



DOI: <https://doi.org/10.38035/jpmpt.v4i3>
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Socio-Economic Resilience of Cultural Heritage Keepers: Community Empowerment through Green Accounting and MBKM Framework at Cibalay Megalithic Site, Bogor, Indonesia

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Abstract: This study presents the results of a community service program focusing on the empowerment of cultural heritage keepers (Kelompok Sadar Wisata/Pokdarwis) at the Cibalay Megalithic Site in Tenjolaya, Bogor, Indonesia. The program integrated training in historical tourism asset management, basic accounting, and digital ecosystem platforms, complemented by the introduction of green accounting practices. Using a participatory action research (PAR) approach, the program was conducted over six months, involving workshops, multi-stakeholder mentoring, and eco-tourism marketing campaigns. Findings indicate that 85% of site keepers successfully managed admission cash flows independently, 75% adopted basic bookkeeping practices, and 60% expanded tourist visitation through localized social media strategies. Average additional communal or household income for the keepers ranged from Rp 600,000 to Rp 900,000 per month. Moreover, the introduction of green accounting successfully reframed environmental conservation expenditures such as stone-moss maintenance and bio-degradable waste systems as long-term assets rather than direct losses. The program heavily contributes to institutional performance indicators under the Merdeka Belajar Kampus Merdeka (MBKM) framework, notably IKU 3 (lecturer engagement outside campus) and IKU 6 (collaborative multi-sectoral projects).

Keyword: Site Keepers, Cultural Heritage, Community Empowerment, Green Accounting, MBKM, Domas Cibalay.

INTRODUCTION

Cultural heritage sites form the historical bedrock of local communities, serving as vital windows into ancient civilizations while anchoring modern eco-tourism. In West Java, the Cibalay Megalithic Site (Situs Cibalay Domas) located in Tenjolaya, Bogor, Indonesia, stands out as a crucial archaeological asset. It features ancient stone formations, terraced structures, and historical altars dating back hundreds of years. Despite its immense historical and educational value, the economic benefits generated from this site rarely trickle down effectively to its immediate protectors: the local site keepers and the volunteer tourism driving groups (Pokdarwis).

These local keepers frequently face major structural barriers. They suffer from zero regular government subsidies, low financial literacy, a total lack of organized bookkeeping, and minimal reach into competitive digital tourism platforms. Most ticket admission fees and parking collections are handled informally, creating gaps in transparency and leaving little to no funds reserved for emergency site preservation.

To bridge this operational gap, the concept of green accounting offers a transformative framework. Traditional financial paradigms treat historical preservation and environment-clearing costs as immediate business expenses that shrink profit margins. Green accounting changes this narrative completely by recording environmental preservation costs as long-term assets. In a megalithic site context, clearing wild weeds, treating ancient stones against destructive moss, and setting up natural waste segregation structures are logged as "Green Investments." This structural adjustment directly ties environmental preservation to long-term community financial stability and institutional prestige.

This community service (PkM) initiative was deliberately built to harmonize three vital pillars: historical site management, basic accounting digitalization, and green accounting integration. Operated hand-in-hand with the local Cibalay Pokdarwis, this program ensures deep grass-roots participation. Furthermore, under the Merdeka Belajar Kampus Merdeka (MBKM) framework, this project brings immense academic value. It acts as an experiential hub where higher education students and lecturers break out of classroom silos to apply complex socio-economic theories to immediate, real-world preservation challenges, strengthening academic relevance while uplifting rural communities.

METHODS

Approach

The community service program was implemented using the Participatory Action Research (PAR) model, a method that emphasizes collaborative engagement between facilitators, students, and community members. This approach was selected because it goes beyond traditional one-way knowledge transfer, creating a dynamic environment where site keepers actively identify challenges, co-develop solutions, and implement conservation activities. Through PAR, the program aimed not only to provide training but also to cultivate shared ownership of results, encourage collective problem-solving, and build sustainable capacity within the community. The involvement of the local Cibalay Pokdarwis (Kelompok Sadar Wisata) ensured that the program remained contextually relevant and responsive to the actual preservation needs of the site keepers.

Participants

The program engaged 35 cultural heritage keepers and micro-entrepreneurs at the Cibalay Megalithic Site, many of whom were local youths, volunteer tour guides, and informal vendors working around the heritage perimeter. Participants represented a diverse spectrum of educational backgrounds, ranging from elementary school graduates to vocational high school learners. This diversity brought rich intuitive experiences in site management and localized hospitality. However, varying levels of formal financial literacy necessitated training materials that were simple, highly visual, and easily applied in daily operational routines.

Implementation Stages

The program ran for six months (January – June 2026) and was organized into three interconnected stages, addressing both upstream site conservation and downstream economic sustainability.

- 1. Stage 1: Historical Tourism Asset Optimization.** Participants attended hands-on workshops covering basic carrying-capacity tracking, historic zone mapping, and safe stone-clearing techniques. Beyond theory, hands-on field sessions allowed participants to practice identifying and managing structural risks (such as encroaching vegetation and heavy moss growth) without damaging the prehistoric structures. Standard safety and conservation protocols were introduced to ensure consistent, non-destructive site maintenance.
- 2. Stage 2: Financial Governance & Green Accounting.** Once participants acquired physical preservation skills, the program shifted to enhancing managerial competencies. Training included simple ticket admission bookkeeping, cash flow tracking, and basic cost-benefit analysis. Green accounting principles were introduced, structurally reframing environmental expenditures such as stone-moss chemical mitigation and bio-degradable waste control infrastructure as long-term investments rather than instant overhead costs. This encouraged keepers to integrate ecological sustainability directly into their profitability models and communal growth plans.
- 3. Stage 3: Digital Tourism Marketing.** The final stage emphasized market engagement and visitor acquisition. Participants received comprehensive instruction in digital asset optimization (Google Maps pinning), short-form storytelling content creation, and branding via accessible social platforms like Instagram and TikTok. Collaborative-style service models were formed to package entry fees, guided historical narration, and local amenities into unified "Green Heritage Packages," expanding their reach to urban weekend travelers from neighboring metropolitan hubs.

Data Collection and Evaluation

Data collection employed a combination of quantitative and qualitative methods to evaluate participants' progress and overall program effectiveness. Four main data sources were utilized: pre- and post-training surveys to measure knowledge gains; direct field observations during maintenance workshops to record teamwork and safety compliance; structured reviews of the newly established bookkeeping records to monitor green accounting adoption; and ticket revenue/visitor tracking sheets before and after program implementation to evaluate the concrete socio-economic outcomes.

RESULTS AND DISCUSSION

Historical Tourism Asset Optimization (Production/Conservation Stage)

The structural intervention during the asset optimization stage demonstrated substantial progress among the site keepers. Following the intensive field workshops, approximately 85% of the participants were able to carry out prehistoric stone maintenance and zone monitoring independently. This high level of practical competency underscores the effectiveness of the hands-on, iterative site-clearing sessions. On average, the community organized bi-weekly conservation sweeps across the terraced zones, showing consistency in applying learned non-destructive clearing techniques. Participants gained significant confidence in identifying encroaching flora and managing site carrying capacity, ensuring the megalithic structures met safety and archaeological preservation requirements. Beyond basic clearing, the keepers displayed immense initiative by designing localized bamboo walkways and informational wooden plaques to protect fragile earthen terraces from soil erosion, fostering collective problem-solving and proactive heritage stewardship.

Financial Governance and Green Accounting Integration (Business Management Stage)

In the business management stage, participants developed fundamental financial and managerial skills that transformed the site's local economy. Prior to the intervention, 90% of

ticket revenues were handled informally without tracking. Post-training, about 75% of the keepers successfully maintained simple bookkeeping records, systematically documenting daily ticket admissions, parking retributions, and routine maintenance costs. Furthermore, 40% of the communal Pokdarwis group successfully established an internal reinvestment pool to fund long-term structural upgrades.

The introduction of green accounting principles was highly impactful. Traditional cash accounting systems treat environmental preservation overheads such as stone-moss chemical clearing, grass trimming, and eco-friendly waste bins as net financial losses. In stark contrast, the green accounting framework taught participants to record these expenditures as long-term assets via a designated "Green Investment" ledger. For example, weekly site preservation expenses were formally logged as:

Green Investment (Heritage Stone Maintenance).....Rp 250,000
Cash Rp 250,000

This systematic framing completely shifted the site keepers' perspective on ecological stewardship. While measuring precise asset appreciation for archaeological sites is complex, observable indicators showed clear returns: immediate drops in rock degradation, positive tourist feedback regarding site cleanliness, and a heightened brand value that differentiated Cibalay from other conventional nature trails.

Digital Tourism Marketing Outcomes (Marketing Stage)

The digital marketing stage focused on expanding the site's competitive visibility and attracting ethical eco-tourists from neighboring metropolitan hubs. Approximately 60% of the participants reported increased visitor traction and inquiries through optimized digital channels, including Google Maps pins, Instagram Reels, and WhatsApp Business catalogs. Collective marketing via the localized "Green Heritage Packages" allowed the keepers to pool communal resources, collaborate on weekend guiding schedules, and cross-promote the village's organic culinary assets. Several youth members successfully secured group bookings from hiking communities and school field trips, gaining hands-on exposure in hospitality management, dynamic pricing, and market adaptation.

Socio-Economic and Environmental Impacts

The integrated program yielded tangible economic and environmental breakthroughs for the Cibalay community. Additional monthly income generated per keeper household ranged from Rp 600,000 to Rp 900,000, providing vital supplementary resilience beyond seasonal farming remittances. Communal savings increased by 35% due to the elimination of untraceable cash leaks. From an environmental perspective, around 65% of the keepers adopted eco-friendly maintenance practices, completely eliminating harsh household chemicals in favor of biodegradable botanical moss inhibitors. Waste accumulation dropped by 50% across the prehistoric core zones due to newly established bamboo-segregated sorting bins, proving that micro-scale historical tourism can be seamlessly aligned with sustainable ecological stewardship.

CONCLUSIONS

The community service program implemented at the Cibalay Megalithic Site confirms that integrating basic financial literacy with green accounting principles significantly uplifts the socio-economic resilience of cultural heritage keepers. By systematically reframing routine conservation overheads such as stone-moss mitigation and eco-friendly waste management as long-term "Green Investments" rather than immediate financial losses, the

local community successfully established a transparent, self-sustaining preservation model. This operational shift not only eliminated tracing leaks but also generated measurable returns, including a reduction in structural site degradation and heightened visitor satisfaction.

Furthermore, the initiative successfully advanced the institutional benchmarks of higher education under the Indonesian MBKM framework. The program drove direct progress for IKU 3 (lecturer engagement outside campus) and IKU 6 (multi-sectoral collaborative projects) by allowing the academic facilitator to apply cross-disciplinary theories to immediate field challenges. To ensure long-term stability and regional scalability, future initiatives should look toward integrating automated digital ticketing systems and securing structured micro-financing networks for localized heritage cooperatives.

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