

The low level of community participation in the waste bank program is caused by various interrelated and complex factors. Research by Purnamasari et al. (2022) identified that the main obstacles include lack of awareness of the economic benefits of waste banks, limited access to information, and the dominance of conventional socialization methods that are less effective in reaching the younger generation. Meanwhile, Widyaningsih and Susilowati (2021) found that most urban people spend more time on digital platforms than attending face-to-face meetings, so digital-based communication approaches are becoming more relevant. Wahyuni et al. (2023) also noted that door-to-door socialization and RT/RW meetings have a very limited reach and are unable to maintain long-term community involvement. Therefore, it is necessary to transform a communication strategy that is able to utilize the digital ecosystem to reach a wider audience. This phenomenon encourages researchers and practitioners to explore the potential of digital marketing as a key instrument in increasing community participation.

Digital marketing has proven to be a very effective tool in changing consumer behavior and building communities in various fields, including in social and environmental issues. Kotler and Keller (2016) define digital marketing as a modern communication strategy that utilizes digital platforms to build engagement through interactive content, message personalization, and continuous two-way communication. Indriyani and Astana (2025) prove that the implementation of digital marketing at the Luhungan Wasta Management Waste Bank has succeeded in significantly increasing community participation and strengthening the sustainability of the program. Aprihatiningrum and Rofi (2025) added that product innovation combined with sustainable digital marketing can significantly increase the competitiveness of waste banks and attract more active participants. Artanto (2025) in his community service research proved that digital marketing workshops for waste banks are able to expand the reach of information up to three times compared to conventional methods. Rahmawati (2021) also confirmed that the use of social media in environmental programs can consistently increase public awareness and encourage more active pro-environmental behavior.

The development of social media use in Indonesia shows great potential for the implementation of digital marketing strategies in the waste bank program. Data from We Are Social and Hootsuite (2024) noted that active social media users in Indonesia reached 167 million people or around 60.4% of the total population, with an average daily usage of 3 hours and 17 minutes. Instagram is used by 89 million active users, TikTok by 113 million users, and WhatsApp by more than 90% of internet users in Indonesia. Pramesthi and Handayani (2022) found that visual and short video-based educational content on the TikTok and Instagram Reels platforms had a 4.5 times higher reach rate than plain text content in environmental awareness campaigns. Furthermore, Dewi and Nugroho (2023) identified that collaboration with local micro-influencers in environmental digital campaigns is able to increase community trust and encourage more tangible behavioral conversions. The great potential of Indonesia's digital ecosystem is a strong foundation for the development of innovative digital marketing strategies for waste bank programs.

This Community Service (PKM) activity is present as a response to the gap between the potential of digital marketing and its implementation in the waste bank program at the community level. This activity was carried out at the Akasia Berseri Waste Bank, located on Jalan Perumahan Bukit





Pamulang Indah No. 74, as a community partner that needs to strengthen digital capacity. The main purpose of this activity is to provide structured training to waste bank managers and members on digital marketing strategies which include creating educational content, social media management, interactive campaigns, and digital marketplace integration. Academically, this activity contributes to the development of a digital technology-based community empowerment model that can be replicated in other communities. In addition, this activity also has a significant educational dimension for students as PKM implementers, who gain real experience in applying digital marketing management knowledge to social empowerment practices. Thus, this PKM is expected to be able to have a wide multiplier impact, both for the community as beneficiaries, for waste bank managers as partners, and for students as prospective professionals who care about environmental issues and sustainable development.

IMPLEMENTATION METHOD

This Community Service Activity (PKM) is carried out using a structured training method that is comprehensively designed to ensure effective knowledge and skill transfer to all participants. The training method was chosen because it has proven to be effective in the context of community empowerment, as stated by Sugiyono (2021) that structured training allows participants not only to understand concepts theoretically, but also to be able to apply them directly in real situations. This activity was carried out at the Akasia Berseri Waste Bank, Jalan Perumahan Bukit Pamulang Indah No. 74, by involving waste bank managers, community members, PKM Group 2 implementing students, and expert resource persons in the field of digital marketing. The participatory-lecture approach is applied to open up participants' insights while encouraging active involvement in each learning session, so that participants do not only act as passive recipients of information, but also as active subjects who contribute to the learning process together. The selection of this method is based on the principle of andragogy (adult learning) which emphasizes practical relevance and active involvement as the key to the success of the non-formal education process in the community.

The stages of implementing PKM activities are designed systematically and sequentially to ensure a progressive understanding from basic concepts to practical implementation. The first stage was a material presentation session on the concept of waste banks and the circular economy, where the speakers delivered material interactively using PowerPoint media equipped with infographics, short animated videos, and real case studies from waste banks that have successfully implemented digital strategies. At this stage, participants are invited to understand the basic philosophy of the circular economy as conceptualized by the Ellen MacArthur Foundation (2021), which is an economic system designed to eliminate waste and keep resources continuously used in the productive cycle. Interactive discussions and Q&A sessions are held openly for participants to ask questions, share experiences, and identify specific challenges faced in their communities. The activity facilitator acts as a moderator who encourages constructive dialogue and ensures that all participants are actively involved in the learning process. The session lasted for 90 minutes and ended with a joint reflection to consolidate the participants' understanding.

The second stage is an introduction to digital marketing strategies that are specifically designed for the context of the waste bank program. The speakers introduced various main components of digital marketing, including social media management (Instagram, TikTok, and WhatsApp Business), visual-based educational content creation, effective storytelling techniques for environmental issues, and gamification concepts as strategies to increase audience engagement. The approach used in this session refers to the PESO (Paid, Earned, Shared, Owned Media) framework developed by Dietrich (2020), so that participants understand the digital communication ecosystem holistically. The material is presented in polite, straightforward, and easy-to-understand language for all ages, using analogies and examples that are close to the participants' daily lives. Each sub-topic is accompanied by real-life examples of successful waste bank social media accounts, both from Indonesia and internationally, to provide inspiration and concrete insights to participants. Participants were also given a printed training module that could be taken home as a reference after the activity.

The third stage is a demonstration session and direct practice of creating social media accounts and digital marketplaces for waste bank promotion purposes. The facilitator first demonstrates the steps of creating and optimizing a business Instagram account, including engaging profile setup, informative



bio writing, and relevant hashtag usage strategies. Participants were then guided directly to try to create simple content using their respective smartphones, by utilizing easy-to-use photo and video editing apps such as Canva and CapCut. Mentoring is carried out personally by PKM implementing students who have been equipped with technical knowledge of digital marketing, so that each participant can get assistance that suits their needs and level of digital ability. This hands-on practice is important because research by Yulianti and Prasetyo (2022) shows that the learn-by-doing method increases the retention of digital knowledge and skills by 65% compared to theoretical learning alone. This session is designed with a relaxed, fun, and non-intimidating atmosphere, so that participants feel comfortable in exploring digital technology.

The fourth stage is an intensive mentoring session in creating high-quality digital content for the purpose of promoting waste banks. In this session, participants were guided to create various types of content, including: photos of recycled products with good lighting and composition, short educational videos on how to properly sort waste, and interactive campaign content such as online quizzes and environmentally-themed challenges. Facilitators provide guidance on effective visual communication design principles, including the selection of colors, typography, and layouts that align with the values of the waste bank program. Each small group of participants was tasked with creating a complete content package consisting of feed posts, informative captions, and stories that invited audience interaction. The results of content production are then criticized and discussed together in constructive feedback sessions, so that participants can learn from each other and improve the quality of their work. This collaborative creative process not only produces content that is ready to be published, but also builds participants' confidence in managing digital platforms.

The fifth and final stage was a comprehensive evaluation session aimed at measuring the effectiveness of the entire series of training activities. Evaluation was carried out through two approaches: quantitative evaluation using a structured questionnaire with a Likert scale of 1-5 that measured the improvement of participants' knowledge, skills, and motivation, and qualitative evaluation through focus group discussions that explored participants' experiences, challenges, and expectations in more depth. The evaluation data were analyzed using a comparative descriptive method to compare the conditions before and after training (pre-test and post-test). In addition, this activity also implements a follow-up plan in the form of the formation of a WhatsApp group of the digital community of the waste bank as a forum for communication, content sharing, and mutual support in a sustainable manner after PKM activities. Remote mentoring for 30 days after the training is also scheduled to ensure participants are able to implement the knowledge gained independently. All stages of activities are documented in a structured manner as material for program evaluation and reference for the development of similar PKM in the future.

Table 1. Activities, Methods, and Tools/Materials for the Implementation of PKM

No.	Activities	Purpose	Method	Tools/Materials
1	Presentation of the concept of waste bank and circular economy	Improve participants' basic understanding of sustainable waste management	Interactive talks, discussions, Q&A	PowerPoint slides, laptops, infocus, print modules
2	Introduction to digital marketing strategies	Introducing digital marketing concepts and tools for the waste bank program	Lectures, case studies, group discussions	PowerPoint, laptop, infocus, example of social media account
3	Social media and marketplace account	Train participants to create and manage digital accounts independently	Demonstrations, hands-on practice, mentoring	Smartphone, laptop, Instagram account, Canva, CapCut



No.	Activities	Purpose	Method	Tools/Materials
	creation training			
4	Digital content creation assistance	Produce quality digital content that is ready to be published	Creative workshops, feedback, group collaboration	HP, editing applications, waste bank recycling products
5	Evaluation of program participation & sustainability	Measuring training effectiveness and planning follow-up	Focus group discussions, pre-test & post-test	Questionnaire, evaluation form, Google Form, laptop

Source: PKM Activity Results, 2024

RESULTS AND DISCUSSION

Community Service Activities (PKM) carried out at the Acacia Berseri Waste Bank produced significant findings that were relevant to the goals that had been set. The preparation stage carried out before the implementation of the activity includes in-depth observation of environmental conditions, the waste management system that has been running, and the level of digital literacy of the local community. From these initial observations, it was found that most waste bank managers and members have not utilized digital platforms optimally for the purpose of program promotion and communication. Intensive coordination with waste bank administrators is carried out to understand the operational mechanism, the type of waste received, the challenges faced, and their expectations for the use of digital technology. The results of this needs assessment are the main basis for designing training content that is relevant, applicative, and in accordance with the local context of the community. Thus, all the materials and activities developed can really answer the real needs in the field.

The first session which discussed the concept of waste banks and the circular economy succeeded in significantly increasing participants' understanding, as reflected in the results of the pre-test and post-test carried out. The average comprehension score of participants increased from 52.3 (pre-test) to 78.6 (post-test) on a scale of 0-100, or an increase of 50.3%. Participants seemed very enthusiastic in participating in the discussion session, especially when the speakers presented concrete data on the economic value of waste achieved by waste banks in big cities such as Surabaya and Malang. One of the interesting findings of this session was that many participants did not previously know that the plastic, paper, and metal waste they collected has significant economic value if managed in an organized manner. The interactive discussions that took place during this session also identified various barriers to participation felt by residents, including ignorance about the type of waste received, less flexible waste bank operational schedules, and lack of motivation due to the low frequency of socialization. This finding is a valuable reflection material for managers to improve the waste bank's operational system.



Figure 1. Resource Person Presenting Digital Marketing Materials to PKM Participants
(Source: Documentation of PKM Activities of the Acacia Berseri Waste Bank, 2024)

Introduction and training sessions on digital marketing strategies are the core of this PKM activity and have the most significant impact on increasing the capacity of participants. The resource persons introduced various digital marketing strategies that have been proven effective in the context of environmental programs, including #BankSampahAkasia hashtag campaigns on Instagram, the creation of 60-second educational video content for TikTok, the dissemination of information through broadcast messages organized in WhatsApp Group, and the use of the Instagram Stories feature for polls and interactive quizzes on waste management. Indriyani and Astana (2025) confirmed that a consistent and planned content strategy in digital platforms was able to increase the number of active waste bank customers by up to 35% in the first three months of implementation. Artanto (2025) also shows that digital marketing workshops for waste banks equipped with hands-on practice produce a much higher level of technology adoption than training that is only theoretical. Furthermore, Aprihatiningrum and Rofi (2025) emphasized that sustainable digital marketing innovation, including consistent content management and responsiveness to platform trends, is a key factor in maintaining and improving the competitiveness of waste bank programs in the digital era.

The implementation of the digital marketing strategy taught in this PKM activity resulted in several concrete digital products that can be directly used by the Akasia Berseri Waste Bank. First, the formation of @banksampahakasia official Instagram account which is equipped with a professional business profile, informative bio, and some interesting initial uploads. Second, the creation of digital content templates in Canva format that can be easily adjusted and updated by waste bank managers independently. Third, the formation of a WhatsApp group of the waste bank digital community which is a forum for active communication between managers, members, and prospective new members. Fourth, the preparation of a digital content calendar for the next three months that contains a planned upload schedule and theme. Dewi and Nugroho (2023) in their research found that waste bank programs that have an active digital presence with a frequency of uploads at least three times per week experienced an average increase in the number of active customers by 28% in the first six months. Pramesthi and Handayani (2022) also identified that content based on success stories (success stories) of waste bank members uploaded on social media had an engagement rate 4.2 times higher than ordinary informative content.



Figure 2. Active Participants Participate in Digital Marketing Training and Mentoring Sessions
(Source: Documentation of PKM Activities of the Acacia Berseri Waste Bank, 2024)

The results of the final evaluation of the activity showed a very satisfactory success rate and exceeded the targets set at the beginning of the program. Of the total 45 participants who attended, 93.3% (42 people) stated that they were satisfied or very satisfied with the training materials and methods provided, while 88.9% (40 people) stated that they were ready to implement digital marketing strategies that had been learned independently. The results of the evaluation questionnaire also showed that the aspect of increasing participation motivation received an average score of 4.2/5.0, which indicated that participants felt more motivated to be actively involved in the waste bank program after participating in this activity. Rachman, Komalasari, and Hutagalung (2021) in their research underlined that increasing community participation motivation is a major prerequisite for the long-term sustainability of waste bank programs. Sultan et al. (2025) added that a participatory approach combined with digital technology has been proven to be able to increase citizen engagement more organically and sustainably than financial incentive-based programs alone. These findings as a whole confirm that digital marketing strategies implemented through structured training methods are an effective and targeted approach in increasing community participation in waste bank programs.

The positive impact of these PKM activities is not only felt on the digital aspect, but also on the social, environmental, and economic aspects of the community more broadly. From the social side, this activity has succeeded in strengthening social cohesion between waste bank managers, active members, and potential new customers through the formation of an active and inclusive digital communication network. From an environmental perspective, the increase in public interest in participating in waste banks triggered by digital campaigns has the potential to increase the volume of sorted waste that is managed productively. Wahyuni et al. (2023) in their research in three major cities in Indonesia found that waste bank programs that are active on social media have an average volume of 40% higher waste deposits than waste banks that do not use digital platforms. From an economic perspective, the introduction of digital marketplaces opens up new opportunities for waste banks to sell creative recycled products to a wider market, not just limited to local communities. Achillas and Aidonis (2026) in their latest study on the circular economy and waste management emphasized that the digitization of the waste management value chain, including the marketing of recycled products through e-commerce platforms, is the key to increasing the profitability and competitiveness of waste bank programs in the future. Thus, the digital marketing strategy implemented in PKM has the potential to have an impact that goes far beyond just increasing participation, but also contributes to the transformation of the waste management ecosystem that is more sustainable and oriented towards community welfare.

The success of this PKM activity also provides valuable lessons on the key factors that determine the effectiveness of digital marketing training in grassroots communities. First, the relevance of the training content to the local context and needs proved to be the most significant determining



factor. Second, patient and non-judgmental personal assistance is very important in overcoming participants' psychological barriers to new technologies. Third, the creation of real digital products during the training provides a strong sense of achievement and confidence to the participants. Fourth, the formation of a post-training digital community ensures the sustainability of the learning process and mutual support between participants. Widyaningsih and Susilowati (2021) confirmed that the peer support factor or support from fellow community members is the strongest predictor for the success of digital technology adoption in community groups that previously had low digital literacy. Priadana and Sunarsi (2021) also emphasized that digital training integrated with community economic empowerment programs results in a much higher level of sustainability than stand-alone training. These findings reinforce the argument that digital marketing strategies, when implemented with the appropriate, contextual, and community-based approach, can be a catalyst for meaningful and sustainable social transformation.

CONCLUSION

Based on the implementation of Community Service (PKM) activities at the Acacia Berseri Waste Bank, it can be concluded that the digital marketing strategy applied through structured training methods has proven to be effective in increasing the knowledge, skills, and motivation of participants to actively participate in the waste bank program. The increase in the average understanding score of participants by 50.3% from pre-test to post-test, participant satisfaction level by 93.3%, and readiness for independent implementation by 88.9% are very significant indicators of success. This activity succeeded in producing concrete digital products in the form of official social media accounts, content templates, WhatsApp communities, and content calendars that can be directly used by waste bank managers. The training approach that combines interactive lectures, demonstrations, hands-on practice, and personal mentoring has proven to be able to overcome digital literacy barriers that were previously the main obstacles. Thus, this PKM activity makes a real contribution not only to increasing community participation in the waste bank program, but also to the development of a digital ecosystem that supports sustainable environmental management.

This activity recommends several important things for the sustainability of the program in the future. First, the Acacia Berseri Waste Bank needs to maintain consistency in digital content management with a minimum frequency of three uploads per week to build stable audience engagement. Second, it is necessary to develop advanced digital marketing training programs that cover more advanced topics such as paid advertising, social media analytics, and collaboration strategies with local influencers. Third, this PKM model has the potential to be replicated in other waste banks in the Pamulang area and its surroundings, with contextual adaptations according to the characteristics of their respective communities. Fourth, integration with formal education programs through partnerships with local schools and colleges can expand the reach and impact of the program exponentially. Fifth, the establishment of a coordination forum between waste banks at the sub-district level by utilizing digital platforms can strengthen networks, facilitate knowledge sharing, and increase collective bargaining power in waste management. With the consistent and planned implementation of these recommendations, the digital marketing-based waste bank program is expected to become a holistic, sustainable model of community empowerment, and contribute significantly to the achievement of the Sustainable Development Goals (SDGs), especially goal 11 (Sustainable Cities and Communities) and goal 12 (Responsible Consumption and Production).

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