

Unveiling the Significance of Gedung Sate Architecture within the Context of Sustainable Cultural Tourism

Ahmad Ghazy Dananjaya^{1*}

¹ School of Architecture, Planning, and Policy Development, Institut Teknologi Bandung, Bandung, Indonesia

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Corresponding Author:

Ahmad Ghazy Dananjaya

School of Architecture Planning

Policy and Development,

Bandung, Indonesia

Email:

ahmadghazydananjaya@gmail.com

Abstract

One of the iconic historical buildings in Bandung, Indonesia, known as Gedung Sate, represents a unique architectural fusion of European and local styles. As a significant cultural landmark and a major tourist destination, its preservation and management are paramount. This study aims to analyze the cultural significance of Gedung Sate's architecture and to evaluate its role within the framework of sustainable cultural tourism. This research employed a qualitative case study approach, utilizing architectural observation, semi-structured interviews, and documentary analysis. The analysis is guided by the cultural significance framework of the ICOMOS Burra Charter and supplemented by conceptual models of tourism impact. The findings reveal that Gedung Sate's significance is dualistic, derived from its value as both a colonial aesthetic masterpiece and a symbol of post-colonial national struggle. Furthermore, while tourism numbers appear sustainable, the analysis exposes significant vulnerabilities in the building's physical carrying capacity and socio-economic benefits. The novelty of this study lies in its application of the Burra Charter to a prominent Indonesian heritage site and its structured, critical evaluation of sustainable tourism that moves beyond simplistic metrics. This research contributes to the discourse on heritage management, offering insights for balancing preservation and tourism at similar sites.

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INTRODUCTION

In the heart of the city of Bandung, West Java, stands a timeless architectural icon: Gedung Sate. Built in 1920, this building is not just a physical heritage but also a silent narrative that tells a story of a rich blend of culture and history. According to Sadli et al. (2015), Gedung Sate was indeed designed to "combine two architectural styles, European and Indonesian," making it a prominent historical landmark in Bandung. The grandeur of this building is reflected in the ornaments on its facade, which are inspired by Hindu temples, a tower resembling a Balinese temple, and tiered roofs reminiscent of pagodas. One of the most recognizable features of Gedung Sate is the six skewer-shaped ornaments that adorn the top of its main tower. This ornament is not merely decorative but also a symbol of the six million Gulden used to construct the building in its time. Beyond its historical value, Gedung Sate holds significant potential for the development of sustainable cultural tourism. This is supported by the fact that "Bandung has a high potential in attracting tourists with Progo Street and its surrounding area, which is close to Gedung Sate and Riau Street, as tourist destinations" (Soelaiman et al., 2018).



Figure 1. The Iconic Facade of Gedung Sate with its Skewer Ornament
(Source: Author's Documentation, 2025)

The presence of Gedung Sate further enriches the complexity of Bandung as a cultural tourism destination. The building has great potential to be developed into a dynamic museum and cultural center concept. The importance of this role is emphasized by Hazib et al. (2024), who state that "Gedung Sate as an architectural icon and historical symbol, not only serves as a government center but also as a marker of the cultural identity of the people of Bandung City." This concept allows Gedung Sate to better highlight cultural values, including philosophical elements such as its orientation facing Mount Tangkuban Parahu, which represents the "integration of local Sundanese philosophy in colonial urban planning" (Izzati, Andiyan, & Darwin, 2023). As part of preservation and tourism development efforts, the elements within Gedung Sate can also be linked to modern educational initiatives. Gedung Sate can function as a place for cultural and historical preservation through interpretations that are easily understood by the younger generation. According to Perdana & Sinaga (2024), "The Gedung Sate Museum integrates information displays by utilizing digital technology so that all information is easy to understand and attractive to contemporary culture." Through this approach, Gedung Sate has the potential to become a tourism hub that promotes cultural diversity in depth.



Figure 2. The Current Condition of Gedung Sate and its Surroundings
(Source: Author's Documentation, 2025)

This research explores Gedung Sate as an example of sustainable cultural tourism development by leveraging its architectural heritage values. The main focus of this study is how its ornaments and design elements can be used as a means to convey deeper cultural messages, showcasing the structure's hybrid identity that combines local wisdom and Indo-European architectural styles (Aini, Sulistiani, Fauziyah, & Pebrianti, 2024). For instance, Alifmulyano et al. (2022) note that "in the middle of the Gedung Sate facade there is a rather contrasting and interesting temple-shaped ornament, known as Paduraksa," which typically serves as a gate in special building complexes. Furthermore, the highest roof uses a style "like the *meru* in Bali, something common in the architecture of the Eastern regions" (Alifmulyano et al., 2023). Ornaments like this are key to understanding the cultural narratives embedded in the building, which also reflect the Sundanese philosophy of respecting nature through its alignment towards Mount Tangkuban Parahu (Izzati, Andiyan, & Darwin, 2023).

In line with technological advancements, digital innovations play a crucial role in revitalizing cultural heritage, as "innovative technologies for digitalization and presentation of cultural heritage have been incorporated" (Stewart, 2023), and "This technology helps create virtual images of some deteriorated or damaged interior spaces" (Azali et al., 2023). This is crucial for mitigating physical strain on the building, especially as "Over 40 years, access to historic interiors has increased dramatically... thus reducing the time available for collections care, and exposing furnishings to... greater rates of dust deposition" (Lloyd, 2023).

The global trend shows that "digital innovations such as VR and AR are transforming Heritage Tourism by creating immersive and interactive experiences" (Nag & Rathore, 2025). This is seen in practice where "The Mining Museum of Slovenia, utilizing both AR and VR, provides an engaging virtual experience" (Nag & Rathore, 2025),

and more broadly, "The use of mixed reality in the field of cultural heritage is now widespread" (Barrile et al., 2022). Furthermore, "A virtual tour... represents an innovative approach for buildings built in Art Nouveau style" (Caciora et al., 2023), and "The study highlights the positive impact and role of hologram technology in reviving and enhancing the interior spaces" (Azali et al., 2023). This approach has been directly adopted at Gedung Sate, where its museum operates under the 'Smart Museum' concept (Ramadhan et al., 2025)—which "provides a new experience for tourists by using digital technology" (Khairunnisa et al., 2023) and "offers an educational experience through interactive technology" (Khalda & Kemala, 2024). The museum "uses augmented reality (AR) technology to provide visitors with an interactive and immersive learning experience about the history of Gedung Sate" (Nazhar & Rosid, 2020). This implementation is confirmed by numerous sources, noting "The Gedung Sate Museum in Bandung has an exhibition space that uses digital technology, such as Augmented Reality (AR)" (Hazib et al., 2024), and "The Gedung Sate Museum carries the 'Smart Museum' concept which provides a new experience for visitors by presenting information through digital technology, including Augmented Reality (AR) and Virtual Reality (VR)" (Anom et al., 2024). Indeed, "The Gedung Sate Museum uses various technologies to deliver education, including augmented reality, interactive floor, [and] virtual reality" (Pertwi & Yudana, 2018), as "There are many technologies used to support the delivery of information through graphics, including 4D projections, Augmented Reality, Virtual Reality, and a Theatre" (Khairunnisa et al., 2023).

The integration of "digital technology so that all information is easily understood and attractive to contemporary culture" (Perdana & Sinaga, 2024) allows "The use of augmented reality in the museum's history room... visitors to engage with both real and virtual environments" (Nazhar & Rosid, 2020). This "serves as an innovative educational tool" (Aini et al., 2024), aligning with the goal that "The Gedung Sate Museum was created to display facts about Gedung Sate" (Perdana & Sinaga, 2024). This use "as a medium for history awareness education... is useful as a medium for getting to know a nation's identity" (Tantriani, 2023), reflecting a broader purpose where "The Gedung Sate Museum functions as a means of education, information, and recreation" (Ramadhan et al., 2025) and "Outreach programs in science museums help new audiences build meaningful scientific experiences" (García-Guerrero et al., 2022). However, this digitalization also presents a key challenge, similar to those in other collections, as the "scientific, educational, and even touristic uses" of heritage elements can potentially threaten their conservation (Lima de Manes et al., 2025). This is a vital concern, as "Fossils are regarded as cultural assets in many countries" (Ragni et al., 2025), yet "The sale of fossils to private collectors raises concerns among palaeontologists" (Ragni et al., 2025). Beyond collection loss, the physical environment is crucial, as "Poor air quality inside museums can have a double effect... influencing the integrity of the exhibits" (Ilies et al., 2022), and "Climate fluctuations in the environment of wooden sculptures... contribute to their deterioration" (Soboń & Bratasz, 2022).



Figure 3. Well-Maintained Area of Gedung Sate
(Source: Author's Documentation, 2025)

This research covers two main aspects: how Gedung Sate reflects the integration of Nusantara culture, particularly the influence of various religions in Indonesia, in its architectural design, and how this building can play a role in the development of sustainable cultural tourism. Through this study, it is hoped to demonstrate how Gedung Sate can be more than just a tourist destination. This is important because, as stated by Sulasman, Latifah, & Lestari (2022), the building is also a "symbol of the struggle for independence" through the Battle of Gedung Sate event in 1945. Thus, this research offers a deeper interpretive concept, which not only highlights historical aspects but also delves into relevant cultural and philosophical elements. Gedung Sate "functions not only as an administrative symbol of West Java, but has also become an integral part of the collective identity of the people of Bandung" (Hazib et al., 2024). Therefore, this building can serve as a model for implementing a more modern and sustainable museum and tourism concept, focusing on preserving the cultural, religious, and historical values contained within it for future generations.

LITERATURE REVIEW

Cultural Significance in Architectural Heritage

The value of a heritage site extends beyond its physical form. The ICOMOS Burra Charter (2013) provides a globally recognized framework for defining and assessing this value through the concept of cultural significance. Cultural significance is defined as the "aesthetic, historic, social, or spiritual value for past, present, or future generations." This multidimensional approach is critical for a comprehensive understanding of a heritage place.

1. Aesthetic Value refers to the sensory and artistic aspects of a place, including its form, scale, color, texture, and material. In architecture, this relates to the building's design, craftsmanship, and its harmony with the surroundings (Herr, 2023).
2. Historic Value encompasses the place's association with historical figures, events, phases, or activities. It connects a physical site to the narrative of the past (Sulasman et al., 2022).
3. Social Value relates to the meanings a place holds for a community, often as a source of identity, connection, or continuity. This includes its role as a landmark or a space for communal activities (Heriansyah, 2022).
4. Spiritual Value refers to the connections a place has with intangible beliefs, which can be religious, cultural, or personal.

By applying this framework, the assessment of a building like Gedung Sate moves beyond mere stylistic description to a deeper understanding of why it matters.

Sustainable Cultural Tourism

Sustainable cultural tourism is a model that seeks to provide a meaningful visitor experience while protecting and enhancing heritage assets and supporting local communities. According to Mathieson and Wall (1982), tourism development inevitably creates impacts—positive and negative—on the destination's environment, economy, and society. The goal of sustainability is to maximize the positive impacts (e.g., funding for conservation, increased cultural awareness) while minimizing the negative ones (e.g., physical degradation, commercialization of culture, overcrowding). In the context of a heritage building, sustainability involves managing carrying capacity—the level of visitor use an area can accommodate without unacceptable deterioration of its physical and cultural character (Soelaiman et al., 2018). Modern approaches also emphasize the role of technology, such as AR and VR, in creating immersive and educational experiences that can reduce physical strain on sensitive areas of a site while enhancing visitor engagement (Nag & Rathore, 2025). Therefore, effective sustainable tourism requires a delicate balance between conservation, education, and economic benefit.

Gedung Sate in Previous Research

Existing literature on Gedung Sate primarily focuses on its architectural style and historical narrative. Studies by Sadli et al. (2015) and Aini et al. (2024) describe its design as a blend of Indo-European styles, highlighting elements like its temple-inspired facade and symmetrical plan. Its historical importance, particularly during the Indonesian struggle for independence, is documented by Sulasman et al. (2022). More recently, research has explored the use of digital technology in the Gedung Sate Museum as a tool for modern education (Nazhar & Rosid, 2020; Perdana & Sinaga, 2024). While this body of work provides a valuable foundation, a holistic analysis that connects its architectural significance using a formal framework like the Burra Charter to the challenges and opportunities of sustainable tourism is still needed. This research aims to fill that gap.

METHODS

This research uses a qualitative case study approach to conduct an in-depth exploration of Gedung Sate as an architectural entity and a cultural tourism destination. Data collection was conducted between May and June 2025 through three main techniques: direct observation, semi-structured interviews, and documentary analysis. Observation was carried out through photographic documentation and manual sketching to study the architectural elements. Interviews targeted key stakeholders, including a museum curator, a local historian, and tourists, to gain diverse perspectives on the site's cultural value and management. Documentary analysis involved the review of archival photos, official tourism statistics publications, and relevant academic articles to enrich the historical and factual context of the research.

$$D = \frac{B.E}{C} \dots\dots\dots(1)$$

The primary data analysis in this research is qualitative and thematic, interpreted through the cultural significance framework of the Burra Charter. However, to frame the discussion on sustainability in a structured manner, several conceptual models are also presented. The first model, adapted from Mathieson and Wall (1982), is used to illustrate general tourism pressure. In this formula, the Impact Index (D) is calculated by multiplying the Number of Tourists (B) by their Level of Involvement in cultural activities (E), and then dividing the result by the site's Carrying Capacity (C). This model conceptually demonstrates how the interaction between visitor numbers and their participation can exert pressure on the capacity of a heritage site.

$$TCC = \left(\frac{A.M.S}{P_{Max}} \right) . T \dots\dots\dots(2)$$

To deepen the understanding of the Carrying Capacity (C) variable, a second conceptual framework introduces a multi-dimensional carrying capacity model. This model illustrates that the actual Tourism Carrying Capacity (TCC) is not solely determined by the Physical Area Factor (A) available to visitors. This value must be multiplied by a Management Factor (M), representing the quality of conservation policies and facilities, and a Social & Environmental Tolerance Factor (S), which measures the fragility of the ecosystem and the local community. The result is then divided by the Standard Space Requirement per Visitor (P_{max}) to determine a realistic capacity. This shows that poor management or a fragile environment can drastically reduce the effective capacity of a site, even if its area is large.

$$Y_{Total} = D_{Tour} . K_c \left(\frac{1}{1-(MPC.(1-L))} \right) \dots\dots\dots(3)$$

The final aspect of sustainability is the economic impact, which can be conceptualized through an effect multiplier model. This model shows how the Total Economic Impact (Y_{total}) in the local community is derived from Direct Tourist Expenditure (D_{tour}), which is magnified by a multiplier. This multiplier is calculated based on the local community's Marginal Propensity to Consume (MPC) their additional income, after accounting for the Leakage Rate (L), or the proportion of money that leaves the local economy. Although accurate calculations for these models would require extensive quantitative data beyond the scope of this qualitative study, their presentation aims to highlight the complexity of the variables that must be considered in heritage management and to suggest directions for future quantitative research.

RESULTS AND DISCUSSION

The Duality of Cultural Significance: A Blend of Colonial Aesthetics and National Identity

The primary finding of this research confirms that the cultural significance of Gedung Sate is dualistic, a characteristic that is both its greatest strength and its most significant challenge. On one hand, the building radiates aesthetic and historic value as a masterpiece of colonial architecture. Its magnificent Neoclassical European style is evident in the giant pillars and symmetrical layout, reflecting Western power and rationalism of its time. However, the architect, J. Gerber, brilliantly fused this with Nusantara philosophy, such as the tiered roof (*tumpang*) that adopts the form of a Balinese *meru* and the *Paduraksa* ornament at its main gate. This fusion creates a hybrid entity whose aesthetics are universally admired.

On the other hand, Gedung Sate holds a contrasting historic and social value as a symbol of national pride and sovereignty. The heroic "Battle of Gedung Sate" in 1945 fundamentally re-appropriated the meaning of this building from a mere colonial relic into a monument of the nation's struggle. This process of re-appropriation is the core of its post-colonial identity. This duality presents a complex management challenge: should the narrative highlight the beautiful European heritage to attract international tourists, or the heroic story of the nation's struggle for nationalistic education? Currently, both narratives coexist, but often the aesthetic narrative dominates, which risks diminishing the public's understanding of the deeper layers of its struggle.

A Critical Analysis of Tourism Sustainability: Behind the Impact Numbers

This second point critically analyzes tourism sustainability through the three conceptual models outlined in the methods chapter. The analysis begins with the Tourism Impact Index calculation, followed by conceptual simulations for the Multi-Dimensional Carrying Capacity and the Economic Multiplier Effect to uncover complexities not visible from a single metric.

The first calculation for the Tourism Impact Index (D), based on secondary data and field estimations, is presented in Table 1.

Table 1. Tourism Impact Index (D) Calculation

Parameter	Symbol	Value	Data Source
Number of Tourists (Museum)	B	50,000 people/year	West Java Tourism & Culture Office
Level of Tourist Involvement	E	0.8 (80%)	Estimation from Surveys & Observation
Initial Carrying Capacity (Est.)	C	120,000 people/year	Interview with Site Management
Tourism Impact Index	D	0.33	Calculation: $(50,000 \times 0.8) / 120,000$

The result $D=0.33$ suggests that, in general, tourism pressure is below the estimated carrying capacity. However, this figure is simplistic. To understand the actual vulnerability, a conceptual simulation was performed on the Multi-Dimensional Carrying Capacity (TCC) model, as shown in Table 2.

Table 2. Conceptual Simulation of Multi-Dimensional Carrying Capacity (TCC) per Year

Parameter	Symbol	Simulated Value	Notes
Physical Museum Area	A	1,500 m ²	Estimated accessible exhibition area.
Management Factor	M	0.9	Management quality is considered high (professional).
Environmental Tolerance Factor	S	0.6	Low due to the fragility of the aged building materials.
Standard Space per Visitor	Pmax	4 m ² /person	Standard for comfort and safety.
Effective Carrying Capacity (TCC)	TCC	60,750 people/year	Calculation: $((1,500 \times 0.9 \times 0.6) / 4) \times 300$ days

The simulation in Table 2 presents a much grimmer picture. By factoring in a low Environmental Tolerance Factor (S) of 0.6 due to the fragility of the historic materials, the effective carrying capacity (TCC) drops drastically to only 60,750 visitors per year. This figure indicates that although the current number of visitors (50,000) is still below the TCC, the margin is far slimmer than the initial estimate (120,000). This underscores the critical importance of strict preventive conservation management, as the building's material fabric is the weakest link in its physical sustainability system.

Table 3. Conceptual Simulation of the Local Economic Multiplier Effect

Parameter	Symbol	Simulated Value	Notes
Direct Tourist Expenditure	Dtour	IDR 5,000,000,000/year	50,000 tourists x @ IDR 100,000
Marginal Propensity to Consume	MPC	0.7	Standard estimate for a developing economy.
Economic Leakage Rate	L	0.5 (50%)	High, due to non-local souvenirs & services.
Economic Multiplier	-	1.54	Calculation: $1 / (1 - (0.7 \times (1-0.5)))$
Total Economic Impact	Ytotal	IDR 7,700,000,000/year	Calculation: IDR 5 Billion x 1.54

The simulation in Table 3 reveals a major challenge in economic benefits. Assuming a Leakage Rate (L) of 50% due to the prevalence of non-local products, the resulting economic multiplier is only 1.54. This means that from an initial tourist expenditure of IDR 5 billion, the total impact circulating in the local economy is only IDR 7.7 billion. If this leakage rate could be reduced (for example, by promoting the sale of local artisan products), the multiplier could increase significantly. This proves that the sustainability of tourism at Gedung Sate depends not only on visitor numbers but also on how deeply its economic value chain can empower the local community.

The Dual Role of Technology: Educational Opportunities and the Risk of a Superficial Experience

The "Smart Museum" concept implemented at Gedung Sate (Figure 5) is a commendable innovation and a major opportunity. Technologies like Augmented Reality (AR), which allows visitors to see visualizations of the original construction overlaid on the existing structure, and Virtual Reality (VR), which simulates the atmosphere of the 1945 Battle, are effective in engaging younger audiences and presenting history in an immersive way (Aini et al., 2024). From a sustainable management perspective, this technology is clever as it can concentrate intensive interactions in a modern, controlled exhibition space, thereby reducing physical pressure on the more fragile main parts of the building.

However, interview findings indicate that this technology is a "double-edged sword." There is a risk of the "gamification" of history, where the essence and emotion of a historical event are replaced by the fun of digital interaction. The culture of social media also reinforces this risk. For some visitors, the primary purpose of their visit shifts from "understanding" to "documenting," turning Gedung Sate into an aesthetic backdrop for personal content. The focus on capturing the perfect photo or video can divert attention from deeper narratives and even lead to disregard for conservation rules, such as the prohibition of flash photography. Thus, the challenge for management is to design technological experiences that deepen, not cheapen, the visitor's emotional and intellectual connection with the cultural heritage itself.

The Social and Community Dimension: Towards Inclusive Sustainability

The final point of discussion focuses on the social value of Gedung Sate as a community anchor, embodied by its function as an open government center and its symbiotic relationship with the Gasibu public square. This makes it more than a dead monument; it is part of the pulse of social life for the citizens of Bandung. However, this strong social value has not yet been fully integrated into its tourism model. Findings on the concentration of visitor impact at specific points and the limited involvement of the local community indicate a management approach that is still predominantly *top-down*.

True and inclusive sustainability demands a more participatory strategy. This is not just about providing space for small vendors, but about actively inviting the community as partners in narrative creation. The implications could include co-curating exhibition programs with local history groups, creating "story-based tours" guided by residents, or establishing formal partnerships with local craft cooperatives to supply the museum gift shop. By doing this, the community is transformed from a mere object or audience of tourism into an active subject and steward of its own heritage. Strengthening this social dimension is ultimately the best investment for the long-term preservation of Gedung Sate, because a building that is loved and owned by its community is the most enduring.

CONCLUSION

This study concludes that Gedung Sate is a complex cultural heritage entity, whose significance extends far beyond its physical architecture. The analysis using the Burra Charter framework reveals that its primary value lies in a duality of significance: on one hand as a masterpiece of colonial aesthetics, and on the other as a symbol of struggle and post-colonial national identity. This finding confirms that Gedung Sate is not just a monument, but a living narrative that reflects the paradoxes of Indonesian history. In the context of sustainable cultural tourism, this research finds that a superficial view can be deceptive. Although the Tourism Impact Index indicates a safe number, a critical analysis through deeper conceptual models reveals significant vulnerabilities. The physical sustainability of the site is threatened by the fragility of its old building materials, which makes its real carrying capacity much lower than estimated. Meanwhile, its socio-economic sustainability is challenged by a high potential for economic leakage and sub-optimal community involvement. The use of modern technology is also found to be dual-natured: a powerful educational tool that also risks promoting a superficial visitor experience.

The main contribution of this research is its holistic approach, which integrates an international framework (the Burra Charter) with a critical analysis of tourism models in an Indonesian case study. Its novelty lies in the effort to move beyond simplistic tourism metrics and deconstruct the complexity behind the numbers, highlighting issues of material fragility, economic equity, and depth of interpretation. In practical terms, this research implies that managers of heritage sites like Gedung Sate must adopt strategies that balance narratives, prioritize preventive conservation, strengthen local economic value chains, and design technology that deepens meaning, rather than merely providing entertainment. This study has limitations that must be acknowledged. First, the quantitative analysis presented was a conceptual simulation and not based on extensive empirical data collection; thus, the resulting figures are illustrative. Second, the qualitative findings from interviews are based on a small sample size and therefore cannot be generalized, although they provide valuable indications. For future research, a full quantitative study is recommended to

empirically validate the Carrying Capacity and Economic Multiplier models. Furthermore, ethnographic research on visitor behavior and perception could provide deeper insight into the impact of technology on the tourist experience. Finally, a comparative study with other post-colonial landmarks in Southeast Asia could reveal whether this duality of significance is a common regional management challenge.

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