

## **PEOPLE, PUBLIC, AND PRIVATE PARTNERSHIP IN ARCHAEOLOGICAL SITE MANAGEMENT: INSIGHTS FROM SANTUBONG, SARAWAK**

*Kolaborasi Komuniti, Agensi dan Swasta dalam Pengurusan Tapak  
Arkeologi: Tinjauan dari Santubong, Sarawak*

**Nur Auni Ugong<sup>1</sup>  
Siti Hafizah Suaidi<sup>1</sup>**

<sup>1&2</sup>Faculty of Social Sciences and Humanities, Universiti  
Malaysia Sarawak 94300 Kota Samarahan, Sarawak, Malaysia

\*Corresponding author: unauni@unimas.my

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### **Abstract**

This study aims to examine the effectiveness of the People-Public-Private Partnership (P4) model in managing the Santubong Archaeological Site in Sarawak, Borneo, by focusing on its indicators, challenges, and strategies for balancing heritage conservation with socio-economic development. Using a qualitative methodology, the research incorporates in-depth interviews, focus group discussions, and participant observation involving stakeholders such as heritage managers, community leaders, and private sector representatives. Analysis reveals that the P4 framework's strengths include fostering community involvement (57.9%), promoting clear communication (47.4%), and aligning shared goals (42.1%), all of which contribute to more effective heritage management. However, the study also identifies significant challenges, such as funding constraints (26.3%), lack of expertise (47.4%), and communication barriers (15.8%), which hinder the full realization of partnership potential. Key strategies proposed to enhance outcomes include equitable revenue sharing, the integration of technology, and focused capacity building. Although the findings are site-specific and may not be entirely generalizable, they offer valuable insights for comparative research. The practical implications highlight the importance of inclusive governance, strategic resource allocation, and technological support for sustainable heritage.

site management. Socially, the study emphasizes the need for community engagement in preserving cultural heritage, while simultaneously addressing local economic needs, fostering social cohesion, and strengthening cultural identity. Overall, this research provides a fresh perspective on the application of the P4 model in Southeast Asian archaeological site management, combining international best practices with localized strategies.

**Keywords :** Heritage Management, People-Public-Private Partnership, Santubong Archaeological Site, Sustainability

## Introduction

Archaeological sites are invaluable links to our shared heritage, offering historical, cultural, and economic benefits while driving socio-economic growth. However, preserving these sites is challenging due to limited resources, environmental threats, and conflicting stakeholder interests (Miura, 2022; Nasser, 2003). Innovative governance frameworks that embrace diverse perspectives are crucial for achieving both conservation and sustainable use. The P4 model provides a collaborative solution, uniting communities, governments, and private entities to address these issues effectively (Žuvela et al., 2023; Boniotti, 2021).

The Santubong Archaeological Site in Sarawak, Borneo, is a prime example of how the P4 model can enhance heritage management. Known for its historical significance and artifacts from the Iron Age, Hindu, and Buddhist traditions, Santubong has attracted research and tourism since the mid-20th century (Chin & Nyandoh, 1975; Harrisson, 1957). Despite its potential, the site faces challenges like funding shortages, uneven stakeholder involvement, and pressures, similar to global heritage sites like Petra (Miura, 2022). This study examines the PPP framework at Santubong, focusing on its effectiveness, challenges, and outcomes, contributing valuable insights to sustainable heritage management in Southeast Asia (Joshi et al., 2021).

The P4 model offers an evolved framework for managing cultural heritage by emphasizing the inclusion of local communities alongside public and private stakeholders. The P4 model is

characterized by its multidimensional approach, emphasizing the equitable distribution of roles and responsibilities among stakeholders to managing heritage sites effectively (Sotiriadis & Shen, 2017; Boniotti, 2021; Zuvela et al., 2023).

Public institutions in the P4 model formulate policies, set regulatory standards, and ensure heritage site management aligns with legal and ethical guidelines while balancing stakeholder interests (Joshi et al., 2021; Haanpää, Puolamäki, & Karhunen, 2018), facilitate collaboration and transparency among involved entities (Joshi et al., 2021; Haanpää et al., 2019; Chan & Lee, 2017; Chan & Lee, 2017). Private entities provide financial support, introduce innovative practices, and apply entrepreneurial and technological solutions to enhance sustainability and efficiency (de Araujo et al., 2019; Haanpää et al., 2019). Meanwhile, local communities contribute cultural knowledge and stewardship, fostering a human-centric approach to heritage preservation, actively protect and shape the site's identity and heritage (Haselberger & Krist, 2022; Umar, Yuceer, & Aydin, 2022; Aggarwal & Suklabaidya, 2017; Aziz, 2017; Ekici et al., 2022).

## **Methodology**

### **Location and Description of the Study Site**

Santubong, a historically significant region in Sarawak, Malaysia, has long been known for its rich archaeological heritage. First identified during James Brooke's administration, the area has yielded artifacts such as gold ornaments, beads, gemstones, pottery, and relics of Chinese and Siamese origin. Discoveries of Iron Age relics, Hindu imagery, and carved stones further establish Santubong as an ancient center of trade, culture, and religion (Chin & Nyandoh, 1975; Chin, 1977; Treloar, 1977; Tucon et al., 2010).

Archaeological exploration in Santubong began in 1946–1947 under Tom Harrisson, tasked with clearing remnants of the Japanese occupation. He identified and mapped ancient ritual sites, leading to systematic excavations in 1949 and 1952. These efforts uncovered six key sites—Sungai Jaong, Bongkissam, Bukit Maras, Sungai Buah, Tanjung Kubor, and Tanjung Tegok—providing valuable insights into Santubong's heritage (Christie, 1985; Doherty, et al., 2007).

Among these sites, Sungai Jaong stands out for its intricately carved stones depicting human figures and geometric patterns. Located approximately two miles from Kampung Santubong, this site yielded significant artifacts, including stone tools, beads, and clay and iron kitchen utensils. A small area of 750 square meters produced gold and ceramic objects associated with the Tang and Sung Dynasties, suggesting that the site was active around or before 1000 CE. These findings underscore the importance of Sungai Jaong as a centre of cultural and economic activity.

The nearby site of Bongkissam, adjacent to Kampung Santubong, yielded artifacts of a similar nature but of superior craftsmanship compared to those at Sungai Jaong. Excavations in 1966 uncovered a rectangular stone platform with a central cavity containing yellow sand and a silver box filled with gold ornaments. These ornaments included figures of Buddha statues, crescent moons, elephants, turtles, and snakes, showcasing the artistic and cultural richness of the site. Such discoveries affirm Bongkissam's role as a significant religious and administrative hub, possibly established during the late 16th century (Griswold, 1962; Harrisson et al., 1967).

Located behind Bongkissam, Bukit Maras yielded a fragment of a Buddha statue measuring over ten inches in height, alongside tantric artifacts. Scholars have classified the site as a temple cave dating back to the 8th–9th centuries, highlighting early Buddhist influences in the region. These findings provide valuable evidence of Santubong's religious and cultural exchanges during the early medieval period. Other sites, including Sungai Buah, Tanjong Kubor, and Tanjong Tegok, further emphasize Santubong's historical significance as a key trading port. Artifacts such as ceramics from the Tang and Sung Dynasties and Iron Age relics indicate that Santubong served as a pivotal stopover for traders from East Asia, Southeast Asia, and China as early as the 5th century. These findings reveal the extensive maritime trade networks that connected Santubong to broader cultural and economic exchanges across the region (Harrisson, 1957; Harrison et al., 1957; Solheim, 1965; Zainie & Harrisson, 1967).

Collectively, the archaeological discoveries in Santubong offer a rich narrative of its historical importance as a center of trade, religion, and culture. The diverse artifacts unearthed from these sites underscore Santubong's role as a key player in regional and global interactions, marking it as a vital heritage site in Southeast Asia.

However, these findings also call for greater efforts in preserving and showcasing Santubong's archaeological legacy to ensure that its rich history continues to inform and inspire future generations.

## **Research Method**

The study systematically evaluates the P4 model in managing the Santubong Archaeological Site, focusing on its characteristics, effectiveness, and implementation challenges. The objectives are to;

- i. Identify key characteristics of the P4 model in heritage management
- ii. Assess its effectiveness in resource allocation, stakeholder engagement, and decision-making,
- iii. Identify challenges such as funding constraints, conflicting priorities, and governance issues.

These objectives were achieved through in-depth interviews with 20 key informants, including heritage managers, policymakers, archaeologists, and community leaders, complemented by focus group discussions (FGDs) with local residents, private sector participants, and community representatives. Additionally, 20 survey questionnaires were used to gather stakeholder perceptions of the model's performance in areas such as resource management, conflict resolution, and community benefits. Participant observation was also conducted to examine the P4 model in practice, providing further depth to the analysis.

Thematic analysis was used to identify patterns and key themes in the data. The process involved familiarization with transcripts and field notes, followed by initial coding to highlight important themes. These codes were grouped into broader categories for a structured analysis. Atlas.Ti facilitated data management, coding, and cross-referencing. Stakeholder perspectives from interviews and FGDs were compared to identify similarities and differences among public institutions, private entities, and local communities, providing deeper insights into the complexities of the P4 model.

## **Study Results / Study Findings**

### **Characteristics for PPP**

The findings reveal key characteristics that contribute to the effectiveness of partnerships at the Santubong Archaeological Site, with community involvement (57.9%) emerging as the most significant factor. This aligns with successful global practices at sites like Ayutthaya Historical Park in Thailand, where community-driven initiatives have been pivotal in integrating local economic development with conservation (Thanvisithpon, 2016; Seviset, & Charoensettasilp, 2018). In contrast, heritage sites that lack meaningful community engagement, such as parts of Petra in Jordan during earlier conservation efforts, have faced challenges in sustaining long-term outcomes due to diminished local support (Mickel & Knodell, 2015; Alrwaifah, Almeida-García, & Cortés-Macías, 2021; Cesaro, et. al., 2023).

Clear communication and adequate funding, both rated at 47.4%, also play crucial roles in the partnership's effectiveness to ensure their roles and objectives, fostering trust and reducing misunderstandings. This mirrors practices at Machu Picchu in Peru, where open communication between stakeholders has strengthened collaboration and prevented conflicts (Larson, & Poudyal, 2012). Adequate funding, meanwhile, is a cornerstone for successful heritage management, enabling the implementation of high-quality conservation techniques and infrastructure improvements. Without sufficient financial resources, as seen in parts of Kenya's Lamu Old Town, projects often stagnate or fail to achieve desired outcomes (Mwenje, & Bunu, 2019; Mbuthia, Kieti, & Ipara, 2024).

Shared goals and objectives (42.1%) further enhance the partnership by aligning stakeholder efforts toward a unified vision for heritage conservation and sustainable development. This characteristic resonates with Italy's Pompeii, where clearly defined goals among stakeholders have facilitated the integration of tourism, conservation, and community benefits (Jamal, & Stronza, 2009; Osanna, & Rinaldi, 2018). However, without consistent reinforcement, shared objectives risk being diluted by competing interests, as observed in earlier phases of heritage management at Cambodia's Angkor Wat (Gillespie, 2009; Gillespie, 2013).

Expertise and knowledge sharing (36.8%) is another significant factor in Santubong's partnership model to ensure conservation practices meet international standards while addressing local challenges. This characteristic is evident at Stonehenge in the UK, where collaborations between archaeologists, technologists, and local communities have resulted in innovative conservation techniques and visitor engagement strategies (Mcanany, & Rowe, 2015; Woodfill, & Rivas, 2020).

Strong leadership and legal and regulatory support, each rated at 15.8%, appear less prominent but remain essential components of effective partnerships. The absence of strong leadership, as observed in some phases of the Giza Pyramids' conservation efforts, can lead to fragmented initiatives and inefficiencies (Hawass, 2000; Hemedia, & Sonbol, 2020). Similarly, robust legal and regulatory frameworks are critical for protecting heritage sites from overdevelopment and ensuring compliance with conservation policies. For instance, Spain's Alhambra has benefited from stringent legal protections that have preserved its cultural and historical integrity (Jiménez, & Gutiérrez-Carrillo, 2019).

The effectiveness of partnerships at Santubong is driven by a combination of community involvement, clear communication, adequate funding, shared objectives, expertise sharing, leadership, and legal support. When compared with global heritage sites, Santubong aligns with best practices in several areas but has room to enhance leadership and regulatory mechanisms. By leveraging these characteristics and learning from global examples, Santubong can position itself as a model for sustainable heritage management, balancing conservation with socio-economic benefits for all stakeholders.

### **Indicators of Success in PPP Management**

The metrics used to measure the success of partnership projects at the Santubong Archaeological Site reflect a multifaceted approach to evaluating the effectiveness and sustainability of collaborative efforts. Among these, funding and financial resources, rated at 47.4%, stand out as a critical determinant of success. Education and awareness programs, also rated at 47.4%, are another key indicator of success.

These programs play a pivotal role in fostering public understanding and appreciation of Santubong's cultural and historical significance.

Government policies and legal frameworks (31.6%) serve as foundational supports for effective partnerships. These frameworks provide the regulatory environment necessary to protect the site and guide stakeholder interactions. Technological integration (31.6%) is another crucial metric, as it reflects the site's ability to leverage modern tools for conservation, documentation, and visitor engagement. Cultural and social values, rated at 31.6%, highlight the importance of aligning conservation projects with the cultural significance and social fabric of the local community. Economic development pressures, although rated lower at 15.8%, remain a relevant metric, reflecting the balance between economic growth and heritage preservation.

Finally, arrangement and administrative efficiency, at 2.1%, indicate the operational capability of the partnership. While rated lower, this metric is still vital, as inefficiencies in administration can undermine the implementation and impact of projects. Streamlined processes, clear communication channels, and well-defined roles are essential for achieving the goals of the partnership.

In conclusion, the success metrics for Santubong partnerships offer a holistic evaluation framework, balancing financial stability, education, cultural values, and innovation. By addressing economic and administrative challenges, these metrics ensure sustainable, community-aligned heritage management, reflecting the vital interplay of resources, governance, and cultural significance.

### **The effectiveness of PPP Partnership Model**

The analysis of the findings regarding the effectiveness of the P4 model in managing the Santubong Archaeological Site provides significant insights into its performance and areas for improvement. When placed in a global context, the assessment reveals valuable parallels and contrasts with other heritage sites worldwide, offering a critical lens to interpret its challenges and successes.

The findings that 31.6% of respondents rated the P4 model as "very effective" and another 31.6% as "effective" suggest that the

model holds promise but remains inconsistent in its outcomes. The neutral response (36.8%) indicates that stakeholders may not fully perceive the benefits or have reservations about their roles. This ambivalence aligns with challenges seen at Petra in Jordan, where initial skepticism about partnerships stemmed from unclear stakeholder responsibilities and uneven benefit distribution (Alrwajfah et al., 2021; Alnsour et al., 2024).

The relatively positive feedback on decision-making (42.1% good, 31.6% very good) reflects an inclusive approach but highlights gaps in transparency, as indicated by 26.3% neutral responses. This is comparable to Italy's Pompeii, where participatory governance and multi-stakeholder forums have successfully aligned conservation and development goals (Aureli & Del Baldo, 2022; Righettini, 2021; Taormina & Baraldi, 2022.). For Santubong, implementing regular stakeholder forums with structured feedback mechanisms could bridge the gap between inclusivity and transparency, ensuring all voices are heard and decisions are well-communicated.

Resource allocation at Santubong reveals a mixed perception, with 42.1% neutral ratings indicating inefficiencies in fund distribution or transparency. This resonates with challenges faced at Machu Picchu in Peru, where unclear financial flows initially undermined stakeholder trust (Zan & Lusiani, 2011; Larson & Poudyal, 2012). Santubong could adopt similar practices, ensuring clear documentation and communication of financial allocations to build stakeholder confidence and reduce neutral feedback.

Positive ratings in stakeholder engagement (42.1% good, 31.6% very good) reflect efforts to involve various parties, yet the 26.3% neutral responses indicate room for more consistent and meaningful engagement. Globally, the management of Lamu Old Town in Kenya highlights the value of ensuring tangible benefits for stakeholders, which fosters a sense of ownership (Mbuthia, 2024). Capacity-building workshops and participatory conservation programs could empower Santubong's local communities as active custodians, aligning their roles with the site's conservation and development goals.

The balanced perception of conflict resolution at Santubong (36.8% neutral, 36.8% good, 26.3% very good) suggests existing mechanisms are functional but may lack robustness for complex disagreements. Lessons from Spain's Alhambra highlight the

effectiveness of structured frameworks, such as third-party mediation and legally binding agreements, in resolving disputes among diverse stakeholders (Nasser, 2003; Throsby, Zednik, & Araña, 2021). Santubong could benefit from similar systems, introducing formal mediation panels and grievance redressal mechanisms to preempt and address conflicts effectively.

Outcome sustainability ratings (31.6% very good, 26.3% good, 42.1% neutral) point to concerns about the long-term viability of initiatives, reflecting the need for clearer strategies to maintain outcomes beyond initial investments. Thailand's Ayutthaya Historical Park demonstrates how community-driven tourism and equitable revenue-sharing models can enhance perceptions of sustainability (Thanvisithpon, 2016).

Ratings for innovation and adaptability (47.4% good, 26.3% very good) underscore Santubong's strength in integrating modern approaches, yet the 21.1% neutral and 5.3% poor ratings highlight gaps in convincing all stakeholders. The use of digital tools at sites like Stonehenge in the UK illustrates the potential of technologies such as augmented reality, 3D mapping, and virtual tours in improving site management and visitor engagement (Pearson et al., 2008).

Resource management is another area where Santubong can draw lessons from global best practices. Machu Picchu in Peru offers a compelling model of resource transparency through participatory budgeting and public audits, which have strengthened trust and improved resource allocation efficiency (Larson, & Poudyal, 2012). At Santubong, 42.1% of respondents expressed neutral perceptions of resource allocation, suggesting inefficiencies or a lack of clarity. Introducing transparent mechanisms such as annual financial reports and community-led audits would allow stakeholders to better understand and influence how funds are utilized, thereby improving satisfaction and trust in the PPP model.

Conflict resolution frameworks also require strengthening at Santubong. The Alhambra in Spain has demonstrated the value of preemptive frameworks such as mediation panels and legally binding agreements to manage disputes effectively (Jiménez, & Gutiérrez-Carrillo, 2019). While conflict resolution at Santubong is not rated poorly, the high neutral responses (36.8%) indicate that current mechanisms are either underutilized or inadequate for resolving

complex disagreements. Establishing formal grievance redressal systems and mediation frameworks would enhance the site's ability to handle conflicts, fostering long-term collaboration among diverse stakeholders.

Santubong's sustainability strategies should better integrate community ownership, following Ayutthaya Historical Park's model in Thailand. Ayutthaya empowers locals through tourism-driven businesses that support both conservation and economic benefits (Thanvisitthpon, 2016; Srijuntrapun, Fisher, & Rennie, 2017; Seiset, & Charoensettasilp, 2018; Phuanpoh & Ketsomboon, 2023). At Santubong, 42.1% neutral responses on sustainability indicate a lack of clear community engagement strategies. Implementing revenue-sharing models to reinvest tourism income into local projects could enhance participation and ensure long-term conservation success.

Technological integration at Santubong is underutilized compared to sites like Stonehenge, which use 3D mapping and virtual tours to enhance conservation and visitor experience (Jung, & Dieck, 2017). Santubong has potential to adopt digital tools such as drone surveys and AI monitoring to improve accuracy, attract visitors, and boost management efficiency. Embracing technology could position Santubong as a modern conservation model.

In conclusion, Santubong's P4 model shows potential but can improve by adopting global best practices. Key areas include benefit-sharing, participatory decision-making, transparent management, conflict resolution, community-driven strategies, and technology use. Strengthening these aspects will enhance cultural preservation and socio-economic growth, positioning Santubong as a model for heritage management in Southeast Asia and beyond.

## **Challenges**

The challenges faced in implementing the P4 model at the Santubong Archaeological Site reflect broader systemic issues commonly encountered in heritage management globally. The most significant challenge, identified as a lack of expertise and training (47.4%), underscores a critical gap in the technical and managerial capacity of stakeholders. This challenge parallels issues observed in the management of heritage sites like Machu Picchu in Peru, where

insufficient expertise initially hindered sustainable conservation practices (Morillas et al., 2019). Without adequate training, stakeholders struggle to implement innovative and effective management techniques, which can lead to the degradation of the site's Outstanding Universal Value (OUV).

Funding constraints, rated at 26.3%, represent another significant barrier to the effective implementation of the P4 model. Similar to challenges faced at Petra in Jordan, Angkor Wat Cambodia inadequate financial resources limit the ability to maintain infrastructure, invest in modern conservation technologies, and engage local communities effectively (Miura, 2022; Heslinga, Groote & Vanclay, 2017)). At Santubong, funding constraints may exacerbate other challenges, such as lack of training and expertise, creating a cyclical barrier to progress.

Conflicting interests (26.3%) present a complex challenge, as diverse stakeholders often have varying priorities, ranging from conservation and tourism development to local economic benefits. This issue is not unique to Santubong; it has also been documented at the Alhambra in Spain and Machu Picchu (Bertacchini & Gould, 2021) where tensions between cultural preservationists and commercial stakeholders required mediation frameworks to align goals.

Bureaucratic hurdles (15.8%) and communication barriers (15.8%) further complicate the effective implementation of the P4 model. Bureaucratic inefficiencies, such as delayed approvals and fragmented governance structures, have similarly hindered projects at heritage sites like the Giza Pyramids in Egypt (De Noronha Vaz, et al., 2011). These delays can discourage private sector participation and reduce community trust. Meanwhile, communication barriers can lead to misunderstandings, misaligned expectations, and a lack of stakeholder engagement.

The lack of community engagement (15.8%) is another critical issue, reflecting a missed opportunity to involve local populations as active participants in heritage management. Community engagement has proven instrumental in the success of Thailand's Ayutthaya Historical Park, where local communities are empowered through tourism-driven economic initiatives (Thanvisithpon, 2016; Srijuntrapun, et al., 2017; Pansukkum, & Swanson, 2018). At Santubong, the lack of community involvement may stem from

inadequate outreach efforts or a failure to demonstrate tangible benefits. Legal and regulatory issues (5.3%) appear to be a minor challenge but are no less significant. Weak legal frameworks can undermine efforts to protect heritage sites from overdevelopment or unauthorized activities, as seen in parts of Lamu Old Town in Kenya (Katsamudanga, 2021; Gitau, et al., 2024).

In summary, the challenges faced in implementing the PPP model at Santubong highlight the need for a multi-faceted approach that addresses both systemic and localized barriers. Capacity-building programs, diversified funding strategies, conflict resolution frameworks, streamlined governance structures, and enhanced community engagement are essential for overcoming these obstacles. By drawing lessons from successful heritage management practices worldwide, Santubong can strengthen its PPP model to achieve sustainable conservation and socio-economic benefits for all stakeholders.

### **Future challenges**

The future challenges for heritage management partnerships at the Santubong Archaeological Site reflect global trends and site-specific concerns, requiring a forward-thinking and adaptable approach. Rapid advancements in technology (21.1%) present both opportunities and challenges for heritage management. While tools such as digital documentation, 3D modeling, and AI-based conservation techniques have proven transformative at sites like Stonehenge in the UK, their integration at Santubong requires continuous learning and capacity-building among stakeholders (Jung, & Dieck, 2017). The lack of expertise in utilizing these tools could create gaps in adopting innovative practices, potentially leaving Santubong behind in global conservation efforts.

Growing tourism, noted by 26.3% of respondents, poses another significant challenge. While increased tourism brings economic benefits, it also risks overcrowding, environmental degradation, and cultural commodification, as seen at Angkor Wat in Cambodia, where unchecked visitor numbers have threatened the site's sustainability (Gillespie, 2009; Gillespie, 2013). Securing consistent and sufficient funding, cited by 21.1% of respondents, remains a perennial issue in heritage management. Economic fluctuations and competing priorities often divert resources away from cultural preservation, as has been

observed in the fluctuating funding models at Petra in Jordan (Mickel & Knodell, 2015; Alrwaifah, Almeida-García, & Cortés-Macías, 2021; Cesaro, et. al., 2023).

The challenge of ensuring ongoing and meaningful community involvement, highlighted by 42.1% of respondents, is particularly critical given changing demographics and social dynamics. This issue resonates with challenges faced at Ayutthaya Historical Park in Thailand, where generational shifts have impacted local engagement in heritage initiatives (Thanvisitthpon, 2016). Finally, the preservation of traditional knowledge and practices, cited by 36.8%, is essential for maintaining the cultural continuity of Santubong's heritage. The rapid pace of societal change and globalization often marginalizes traditional practices, as seen in the loss of indigenous knowledge systems at heritage sites like Machu Picchu in Peru (Larson, & Poudyal, 2012; Losson, 2013).

In conclusion, the future challenges for Santubong's heritage management partnerships are multifaceted, encompassing technological integration, sustainable tourism management, financial stability, community engagement, and cultural continuity. Drawing lessons from global heritage sites and adopting a proactive, inclusive approach can enable Santubong to navigate these challenges effectively. By addressing these emerging trends, Santubong can position itself as a leader in sustainable heritage management, ensuring the preservation of its cultural and historical legacy for future generations.

## **Strategies**

The strategies employed to ensure the long-term sustainability of partnerships at the Santubong Archaeological Site highlight critical aspects of inclusive management, cultural promotion, and adaptive practices. The emphasis on actively involving all stakeholders (47.4%), including local communities, government agencies, and private sector partners, reflects an understanding of the importance of collaborative governance. At Santubong, the active participation of diverse groups ensures that strategies are not only inclusive but also reflective of the multifaceted needs of heritage management, fostering a stronger sense of ownership and shared accountability.

Promoting awareness of the cultural and historical significance of Santubong (47.4%) is another crucial strategy. At Santubong, such efforts can bridge the gap between local communities and heritage conservation, ensuring that cultural values are recognized and preserved for future generations. Ensuring local community benefits through job creation, tourism development, and improved infrastructure (31.6%) is key to linking conservation with socio-economic development. These efforts could be further amplified by aligning tourism development with community-led initiatives, fostering a deeper connection between locals and the heritage site while ensuring that economic benefits are equitably distributed. However, the relatively low emphasis on community-led initiatives (5.3%) indicates a missed opportunity to empower locals as active contributors to heritage conservation.

The integration of adaptive strategies (21.1%) to address emerging challenges reflects a recognition of the dynamic nature of heritage management. For Santubong, incorporating adaptive feedback mechanisms into its governance model can ensure that management practices remain relevant and effective over time. However, the lack of collaboration with policymakers (0%) to integrate heritage conservation into broader urban and regional planning suggests a critical gap. Santubong would benefit from greater alignment with broader policy frameworks to secure long-term institutional and infrastructural support.

The relatively low focus on innovative technologies and approaches (10.5%) highlights another area for improvement. For Santubong, leveraging such technologies could modernize its conservation efforts, attract a global audience, and align with eco-friendly practices, thereby addressing both preservation and sustainability concerns. Finally, the minimal emphasis on efficient resource management practices (10.5%) suggests underutilization of funds and opportunities for greater financial impact. Learning from models like Machu Picchu, where participatory budgeting ensures funds are allocated effectively, Santubong could implement transparent and efficient resource management systems to maximize the impact of available resources.

Meanwhile, strategies for long-term sustainability at Santubong include actively involving stakeholders (47.4%) and promoting cultural awareness (47.4%). However, low emphasis on community-led initiatives (5.3%) and technological integration (10.5%) suggests missed opportunities. Sites like the UK's Stonehenge demonstrate how

integrating community-driven projects and advanced technologies, such as 3D mapping, can enhance conservation efforts.

The delicate balance between conservation and development is a critical issue for Santubong. Current efforts to engage the local community (66.7%) and promote sustainable tourism (38.9%) are commendable, reflecting practices in Thailand's Ayutthaya Historical Park, where sustainable tourism has enhanced local livelihoods while preserving cultural heritage. However, comprehensive master planning and collaborative funding models, like those used in South Africa's Robben Island Museum, are essential to prevent overdevelopment and ensure alignment between cultural preservation and economic growth.

Conflict resolution mechanisms, including open communication channels (68.4%) and regular meetings (42.1%), are central to the P4 model at Santubong. These practices resonate with those implemented at Spain's Alhambra, where transparent communication has minimized stakeholder disputes. However, incorporating third-party mediation (15.8%) could provide impartiality in addressing more contentious issues. Additionally, intrinsic motivations such as personal interest or passion (63.2%) and community service (57.9%) play a significant role in sustaining stakeholder engagement, reflecting findings from the conservation of Australia's Kakadu National Park, where community-driven passion has been a cornerstone of preservation efforts.

P4 model demonstrates significant potential for managing archaeological sites, including Santubong. However, addressing its challenges—such as lack of expertise, funding constraints, and limited community leadership—will require strategies inspired by successful global practices. Capacity-building programs, alternative funding mechanisms, and the integration of modern technologies are critical for strengthening the model. Furthermore, fostering inclusive governance and participatory decision-making will ensure equitable and transparent management. By aligning these efforts with global best practices, the Santubong site can evolve into a leading example of sustainable heritage conservation, contributing to the broader discourse on managing archaeological sites worldwide. This model, when refined and contextualized, has the potential to serve as a blueprint for other archaeological sites facing similar challenges, from Southeast Asia to the Americas.

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## **Outcomes**

P4 model represents a promising framework for managing heritage sites, as demonstrated at the Santubong Archaeological Site. This model's effectiveness is grounded in its emphasis on community involvement, clear communication, and shared goals. Community involvement (57.9%) fosters local ownership and cultural pride, as seen in global case studies, such as the management of the Great Wall of China and the Angkor Wat complex in Cambodia, where local community engagement directly contributes to the sustainability of heritage preservation efforts (Fletcher et al., 2007; Winter, 2008; Blundo et al., 2017). Similarly, clear communication (47.4%) and shared goals (42.1%) enhance collaboration among diverse stakeholders where shared objectives align local and international stakeholders.

The Santubong site's high stakeholder engagement and decision-making ratings—42.1% good and 31.6% very good—indicate significant progress in fostering inclusivity and collaboration. This aligns with practices in Italy's Pompeii, where participatory governance models have been integral in resolving conflicts among stakeholders. However, Santubong's substantial neutral responses (26.3%–36.8%) reveal gaps in fully engaging all partners, a challenge also noted in Jordan's Petra Archaeological Park, where limited local involvement hindered conservation efforts. Furthermore, Santubong's strong ratings for innovation and adaptability (73.7% good and very good) mirror the success of digital documentation and eco-friendly construction methods at Peru's Machu Picchu, underscoring the importance of integrating modern conservation techniques.

Economic outcomes of the PPP model are evident at Santubong, with 78.9% agreeing it has contributed to increased income, demonstrating its ability to align heritage conservation with local development goals. However, challenges such as lack of expertise and training (47.4%) and funding constraints (26.3%) limit the full potential of the PPP model at Santubong. These barriers echo those faced in Egypt's Giza Pyramids area, where inadequate technical capacity and financial resources have hindered sustainable site management.

## Conclusion

P4 model demonstrates significant potential for managing archaeological sites, as exemplified by the Santubong Archaeological Site in Sarawak. The integration of local communities, government bodies, and private entities fosters inclusive governance, enhances resource allocation, and strengthens conservation efforts. Despite challenges such as funding constraints, lack of expertise, and communication barriers, the P4 framework highlights the importance of shared goals, technological innovation, and equitable benefit-sharing in ensuring sustainable outcomes. By addressing these challenges and learning from global best practices, Santubong can serve as a benchmark for heritage site management, balancing cultural preservation with socio-economic development for future generations.

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