

Adaptive Reuse of Historic Buildings for Museum Purposes: A Comprehensive Analytical Framework

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Abstract

This research explores the conversion of historical buildings into museums, focusing on their original roles and architectural characteristics. This qualitative study employs a comparative analysis of selected adaptive-reuse museum cases across Southeast Asia and an extensive literature review to examine how original building typologies, spatial organization, ethical considerations, and community engagement shape museum outcomes. It examines case studies from Southeast Asia, such as Thailand, Malaysia, and Singapore, and how these buildings influence exhibition planning, spatial structuring, and public engagement. The study views reuse as a flexible strategy that connects with broader economic, social, and environmental issues. Economically, modifying existing structures is often more cost-effective than building new ones, reducing material costs, opening avenues for heritage tourism, and accessing diverse funding sources. Socially, it promotes cultural continuity, stimulates inclusivity, and strengthens relationships between institutions and communities. Environmentally, reuse fosters sustainable development by preserving embedded energy in existing materials, reducing construction waste, and aligning with climate-responsive design concepts. The research also addresses ethical issues, emphasizing the responsibility of carefully interpreting history, ensuring equal access, and maintaining transparency in funding and operational processes. It also addresses challenges such as integrating modern facilities without compromising heritage values, responding to safety and accessibility requirements, and engaging stakeholders at every stage. The study concludes that if guided by thoughtful design and collective conservation, repurposing historic buildings will be a more modern, culturally rooted, and sustainable choice than new construction.

Keywords: Adaptive reuse, Historic buildings, Museum development, Heritage conservation, Community engagement

Introduction

Transforming historical buildings into museums is a popular strategy for preserving architecture, museum studies, and cultural heritage. This approach helps pass down architectural stories and makes history meaningful to people today, especially in Southeast Asia where colonial, royal, religious, and local histories coexist. The new use of these buildings has gained popularity as a choice for urban development and creating sustainable museums that align with local culture.

This research employs a framework for categorizing original building types and exhibition themes, considering various types of buildings such as former government offices, mansions, missionary houses, old factories, military camps, and shrines of Chinese descent groups in Thailand, Malaysia, and Singapore. These buildings have been effectively transformed into cultural museums, archives, art galleries, and specialized institutions. The study examines the curators' intentions in using architecture, material heritage, and symbolic meanings in the design process, interpretation, and visitor experience in relation to the original spatial forms.

Reusing buildings has benefits in several areas, such as saving money, attracting heritage tourists, opening up funding opportunities, and keeping culture and community identity alive by connecting with the past. Museums in old buildings often act as "living archives," providing people of all ages with a place to talk and strengthen social ties.

However, the adaptation of historic buildings presents challenges, such as limited accessibility, managing visitor flow, inadequate lighting, or environmental control. Conservation approaches must involve minimal intervention, reversible changes, and the installation of new systems that harmonize with the original values.

The heart of sustainable reuse success lies in community involvement, as historical buildings often hold cultural value for the surrounding community. Multi-sector management and organizing joint activities and participatory curation promote sustainability, engagement, and shared ownership in the long term. Case studies like the Chiang Mai City Arts and Cultural Center and Leong San Tong Khoo Kongsi demonstrate that community-driven initiatives can create vibrant cultural spaces with diverse roles.

Research Objective

This research explores the adaptive reuse of historical buildings as museums in Southeast Asia to address cultural heritage preservation, sustainable development, and cultural continuity. It examines case studies of government buildings, elite mansions, religious sites, and commercial buildings to understand how traditional architectural forms influence space organization, interpretation, and visitor experience. The study aims to address practical benefits like cost reduction and environmental efficiency, as well as ethical, social, and curatorial issues related to modifying heritage sites for public engagement. It emphasizes the importance of honoring history and the community's role in project authenticity and sustainability. The research aims to develop a framework for integrating conservation values with contemporary museum use, proposing guidelines for preserving historic structures for future generations.

Literature Review

The repurposing of historical buildings into museums has become a key strategy for preserving cultural heritage, promoting sustainable development, and continuing cultural identity. This literature review compiles knowledge from various fields to explore how theories and practices related to adaptive reuse are applied in the context of Southeast Asia. The main topics discussed include conservation theory, types of buildings, museum design, environmental sustainability, ethical issues, and community involvement.

The essence of the concept of adaptive reuse is to modify buildings of historical, cultural, or architectural significance to accommodate new uses while preserving their original identity and integrity. As Douglas (2006) states, this process is not merely technical but also cultural, requiring a balance between conservation and modernization. Jokilehto (2018), along with international charters such as the Venice Charter and the Burra Charter, emphasizes the principles of minimal intervention and reversible changes to honor the original form and allow for reinterpretation in the future.

Museums located in historic buildings are not just exhibition spaces; they also play a role in narrating historical stories. Macdonald (2011) points out that curatorial design should reflect the stories embedded in the building, rather than imposing themes unrelated to the original context. For example, the Dara Pirom Palace

Museum in Thailand continues to convey its past as a residence of northern nobility, showcasing the lifestyle of the upper class in former times. Additionally, Parry (2007) advocates for the use of digital technologies, such as AR and virtual tours, to enhance storytelling without altering the original structure.

The physical characteristics of a building (typology) play a crucial role in determining the outcomes of its adaptive reuse. Most literature suggests that the success of a museum's utilization depends on the design aligning with the building's original function, such as a government office, a place of worship, a mansion, or an industrial warehouse (Feilden, 2007; Throsby, 2010). Examples from the Chiang Mai City Arts and Cultural Center and the Vongburi House Museum (Baan Vongburi Museum) clearly demonstrate the relationship between architectural heritage and curatorial content.

The economic and environmental benefits are also important reasons that support the reuse. Bullen and Love (2011) as well as Throsby (2010) state that using existing structures helps reduce costs and promotes heritage tourism. Environmentally, reuse conserves embodied energy, reduces demolition waste, and preserves traditional architectural features (Yung & Chan, 2012; Plevoets & Van Cleempel, 2019).

However, adaptive reuse also faces ethical issues, especially when buildings have complex political or religious contexts. The transformation of spaces must be sensitive and comprehensive. Macdonald (2011) and Silva (2015) warn about the dangers of commodifying heritage or erasing diverse histories. The case study of Singhaklai House in Chiang Rai shows that community involvement can foster cultural sensitivity.

Community involvement is therefore the foundation of successful reuse projects. Academics such as Smith and Waterton (2009), Crooke (2007), and Shipley et al. (2006) point out that participatory curation and planning with the community help build trust, cultural relevance, and long-term sustainability.

The literature suggests adaptive reuse is a complex and effective method for transforming historic buildings into cultural institutions, combining conservation principles with ethical stewardship, sustainable design, and inclusive participation, thereby preserving the past and ensuring a resilient future.

Methodology

This study uses qualitative research methods to look into how historic buildings can be used again as museums, with a focus on projects in Southeast Asia. The study is interpretive in nature, trying to figure out how original building types, conservation methods, exhibition themes, and stakeholder involvement all work together to affect the results of adaptive reuse projects.

Research Design

A qualitative, literature-based research design was used, which included comparative case study analysis and typological classification. Instead of testing a hypothesis, this method tries to get a deeper understanding of adaptive reuse as a complex process that includes architectural, museological, cultural, and social factors.

Two main analytical dimensions guide the structure of the research:

Original building function: looking at how different types of buildings (like government buildings, royal residences, and religious structures) affect their ability to be reused and how they are arranged in space.

Thematic exhibition orientation: looks at how the histories of buildings affect or fit with the way curators work.

With this dual lens, the research can look at how architectural form and museum function work together while also finding common design, ethical, and operational patterns across cases.

Case Study Selection

The study is based on twenty purposively selected case-study museums in Southeast Asia (Thailand, Malaysia, and Singapore). The cases were selected to (i) cover diverse original building types and exhibition themes (Tables 1–2), (ii) represent different governance and funding models (public, private, and community-led), and (iii) provide sufficient secondary documentation for comparative analysis.

Thailand: Chiang Mai City Arts & Culture Centre; Lanna Folklife Museum; Chiang Mai Philatelic Museum; Daraphirom Palace Museum; Chiang Rai Picture Museum; Singhaklai House; Field Marshal P. Pibulsongkram House; Overbrook Memorial House; Khum Chao Luang Museum Phrae; Vongburi House Museum (Baan Vongburi Museum, Phrae); Nan national Museum; Lampang Museum.

Malaysia: Cheong Fatt Tze – The Blue Mansion; Pinang Peranakan Mansion; Leong San Tong Khoo Kongsi; National Textiles Museum.

Singapore: National Museum of Singapore; Asian Civilisations Museum; National Gallery Singapore.

Data Sources

Most of the data for the study came from secondary sources, such as academic literature, heritage charters (like the Burra and Venice Charters), government reports, museum publications, and architectural documentation. Additional visual analysis of floor plans, exhibition layouts, and digital site tours gave us more information about how spaces were changed.

When there had been previous field visits or informal interviews, observational notes and photos were used to improve understanding of the context.

Analytical Framework

The study uses a thematic analytical framework with four main parts:

1. Architectural conservation, which is about keeping original features, using intervention strategies, and making sure the materials are strong (Jokilehto, 2018; Orbasli, 2008).
2. Museum functionality—checking the flow of exhibits, how easy they are to get to, the lighting, the climate control, and how well the exhibits fit with the building's history (Macdonald, 2011).
3. Sustainability: looking at how well things use energy, how well they can be reused, and how long they will last (Bullen & Love, 2011; Yung & Chan, 2012).
4. Getting the community and stakeholders involved—looking into participatory planning, cultural programming, and local ownership (Smith & Waterton, 2009; Crooke, 2007).

We used comparative analysis to look at each case study in these areas and find the best practices, problems, and lessons that could be used in other situations.

Limitations

The study has a lot of secondary data, but it has some problems, such as not being able to get to site-specific technical reports easily, not being able to observe things in the field as much as they would like, and the possibility that the findings are only relevant to certain cultures. Not having structured stakeholder interviews also makes it harder to get direct insight into how the community feels.

This approach makes it possible to do a rich and comparative study of adaptive reuse practices. The research aims to give a full picture of how heritage buildings can be carefully changed into museum spaces that are environmentally friendly, welcoming, and culturally relevant by combining typological, spatial, ethical, and social aspects. The method also gives a model that can be used to look at similar projects in other places or cultures.

Results and Discussion

An Analytical Framework for Adaptive Reuse Projects: Typologies of Buildings and Exhibitions

This study gives a full analytical framework for understanding how historic buildings can be changed to be used as museums and cultural spaces. It shows how these kinds of changes happen at the crossroads of preserving cultural heritage, architectural conservation, and modern museum practice. The study sorts adaptive reuse projects into groups based on the buildings' original uses and the themes of their exhibitions. It does this by using important ideas from both conservation and museum studies.

1. Typological Classification by Original Building Function

Adaptive reuse varies significantly depending on the original function of the historic structure. The research identifies six primary building types repurposed into museums: ([Table 1](#), [Figures 1-7](#))

2. Typological Classification by Exhibition Theme

The research also classifies museums based on their thematic focus: ([Table 2](#), [Figures 8-14](#))

Table 1. Building types repurposed into museums

Building Type	Original Function	Museum Focus	Examples	Key Features / Challenges
Government & Administrative	Government halls, city offices	Civic history, governance	Chiang Mai City Arts & Culture Centre, National Museum of Singapore	Spacious, centrally located; often need layout reconfiguration
Royal & Aristocratic Residences	Homes of royalty, nobility	Elite lifestyles, personal heritage	Daraphirom Palace Museum, Cheong Fatt Tze – The Blue Mansion	Ornate interiors; accessibility upgrades often required
Religious & Missionary Buildings	Temples, missionary residences	Religious history, art, education	Singhaklai House, Penang Straits and Oriental Museum	Cultural sensitivity; secular reinterpretation may be challenging
Commercial & Industrial	Post offices, railway offices, factories	Specialized topics (postal, textile, maritime)	Chiang Mai Philatelic Museum, National Textiles Museum	Functional interiors; less inherent cultural identity—needs creative interpretation
Military Buildings	Residences or command centers for military figures	Military history, conflict narratives	Field Marshal P. Pibulsongkram House	Political sensitivity; requires balanced curation
Clan & Community Halls	Ethnic or clan gathering places	Communal heritage, social history	Leong San Tong Khoo Kongsi	Strong community ties; often still in use for traditional events



Figure 1. (left) Chiang Mai City Arts & Culture Centre, (center) Lanna Folklife Museum Chiang Mai, (right) Chiang Mai Philatelic Museum



Figure 2. (left) Chiang Mai Daraphirom Palace Museum, (center) Chiang Rai Picture Museum *under refurbishment, (right) Overbrook Memorial House



Figure 3. (left) Singhaklai House, (center) Field Marshal P. Pibulsongkram House, (right) Nan National Museum



Figure 4. (left) Khum Chao Luang Museum Phrae, (center) Vongburi House Museum, (right) Lampang Museum



Figure 5. (left) Pinang Peranakan Mansion, (center) Cheong Fatt Tze - The Blue Mansion, (right) Leong San Tong Khoo Kongsi



Figure 6. (left) Penang Straits and Oriental Museum, (right) National Textiles Museum Malaysia



Figure 7. (left) National Museum of Singapore, (center) Asian Civilisations Museum, (right) National Gallery Singapore

Table 2. Museums based on their thematic focus

Exhibition Theme	Focus Area	Representative Examples	Key Characteristics
Cultural & Ethnographic	Local traditions, customs, identity	Lanna Folklife Museum, Pinang Peranakan Mansion, Asian Civilisations Museum	Deep cultural immersion; often aligned with building's original community function
Historical & Heritage	Historical figures, local or national history	National Museum of Singapore, Vongburi House Museum, Khum Chao Luang Museum	Strong storytelling potential; often located in historically significant buildings
Art Museums & Galleries	Visual arts, sculpture, traditional and modern	National Gallery Singapore, Singhaklai House	Emphasize aesthetics and atmosphere; adaptable layouts and lighting are critical
Specialized Museums	Niche subjects (e.g., postal, military, textiles)	Chiang Mai Philatelic Museum, National Textiles Museum, Overbrook Memorial House	Require clear thematic interpretation and may need technical infrastructure
Hybrid Museums	Blend of multiple themes	Lampang Museum, Asian Civilisations Museum, National Gallery Singapore	Multifunctional; caters to diverse audiences; demands flexible spatial design



Figure 8. Exhibition (left) Chiang Mai City Arts & Culture Centre, (center) Lanna Folklife Museum Chiang Mai, (right) Chiang Mai Philatelic Museum



Figure 9. Exhibition (left) Chiang Mai Daraphirom Palace Museum, (center) Chiang Rai Picture Museum *under refurbishment, (right) Overbrook Memorial House



Figure 10. Exhibition (left) Singhaklai House, (center) Field Marshal P. Pibulsongkram House, (right) Nan National Museum



Figure 11. Exhibition (left) Khum Chao Luang Museum Phrae, (center) Vongburi House Museum, (right) Lampang Museum

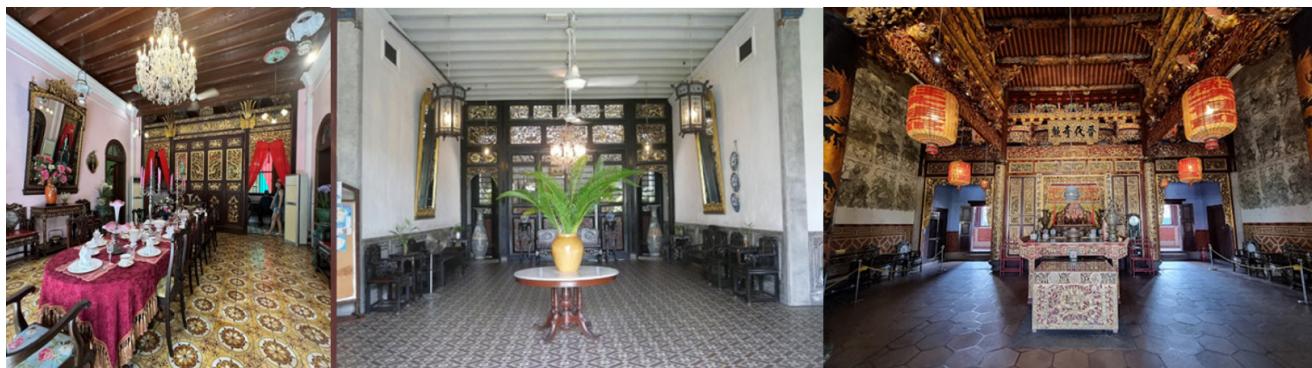


Figure 12. Exhibition (left) Pinang Peranakan Mansion, (center) Cheong Fatt Tze - The Blue Mansion, (right) Leong San Tong Khoo Kongsi

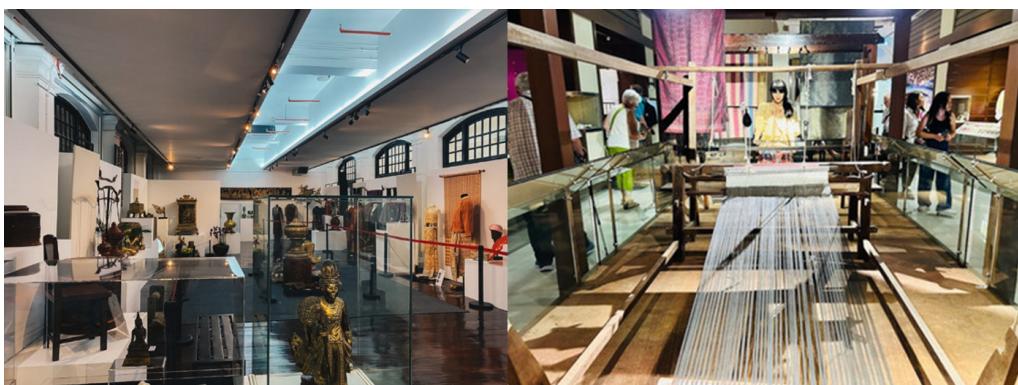


Figure 13. Exhibition (left) Penang Straits and Oriental Museum, (right) National Textiles Museum Malaysia



Figure 14. Exhibition (left) National Museum of Singapore, (center) Asian Civilisations Museum, (right) National Gallery Singapore

Analytical synthesis: linking the typological framework, case evidence, and conclusions

Tables 1 and 2 establish the typological framework by classifying adaptive-reuse museums through (i) original building function and (ii) exhibition theme. Figures 1–14 then illustrate how these categories materialize spatially across the twelve case studies. Building on this, Tables 3–6 translate the case evidence into comparative considerations (Table 3) and design, ethical, and community strategies (Tables 4–6), forming the empirical basis for the conclusions.

Across all cases, the comparison indicates that adaptive-reuse outcomes are not uniform; they vary systematically by building type. For example, royal and aristocratic residences (e.g., Daraphirom Palace Museum; Cheong Fatt Tze - The Blue Mansion; Pinang Peranakan Mansion) tend to offer strong narrative alignment between domestic spatial character and heritage interpretation, but they commonly face constraints in accessibility upgrades and visitor circulation. By contrast, commercial or industrial building conversions (e.g., Chiang Rai Picture Museum) can provide flexible, reconfigurable interiors, yet often require stronger interpretive framing to establish cultural identity. Politically sensitive residences and military-linked sites (e.g., Field Marshal P. Pibulsongkram House) introduce distinct ethical risks, reinforcing the need for balanced curation and transparent interpretive strategies (Table 4).

These typology-specific patterns are carried through into the manuscript's step-by-step conclusion: (1) typological constraints and opportunities (Tables 1–2) shape spatial and service-integration strategies; (2) these strategies generate measurable trade-offs when compared with new construction (Table 3); (3) ethical and community dimensions (Tables 4–5) mediate public legitimacy and long-term sustainability; and (4) the consolidated best practices (Table 6) provide actionable guidance that is directly traceable to the comparative reading of the case evidence.

The study highlights the significance of matching the original building functions with museum purposes by identifying important trends in the adaptive reuse of historic structures. Royal residences support heritage narratives, while government buildings are ideal for cultural museums because of their size and civic legacy. Although secular adaptation can be delicate, religious buildings frequently transform into artistic or educational venues. Specialised themes are well suited for commercial websites. In order to improve adaptive reuse practices, these findings emphasise the necessity of aligning architectural form with curatorial content and recommend further study on visitor engagement and cross-regional comparisons.

Economic, Social, and Environmental Benefits of Adaptive Reuse for Museums Compared to New Construction

While adaptive reuse frequently delivers economic, environmental, and cultural benefits, new construction can be advantageous in specific contexts, particularly where exhibition narratives require highly customized spatial sequences, large structural spans, or intensive building services that are difficult to integrate within existing load-bearing systems and height constraints. New-build projects can also adopt universal design from the outset and incorporate community participation through co-design and consultation processes. Accordingly, the manuscript frames Table 3 as a set of comparative considerations rather than a one-sided hierarchy, highlighting trade-offs that must be assessed in relation to curatorial intent, conservation ethics, and local context.

Compared to new construction, the adaptive reuse of historic buildings for museum purposes offers strong economic, social, and environmental benefits. This analysis shows that turning heritage sites into museums is a practical, sustainable, and culturally enriching approach to urban and architectural development by looking at a variety of building typologies, such as government buildings, aristocratic homes, places of worship, industrial buildings, and community halls.

From an economic point of view, adaptive reuse saves a lot of money on capital expenditures by using existing structures and materials. Historic buildings already have valuable infrastructure and architecture, which lowers the costs of tearing them down and building new ones. The National Museum of Singapore is a good example of this because it has kept its neoclassical shape while adding modern museum functions, which has saved a lot of money on renovations.. Furthermore, heritage tourism plays a pivotal role in generating sustained revenue. Sites such as Leong San Tong Khoo Kongsi in Malaysia draw visitors seeking authentic cultural experiences, producing income through admission fees, guided tours, and cultural programming. Adaptive reuse projects also benefit from access to diversified funding streams, including government conservation grants, private sponsorships, and philanthropic donations, which are frequently unavailable to newly constructed museums. Public-private partnerships, as evidenced in the case of the Field Marshal P. Pibulsongkram House in Thailand, enhance the financial sustainability and long-term viability of such initiatives.

Adaptive reuse helps keep public access, cultural identity, and collective memory alive in a social way.

Museums built in old buildings tell stories through space that let people directly interact with architectural and cultural heritage. For example, the Pinang Peranakan Mansion in Malaysia still has its original furniture and heirlooms, which makes it a fully immersive ethnographic experience based on Peranakan heritage. Also, repurposed sites often serve as lively community spaces, hosting public exhibitions, heritage festivals, and educational workshops. The Chiang Mai City Arts & Culture Centre works with local artists and historians to put together shows that show off Lanna cultural traditions and make people proud of their city. These kinds of programs help bring people together and make it easier for people of different ages to share knowledge. Adaptive reuse also helps make places more accessible, which helps bring people together. Architectural changes, like ramps and lifts that are built into the building in a way that doesn't draw attention to them, make sure that the building meets modern standards like the Americans with Disabilities Act (1990) without ruining its historical value.

Adaptive reuse is good for the environment

because it saves embodied energy, cuts down on demolition waste, and uses passive design strategies. Keeping old buildings instead of building new ones saves the environment the costs of getting materials and making them. The National Textiles Museum in Malaysia is a good example of this benefit. It has made very few structural changes while still meeting modern conservation standards. Many historic buildings also have traditional design features that respond to the weather, like natural ventilation and daylighting, which use less energy. The Chiang Mai City Arts & Culture Centre is a great example of how to use traditional cooling methods to cut down on the need for mechanical systems and improve the building's environmental performance.

The adaptive reuse of historic buildings as museums offers superior economic, social, and environmental outcomes, safeguarding architectural heritage, supporting cultural vitality, community engagement, and sustainable development. Further research is needed to assess visitor engagement, long-term financial outcomes, and policy frameworks for strengthening adaptive reuse as a preferred strategy.

Table 3. Comparative Advantages Over New Construction

Category	Adaptive Reuse Museums	New Construction Museums
Economic Costs	Often lower initial capital costs by leveraging existing fabric; however, retrofit and compliance upgrades can be significant.	Higher upfront costs for land, design, and construction; but budgeting and delivery can be more predictable with fewer retrofit uncertainties.
Tourism Appeal	Strong heritage 'sense of place' can attract cultural tourism and local pride through authenticity and narratives embedded in the building.	Identity can be purpose-built through iconic design and branding; requires curation and marketing to build heritage associations over time.
Funding Opportunities	Eligible for heritage grants, private sponsorships, and government funding	Relies on private investment and municipal budgets
Cultural Significance	Preserves historical memory and community identity	Requires artificially created themes
Community Engagement	Engagement can be anchored in the building's existing social meaning, enabling participatory planning and local stewardship.	Community participation can also be embedded in new-build design processes (co-design, consultation, shared governance), independent of building age.
Environmental Impact	Reduces demolition waste, conserves embodied energy, and integrates passive design	High material consumption, increased carbon emissions

Effective Design Strategies for Preserving Historic Fabric While Accommodating Modern Museum Functions

The adaptive reuse of historic buildings into museums involves a complex interplay between heritage preservation and the integration of modern museum functions. Drawing from a broad range of building types—including governmental, aristocratic, religious, industrial, military, and communal structures—this study identifies key design strategies that facilitate both the conservation of historic fabric and the delivery of a functional, inclusive museum experience.

A principal strategy in adaptive reuse is the retention of significant architectural elements such as facades, woodwork, and decorative features. Preserving these aspects enhances cultural value and visitor experience, as demonstrated in case studies like Leong San Tong Khoo Kongsi and Daraphirom Palace Museum. These projects employed minimal intervention and reversible conservation techniques, which align with established heritage principles (Feilden, 2007), ensuring that buildings can be adapted without compromising authenticity.

Adaptive spatial planning is another critical consideration. Since most historic buildings were not originally designed for museum use, strategic reconfiguration is required to support visitor circulation, flexible exhibitions, and multipurpose spaces. Institutions such as the Chiang Rai Picture Museum and National Textiles Museum utilized modular layouts to accommodate evolving displays while minimizing physical alterations. Equally important is the provision of universal accessibility. Despite challenges presented by older architectural forms, features such as discreet ramps, elevators, and emergency exits have been successfully integrated to comply with accessibility standards while preserving historical character.

The discreet integration of modern infrastructure—HVAC systems, lighting, and security—is also essential. Case studies show that concealed installations maintain the visual integrity of historic interiors. Additionally, the thoughtful application of digital technologies, including augmented reality and interactive storytelling, enhances engagement without permanent structural impact. The Field Marshal P. Pibulsongkram House is a prime example of this approach.

Finally, community involvement remains vital to the sustainability of adaptive reuse museums. Through educational programming, traditional performances, and cultural festivals, these institutions promote local participation and ensure the site remains an active cultural hub.

In sum, successful adaptive reuse demands a holistic design approach that balances preservation with modern needs. Key strategies include architectural conservation, flexible planning, discreet modernization, and community engagement—ensuring that heritage buildings remain vibrant, accessible, and sustainable in their new roles.

Ethical Considerations in Repurposing Historic Buildings for Museums

The adaptive reuse of historic buildings for museum purposes presents a complex range of ethical considerations that must be addressed to ensure responsible heritage management. This includes balancing the preservation of historical authenticity with contemporary functionality, respecting cultural narratives, promoting accessibility, engaging communities, and navigating financial sustainability.

A key ethical concern in adaptive reuse is the tension between preserving historical authenticity and adapting buildings for modern use. Excessive modifications can undermine heritage value, while insufficient adaptation can render the museum inaccessible or impractical. Case studies such as the Chiang Mai City Arts & Culture Centre demonstrate the effective use of minimal-intervention and reversible conservation techniques, which maintain architectural integrity while enabling museum functions.

Respect for cultural and historical significance is also crucial. Many historic sites are embedded with deep cultural, religious, or political meaning, necessitating sensitive reinterpretation. For example, Singhaklai House, originally a missionary residence, and the Field Marshal P. Pibulsongkram House, a former military residence, required thoughtful curatorial practices to avoid biased or reductive narratives. Ethical interpretation should reflect multiple perspectives and involve stakeholders such as historians and community representatives.

Community involvement is essential for ethical adaptive reuse. Heritage buildings often carry collective significance for local populations, and excluding them from planning processes risks cultural alienation. Leong San Tong Khoo Kongsi provides a model of community co-management, where local stakeholders maintain an active role in programming and governance. Participatory planning ensures that the museum reflects and serves the community it represents.

Accessibility is another ethical imperative. While many historic buildings were not designed for universal access, it is critical that they be adapted to meet modern standards. Non-invasive features such as ramps, elevators, and digital tools can enhance inclusivity while preserving architectural coherence, as demonstrated by the Chiang Rai Picture Museum and the National Textiles Museum.

Financial ethics in adaptive reuse revolve around balancing commercial viability with heritage conservation. While income generation is necessary for operational sustainability, over-commercialization may compromise historical integrity. Cheong Fatt Tze – The Blue Mansion exemplifies an ethically balanced model, combining revenue generation with careful preservation.

Ethical adaptive reuse requires integrated strategies that respect heritage values while addressing modern requirements. These include minimal interventions, inclusive curation, participatory governance, accessible design, and transparent financial models. Implementing such approaches allows adaptive reuse projects to uphold cultural authenticity, social inclusivity, and long-term sustainability.

Integrating Community Engagement and Stakeholder Participation in the Adaptive Reuse Process for Museums

Community engagement and stakeholder participation are essential components in the adaptive reuse of historic buildings into museums. This process not only preserves tangible cultural heritage but also revitalizes historic spaces as socially inclusive, financially sustainable, and culturally authentic institutions.

Effective integration of community engagement begins with participatory planning, where local stakeholders, cultural experts, and heritage professionals contribute to the reuse process from the earliest stages.

Table 4. Ethical Challenges and Adaptive Reuse Strategies

Ethical Concern	Adaptive Reuse Strategy	Example Case Study
Preservation vs. Functionality	Use minimal-intervention conservation, reversible modifications, and traditional materials.	Chiang Mai City Arts & Culture Centre, National Museum of Singapore
Cultural & Historical Sensitivity	Ensure historical accuracy, present multiple perspectives, and engage historians.	Field Marshal P. Pibulsongkram House, Singhaklai House
Community Involvement	Implement participatory planning, involve local stakeholders, and maintain traditional uses.	Leong San Tong Khoo Kongsi, Chiang Mai City Arts & Culture Centre
Accessibility & Inclusivity	Introduce non-invasive accessibility features, digital guides, and alternative pathways.	Chiang Rai Picture Museum, National Textiles Museum
Financial Ethics	Establish transparent funding sources, responsible tourism, and ethical commerce.	Cheong Fatt Tze - The Blue Mansion

This approach fosters a shared sense of ownership and ensures that the resulting museum reflects both the historical significance and the cultural needs of the community. Case studies such as Leong San Tong Khoo Kongsi in Malaysia exemplify how inclusive planning can balance heritage preservation with accessibility and relevance.

Collaborative curation is another crucial strategy. By involving descendants, religious communities, and former occupants in storytelling and artifact collection, exhibitions become more authentic and representative of collective memory. The Chiang Mai City Arts & Culture Centre illustrates how integrating local artists and historians into exhibition development enhances cultural depth and inclusivity.

Moreover, adaptive reuse museums can become living cultural hubs by hosting community-led programs, such as traditional performances and heritage workshops. This approach fosters intergenerational engagement and transforms static heritage sites into active centers of cultural continuity. Leong San Tong Khoo Kongsi's ongoing clan events and educational initiatives serve as a successful model.

Financial sustainability is often a challenge in heritage preservation. Engaging diverse stakeholders—including private investors, NGOs, and public institutions—ensures operational viability without compromising historical integrity. Cheong Fatt Tze – The Blue Mansion combines commercial use with cultural programming, demonstrating an ethical funding model rooted in heritage value.

Table 5. Best Practices for Integrating Community Engagement

Engagement Strategy	Implementation Approach	Example Case Study
Participatory Planning	Involve local stakeholders in museum design and governance.	Leong San Tong Khoo Kongsi, Chiang Mai City Arts & Culture Centre
Collaborative Curation	Engage historians, cultural groups, and community elders in exhibition development.	Singhaklai House, Field Marshal P. Pibulsongkram House
Public Programs & Events	Host educational workshops, traditional performances, and heritage festivals.	Leong San Tong Khoo Kongsi, Chiang Mai City Arts & Culture Centre
Multi-Stakeholder Partnerships	Secure funding and operational support from public and private sources.	Cheong Fatt Tze - The Blue Mansion, National Textiles Museum
Inclusive Design & Accessibility	Ensure museums cater to diverse audiences through adaptive infrastructure.	Chiang Rai Picture Museum, National Museum of Singapore

Stakeholder participation in adaptive reuse museums improves inclusivity and accessibility, catering to diverse audiences, including those with disabilities. The Chiang Rai Picture Museum exemplifies inclusive infrastructure implementation through hidden ramps and accessible design. Integrating community voices in adaptive reuse enriches museum content and cultural relevance, fostering long-term sustainability. Best practices include participatory planning, inclusive curation, community-based programming, collaborative funding, and accessible design.

Integrating Adaptive Reuse into Museum Development: A Multifaceted Approach

1. Economic, Social, and Environmental Advantages of Adaptive Reuse Over New Construction

Adaptive reuse provides significant advantages over new construction by reducing financial, environmental, and social costs. Economically, it minimizes capital expenditure by utilizing existing structures and materials. Case studies such as the National Museum of Singapore and Cheong Fatt Tze – The Blue Mansion demonstrate that heritage tourism generates sustainable revenue through entry fees, events, and guided tours. Throsby (2010) emphasizes that such sites stimulate local economies and contribute to urban revitalization, as evidenced in Penang's George Town.

Socially, adaptive reuse supports cultural continuity and strengthens community identity. Unlike new museums, repurposed buildings retain their connection to local narratives, serving as both educational venues and communal spaces. Institutions like the Leong San Tong Khoo Kongsi and the Chiang Mai City Arts & Culture Centre function as “living archives,” preserving both tangible and intangible heritage while fostering inclusivity and collective memory.

From an environmental standpoint, adaptive reuse conserves embodied energy and reduces construction waste. By avoiding demolition and the use of new materials, it aligns with principles of sustainable development. The use of passive design elements in projects like the National Textiles Museum and the Chiang Mai City Arts & Culture Centre reduces energy demands, making adaptive reuse a cornerstone of low-carbon urban regeneration.

2. Optimal Design Strategies for Balancing Historic Preservation and Modern Museum Functionality

Successful adaptive reuse requires thoughtful architectural strategies that honor historic integrity while meeting modern standards. These include retaining original facades and materials, applying minimal interventions, and adapting interiors with modular, flexible layouts. Projects such as the Leong San Tong Khoo Kongsi and Daraphirom Palace Museum exemplify this balance.

Infrastructure must be integrated discreetly to preserve visual coherence. Examples like the National Textiles Museum show how HVAC systems, lighting, and security features can be embedded within historical details. These interventions comply with international charters like the ICOMOS Burra Charter, ensuring both authenticity and usability.

3. Ethical Considerations in Adaptive Reuse and Mitigation Strategies

Adaptive reuse raises ethical issues, especially when dealing with culturally sensitive or contested sites. Balancing preservation with modernization is crucial. Reversible modifications, as employed at the Chiang Mai City Arts & Culture Centre, uphold authenticity while allowing for future flexibility.

Museums like Singhaklai House and Field Marshal P. Pibulsongkram House address the challenge of presenting inclusive, historically accurate narratives. Ethical curation avoids glorification or erasure, embracing pluralism and community voices. Accessibility is another key concern. As demonstrated by the Chiang Rai Picture Museum, modern access features can be incorporated without compromising historical aesthetics.

4. The Role and Benefits of Community Engagement in Adaptive Reuse

Community involvement is central to the success of adaptive reuse. Participatory planning, as seen in the Khoo Kongsi and Chiang Mai Centre, ensures cultural relevance and public support. Collaborative curation enhances authenticity, while community-led programs and partnerships broaden participation.

Financial sustainability is reinforced through multi-stakeholder models. Cheong Fatt Tze – The Blue Mansion exemplifies how public-private cooperation supports conservation and economic viability.

5. Conclusion: The Strategic Value of Adaptive Reuse in Museum Development

Adaptive reuse offers a compelling alternative to new museum construction. It unites conservation, modern functionality, ethical practice, and community engagement into a sustainable development model. Future research should explore technological innovations, visitor engagement metrics, and cross-cultural case studies to further strengthen this transformative approach.

Conclusion

Key Considerations and Challenges in the Adaptive Reuse of Historic Buildings for Museum Purposes

The adaptive reuse of historic buildings for museum purposes involves a complex interplay between heritage preservation, architectural integrity, and contemporary functionality. As an alternative to new construction, adaptive reuse offers a sustainable, culturally responsive model that reinforces the longevity and relevance of historic structures. This summary outlines the primary considerations and challenges involved in adapting heritage buildings into museums and presents practical strategies and case studies.

1. Key Considerations in Adapting Historic Buildings for Museums

A. Preserving Cultural Heritage and Architectural Integrity

Preservation is central to adaptive reuse. Successful projects retain key architectural features such as facades, structural components, and decorative elements, often through minimal and reversible interventions. The National Museum of Singapore exemplifies this approach by integrating contemporary infrastructure within its colonial-era framework, balancing historical authenticity with museum functionality.

B. Functional Adaptation for Contemporary Requirements

Historic structures often lack the spatial and environmental characteristics needed for modern museums. Strategic design responses include:

- Visitor Flow: As demonstrated by the Chiang Mai City Arts & Culture Centre, reconfiguring interior layouts enhances spatial coherence and circulation.
- Accessibility: The Chiang Rai Picture Museum illustrates how subtle interventions can meet accessibility standards while preserving heritage value.

- Environmental Control: The National Textiles Museum in Malaysia incorporates HVAC and lighting systems to safeguard collections within a historically preserved environment.

2. Challenges in Adaptive Reuse and Strategies for Mitigation

A. Balancing Preservation and Modernization

Adaptive reuse projects must navigate the tension between conservation and contemporary use. At Leong San Tong Khoo Kongsi, minimal intervention was employed to retain historical character while introducing digital interpretive pathways for modern engagement.

B. Financial Sustainability and Funding

Given the high cost of restoration, adaptive reuse often necessitates diverse funding streams. Cheong Fatt Tze – The Blue Mansion represents a successful hybrid model combining museum and hospitality services, underpinned by private and public investment.

C. Ethical Interpretation

Museums located within politically or culturally significant sites must ensure balanced representation. The Field Marshal P. Pibulsongkram House employs inclusive curatorial strategies that present multifaceted historical narratives.

D. Community Engagement

Community participation enhances the legitimacy and sustainability of adaptive reuse projects. Leong San Tong Khoo Kongsi serves as a case in point, where collaborative planning with local stakeholders informed the museum's development and content.

3. Best Practices for Adaptive Reuse in Museums

Table 6

4. Conclusion: Pathways to Successful Adaptive Reuse in Museums

Drawing on the typological framework (Tables 1–2), the comparative considerations between reuse and new construction (Table 3), and the synthesized design, ethical, and participation strategies derived from the twelve cases (Tables 4–6; Figures 1–14), the study concludes that successful adaptive reuse for museum purposes depends on aligning (i) building type constraints, (ii) curatorial intent, and (iii) stakeholder legitimacy. Rather than a single 'best' solution, the evidence indicates typology-specific trade-offs that must be managed through conservation-sensitive design and transparent interpretation.

Table 6. Best Practices for Adaptive Reuse in Museums

Key Consideration	Challenges	Solutions & Best Practices	Example Case Study
Preservation vs. Functionality	Risk of structural damage from modern adaptations	Use reversible modifications and minimal intervention	National Museum of Singapore
Visitor Accessibility	Limited infrastructure for universal access	Discreet features (e.g., hidden ramps, digital aids)	Chiang Rai Picture Museum
Financial Sustainability	High restoration and maintenance costs	Public-private partnerships, grants, cultural revenue	Cheong Fatt Tze – The Blue Mansion
Ethical Interpretation	Risk of biased or insensitive narratives	Engage historians and communities in curation	Field Marshal P. Pibulsongkram House
Community Engagement	Potential resistance from local groups	Collaborative planning and cultural programming	Leong San Tong Khoo Kongsi

- Reversible, minimal-intervention modifications that safeguard historic character (Table 6).
- Universal access achieved through non-invasive infrastructure and interpretive aids (Table 6).
- Financial resilience supported by diversified funding models and long-term maintenance planning (Table 6).
- Inclusive curatorial practices that address difficult histories and ethical sensitivities through balanced representation (Table 4).
 - Participatory planning and collaborative curation that foster local ownership and operational sustainability (Table 5).

Future research should strengthen the empirical base through more intensive on-site observation (including visitor flow and object-display conditions), greater access to site-specific technical reports and performance data, and structured interviews with community members, curators, and policymakers. Comparative studies that directly evaluate adaptive reuse against new construction in similar urban and programmatic contexts would further clarify when each approach is most appropriate, including cost, accessibility, and carbon impacts, as well as long-term socio-cultural outcomes.

CRediT Authorship Contribution Statement

Tira Buabai: Conceptualization, Methodology / Study design, Writing – original draft, Supervision, Project administration, Funding acquisition, Conceptualization, Methodology / Study design, Software, Formal analysis, Data curation, Writing – original draft, Writing – review and editing, Visualization, Supervision, Conceptualization, Supervision, Conceptualization, Supervision, Conceptualization, Supervision.



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References

Australia ICOMOS. (2013). *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. <https://australia.icomos.org/publications/charters/>

Black, G. (2011). *Transforming museums in the twenty-first century*. Routledge.

Bullen, P. A., & Love, P. E. D. (2011). Adaptive reuse of heritage buildings. *Structural Survey*, 29(5), 411–421. <https://doi.org/10.1108/0263080111182439>

Crooke, E. (2007). *Museums and community: Ideas, issues and challenges*. Routledge.

Douglas, J. (2006). *Building adaptation* (2nd ed.). Butterworth-Heinemann.

Falk, J. H., & Dierking, L. D. (2013). *The museum experience revisited*. Routledge.

Feilden, B. M. (2007). *Conservation of historic buildings* (3rd ed.). Routledge.

Horayangkura, V. (2010). The creation of cultural heritage: Towards creating a modern Thai architectural identity. *Manusya: Journal of Humanities*, 13(1), 60-80.

Horayangkura, V. (2022). In search of sustainable paradigms for conservation and development based on underlying convergent/divergent conceptions. *Journal of Architectural/Planning Research and Studies (JARS)*, 6(3), 1–22. <https://doi.org/10.56261/jars.v6i3.168711>

International Council on Monuments and Sites (ICOMOS). (1964). *The Venice Charter: International Charter for the Conservation and Restoration of Monuments and Sites*. https://www.icomos.org/images/DOCUMENTS/Charters/venice_e.pdf

International Council on Monuments and Sites (ICOMOS). (1999). International cultural tourism charter: Managing tourism at places of heritage significance.

Jokilehto, J. (2018). *A history of architectural conservation* (2nd ed.). Routledge.

Lim, S. W. Q. (2014). *Heritage, hybridity, and the global city-state: Singapore's Peranakan museum* [Doctoral dissertation, University of British Columbia]. UBC Library. <http://hdl.handle.net/2429/48450>

Macdonald, S. (2011). Leveraging heritage: Museums and urban regeneration. In S. Macdonald (Ed.), *A companion to museum studies* (pp. 408–425). Wiley-Blackwell.

Orbasli, A. (2008). *Architectural conservation: Principles and practice*. Wiley-Blackwell.

Parry, R. (2007). *Recoding the museum: Digital heritage and the technologies of change*. Routledge.

Plevoets, B., & Van Cleempoel, K. (2019). *Adaptive reuse of the built heritage: Concepts and cases of an emerging discipline*. Routledge.

Shipley, R., Utz, S., & Parsons, M. (2006). Does adaptive reuse pay? A study of the business of building renovation in Ontario, Canada. *International Journal of Heritage Studies*, 12(6), 505–520. <https://doi.org/10.1080/13527250600940181>

Silva, K. D. (2015). The spirit of place of Bhaktapur, Nepal. *International Journal of Heritage Studies*, 21(8), 820–841. <https://doi.org/10.1080/13527258.2015.1028962>

Simon, N. (2010). The participatory museum. Museum 2.0.

Smith, L., & Waterton, E. (2009). *Heritage, communities and archaeology*. Duckworth.

Throsby, D. (2010). *The economics of cultural policy*. Cambridge University Press.

Tilden, F. (1977). *Interpreting our heritage*. University of North Carolina Press.

Yung, E. H. K., & Chan, E. H. W. (2012). Implementation challenges to the adaptive reuse of heritage buildings: Towards the goals of sustainable, low carbon cities. *Habitat International*, 36(3), 352–361. <https://doi.org/10.1016/j.habitatint.2011.11.001>