Reimagining the Langkat Museum: Developing a Hybrid Museum and Cultural Heritage Center in Tanjung Pura, Langkat

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ABSTRACT

Museum Langkat is located in North Sumatra Province and serves as a cultural heritage site in Tanjung Pura, Langkat Regency. This museum building possesses significant architectural and historical value, with considerable potential as a cultural center due to its strategic location near other cultural heritage sites, including the Azizi mosque and the former site of the second Palace of the Sultan of Langkat. This article examines the evolution of the Langkat Museum in Tanjung Pura, North Sumatra, into a hybrid museum and cultural heritage center. The structure, formerly the administrative office of the Langkat Sultanate, currently exhibits physical decay and restricted utility. This research presents a hybrid model that combines physical restoration, digital accessibility, and community-oriented programming. The paper advocates for a sustainable and inclusive strategy to rejuvenate regional museums in Indonesia, utilizing global and regional precedents. It delineates critical research deficiencies concerning hybrid museums, community involvement, and the amalgamation of disparate cultural resources. The proposed paradigm designates the museum as a catalyst for cultural continuity, education, and regional development.

Keywords: Museum revitalization; Digital transformation in museums; Community-based Museum; Adaptive reuse of heritage sites; Heritage tourism development.

1. Introduction

1.1 Background

In general, the role and function of the museum is to store, treat, and preserve collections that are cultural-historical heritage. In addition, the museum is also a source of knowledge and a place for educational recreation about the trajectory of historical events (Hartini, 2019). Museums have undergone a significant transformation in recent decades, evolving from static repositories of artifacts into dynamic institutions that actively contribute to public discourse, cultural identity, and community development. No longer confined to mere custodians, museums now serve as inclusive spaces where values such as human dignity, social justice, global equity, and environmental sustainability are preserved and promoted (Etges & Dean, 2022). This progressive vision aligns with the legal and cultural framework established by the Indonesian government through *Peraturan Pemerintah No. 66 Tahun 2015*, which defines museums as institutions mandated to protect, develop, utilize, and communicate their collections to the public. In North Sumatra, 21 museums are officially registered, yet

only one—Museum Langkat—serves the expansive territory of Langkat Regency, which covers approximately 626,329 hectares (Kementrian Pendidikan Dasar dan Menengah, 2025). This singular presence highlights the museum's crucial role in safeguarding the cultural heritage and reinforcing the regional identity of Langkat.

Museum Langkat, like many other conventional museums, functions far beyond the exhibition of historical objects. It is a living institution of cultural preservation (Prince & Laven, 2023), educational engagement, and social advocacy (Ünsal, 2019). Museums now actively shape regional and community development, influencing aspects such as urban planning, the emergence of creative districts, rural revitalization, and participatory cultural practices (Siyu & Shan, 2023). As institutions of both social and cultural value (San-Jose et al., 2023), they provide spaces for learning and reflection, recreation, and leisure (Stephen, 2001). Their ability to adapt to the changing needs of society ensures their continued relevance and influence.

Furthermore, museums play a pivotal role in the tourism economy. They serve as key destinations that attract local and international visitors, enriching a region's cultural and educational landscape (Kseniia et al., 2022). Through this function, museums help to counter the erosion of historical and cultural identity, ensuring that the legacy of the past is meaningfully preserved for future generations (Khottob Idris et al., 2023). Their capacity to offer immersive cultural, historical, and scientific experiences makes them indispensable components of sustainable cultural tourism.

On the other hand, the conventional spatial design of the museum has not been planned to give visitors an engaging experience. The museum's attraction is further diminished by its minimal supporting facilities, which include insufficient public areas, effective ticketing methods, and digital infrastructure with suitable capabilities. The absence of a community-based development strategy is another significant barrier that must be overcome. Due to the absence of community participation in the rebuilding process, there was a lack of understanding and collective support for the museum's potential to remain open for future generations. Consequently, the public's interest in Museum Langkat has decreased, and they are increasingly of the opinion that it is not significant to their cultural identity.

Another difficulty is the tourism potential that has not been fully exploited to its full potential. Visitors are less likely to be interested in visiting Museum Langkat because of its limited promotion, the absence of information offered, and the absence of appealing tour packages. There is a clear correlation between the lack of facilities that can handle a more significant number of people and the absence of programs and activities that have the potential to boost public participation. When seen in a contemporary context, the most significant obstacle is the absence of technological integration within the museum experience. Museum Langkat continues to rely on traditional exhibition methods even though we live in the Fourth Industrial Revolution, which is characterized by the rapid development of digital technology and artificial intelligence (AI). The digitization of archives and collections has not been carried out optimally, and as a result, it has not been of use to either teaching or research. The development and rejuvenation of the museum are also hampered by the fact that there are financial constraints, which is another significant challenge.

The revitalization of historic buildings is inherently multifaceted, extending beyond technical repairs to embrace broader social, environmental, economic, and cultural dimensions embedded within the local community. This multidimensional perspective is in line with the core values of sustainable development. Inappropriate reuse or insensitive interventions can compromise the structural integrity and usability of heritage buildings, the longevity of their materials, and the preservation of decorative elements (Terlikowski, 2017).

In the context of museums, revitalization must be understood not merely as a response to physical degradation, but as a strategic process that integrates cultural preservation with community engagement (Isaac et al., 2023; Loach et al., 2017), urban regeneration (Grodach & Loukaitou Sideris, 2007; Westervelt, 2010) and technological integration (Kadeli et al., 2025). Despite extensive research on museum revitalization in major Indonesian cities, studies on the revitalization of Museum Langkat remain limited. Existing research has predominantly focused on museums in metropolitan areas, leaving significant gaps in the exploration of development strategies and revitalization design for Museum Langkat. Furthermore, community-based approaches to museum revitalization in smaller towns, such as Tanjung Pura, have not been a primary focus in previous studies. Community engagement is crucial to ensuring the long-term sustainability of museum management and operations.

Additionally, most museum revitalization efforts in Indonesia have primarily emphasized physical conservation without fully integrating digital technologies such as augmented reality (AR), virtual reality (VR), or interactive exhibitions, which could significantly enhance visitor engagement. This study aims to develop a revitalization strategy that merges cultural heritage preservation with tourism development in a sustainable manner. This research offers a reference framework for similar institutions in other regions by proposing a community-driven model for museum revitalization in smaller cities. Furthermore, this study advances digital-based museum revitalization strategies, fostering enhanced visitor interaction and engagement. Ultimately, this research aspires to position Museum Langkat as a culturally relevant, competitive, and dynamic heritage destination in the modern era.

Museums are crucial in maintaining the sustainability of historical narratives and collective memory by functioning as spaces to curate, interpret, and communicate history to a broad audience. In this context, museums act as a bridge that connects the past with the present and a learning tool for future generations. Museums also bridge individual and collective memory, help shape social and cultural identities and affirm that historical and cultural heritage belong together (Zhang et al., 2018) History is represented through a variety of digital media and interactive installations, allowing for a dynamic dialogue space between personal and collective narratives. Digital technologies in museums allow visitors to interact with history more immersive and contextualized, thus enhancing their understanding of past events (Claisse et al., 2018).

Despite the important role museums play, a key challenge is how to present historical narratives that strike a balance between historical objectivity and sensitivity to a community's collective experience. However, behind this challenge, museums also have a great opportunity to develop as spaces for reflection and reconciliation. With inclusive and research-based exhibition approaches, museums can provide in-depth insights, strengthen historical understanding, and build closer emotional connections between communities and their past (Pretto et al., 2020).

Cultural heritage plays an important role in maintaining a community's identity and supporting the tourism sector through economic growth and community development. However, modernization often threatens the preservation of cultural heritage, so revitalization efforts are essential to ensure its sustainability in the future (Setijanti & Hayati, 2021). Revitalization is carried out to optimize local potential and wisdom. However, the balance between modernization and preserving the authenticity of cultural heritage, including infrastructure challenges and the impact of tourism, must still be considered. In addition to driving local economic growth, heritage revitalization can also increase the physical value of an area, attract tourists, improve quality of life, strengthen community social activities, create employment and entrepreneurial opportunities, and increase local revenues, including taxes from the tourism sector (Lak et al., 2020). Thus, revitalization contributes to cultural preservation and provides sustainable economic benefits.

In summary, heritage revitalization is a strategic step toward preserving cultural identity and promoting tourism. Revitalization programs can yield major economic and cultural benefits by incorporating sustainable tourist practices, using technology, and engaging local communities. However, careful planning and close collaboration among stakeholders are essential to overcome obstacles and assure the long-term viability of these efforts.

1.2 Historical and Cultural Background of Museum Langkat
The Regional Museum of Langkat Regency, situated at the intersection of Jalan Haji Agus Salim, Jalan T. Amir Hamzah, and Jalan Masjid, is a historic edifice that remains resilient despite being approximately 120 years old. The structure embodies Renaissance architectural principles, including an octagonal form reminiscent of an ancient Roman temple. This configuration offers versatile access and visibility from all angles. The architectural features exhibit symmetry, harmonious proportions, geometric regularity, and a pronounced classical style. The edifice features four principal entrances, with the primary door oriented to the north, granting access to the Palace of the Sultan of Langkat, while the western entrances provide access to the Azizi Mosque. Common architectural features comprise classical columns, pilasters, and a ribbed hemispherical dome topped with a black-painted cupola.

Figure 1. Aerial View of The Building in 1945's (Source: Vrijheidsmuseum, No. INV. 4.2.1.10693)

The building was built in 1905 by Sultan Abdul Azis Jalil Rachmatsyah, the second Sultan of Langkat. It originally served as the Council Office for Customary Affairs and the Sultanate Court, earning the title Kerapatan Besar (Grand Council). In 1943, during the Japanese occupation, the building was completely burned down, leaving only charred remains. This led to its local moniker, the "Black Building." In the 1970s, the structure underwent renovations, including the construction of the Garuda Monument at its front entrance. It led to its temporary renaming as Gedung Bina Pancasila, which functioned as a public meeting hall. During a major flood in the early 1970s, the building was repurposed as a temporary community health center (puskesmas). Subsequently, in 1984, it became the Tanjung Pura District Office before being repurposed again in 2000 as the Deputy Regent's Office. In the same year, the building was officially designated as the Langkat Regional Museum under the administration of the Langkat Regency Government, managed by the Department of Tourism and Culture. The museum's development began in 2000 when the collection of historical artifacts and photographs was initiated. By 2003, museum collections were further expanded through budget allocations from the regional government (APBD). In 2005, a significant restoration project was undertaken, including repairing its ironwood dome and roof, constructing an open stage, and developing surrounding gardens. Finally, at the end of 2006, the Langkat Regional Museum was officially inaugurated by the then Regent of Langkat, H. Syamsul Arifin, SE. Today, the museum is an important cultural repository, preserving Langkat's rich history while facing ongoing spatial organization and exhibition curation challenges.

1.3 Research Objectives and Questions
This research aims to analyze the conditions and problems experienced by Museum Langkat today in supporting the museum's sustainability. In addition, it formulates a hybrid museum model to increase attractiveness and function in the context of cultural preservation, which has an impact on several points such as education, tourism, social, economic, and income. The development of the model aims to design a hybrid Museum Langkat revitalization design integrating interactive technology-based elements to enrich the visitor experience, as well as developing spatial layout and facilities. In addition, this study aims to analyze the role of the museum as a cultural heritage center in the city of Tanjung Pura, Langkat Regency, which can revive the city of Tanjung Pura as a religious heritage city. Based on these problems, this research aims to answer the questions: (1) How are the current condition and limitations of Museum Langkat described? (2) How is the concept and design of a hybrid museum model applied to improve its function as a cultural preservation center, and (3) What gaps exist in research and practice regarding regional museums in Indonesia?

2. Method
2.1 Qualitative Approach and Case Study Methodology
This study adopts a qualitative research approach utilizing a case study method centered on Museum Langkat. This methodological choice is motivated by the necessity to gain a profound understanding of the museum's existing conditions, challenges, and revitalization strategies within the broader framework of cultural heritage preservation and tourism development in Tanjung Pura City.

2.1 Data Sources

Data collection is conducted through direct observation, interviews, and documentary research. Direct observation entails an on-site assessment of the museum's physical state, management practices, and visitor experiences. Additionally, precise re-measurements of both the building and its surrounding landscape are performed, yielding as-built drawings that include existing floor plans, elevations, sections, and perspectives. The documentation process further involves cataloging the museum's collection to assess the appropriateness of exhibits and their supporting elements, such as vitrines, lighting, and narrative panels. Interviews are carried out with key stakeholders, including museum managers, historians, local government officials, and community members, to gather diverse insights into the museum's historical development, management dynamics, and future aspirations. Complementing this, documentary research involves the examination of archival records, reports, and relevant literature, offering a historical and developmental perspective on the museum's evolution. Comparative literature studies are also conducted to analyze stylistic aspects, functional requirements, existing deficiencies, potential advantages, and contemporary technological applications relevant to museum revitalization. The collected data undergo thematic analysis, identifying and categorizing patterns and key themes derived from observations, interviews, and documentation. This process is further refined through a SWOT analysis to systematically formulate a comprehensive revitalization strategy for Museum Langkat. Additionally, archival data retrieved from various sources are examined through the Digging4Data approach, which involves collecting historical materials such as photographs, maps, and newspaper articles to reconstruct the building's typology, construction period, location, founding motives, and details regarding its designers or original owners along a historical timeline (Akihary et al., 2017). To comprehend the area's setting in relation to the Langkat museum building, a number of maps and photographs are compared.
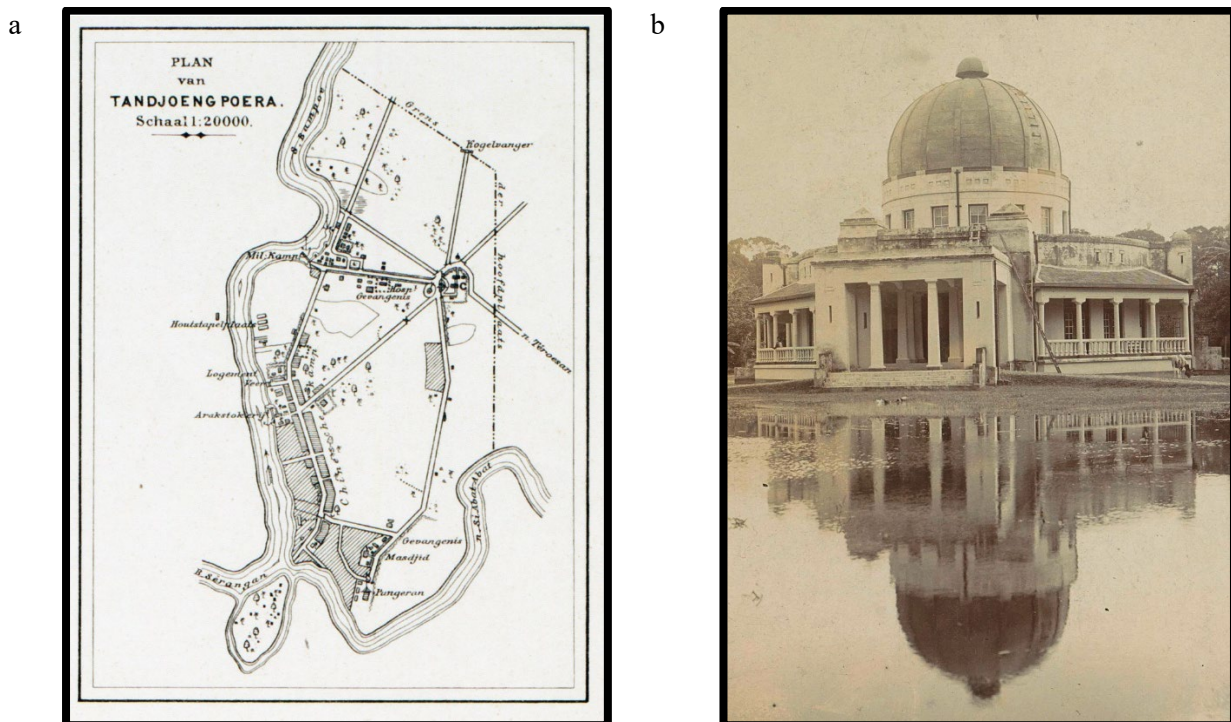
Figure 2. (a) Tanjung Pura City Map in 1895; (b) A View of a building during flooding in Tanjung Pura City (Source: (a) Leiden University Library, No. INV. KK 070-07-01071-01-09 (b) Rijksmuseum Amsterdam, No. INV. RP-F-F01122-S)

2.2 Analytical Framework

To ensure data validity and reliability, source triangulation is employed by cross-referencing information from multiple sources, thereby enhancing the accuracy and consistency of findings. This methodological framework offers a holistic understanding of Museum Langkat, providing the necessary foundation for strategic revitalization efforts aimed at reinforcing its role in cultural heritage preservation and tourism development in Tanjung Pura City. This analysis addresses four primary points: 1) The identification study encompasses an assessment of the current conditions and the significance of cultural heritage buildings; 2) It also evaluates the role and capacity of stakeholders. 3) Examination of digital innovation and comparative analyses in the context of developing a hybrid museum model; Identify the cultural corridor and assess community engagement.

The Sultan Langkat Council Building, now known as the Langkat Regional Museum, has been officially designated as a cultural heritage site under the Minister of Culture and Tourism Regulation No. PM.01/PW.007/MKP/201. Based on the Regulation of the Minister of Public Works and Public Housing Number 19 of 2021 concerning Technical Guidelines for the Implementation of Preserved Cultural Heritage Buildings, the approach to preserving cultural heritage buildings (BGCB) in the context of development is directed at the revitalization type. Revitalization was chosen because it allows for adjustments to the utilization functions so that the building remains relevant and can support the needs of current activities without eliminating its historical values. The determination of this building as cultural heritage is based on several essential values, including historical values recorded in past events—from its initial function as the office of the Sultan of Langkat's Council, its transition to the Japanese military headquarters during the occupation, bombings that occurred during the war, a temporary health center, a regent's office, to a museum; educational values carried out in its function as a museum; and cultural values that are evident from the architecture of the building. Architecturally, the building is unique through its basic octagonal shape and Renaissance-style dome, but still carries the local Malay identity reflected in a typical Malay roofed porch. The combination of global and local elements enriches the artistic and symbolic value of the building as a cultural heritage that deserves to be preserved. This study offers a revitalization-based development model that elevates the historical, cultural, and economic potential values of BGCB. This model not only aims to restore the function and meaning of the building but also enhances the museum's role as a center for education, cultural preservation, and local tourism development. The Langkat Museum is proposed as a pilot museum, which can later be replicated in other regional museums with similar conditions.

3. Result and Discussion
3.1 Current Condition and Limitations of the Langkat Museum
3.1.1 Structural Degradation
As a form of adaptation to the tropical climate, the museum has a portico surrounding the building, serving as a transition space between the exterior and interior. In addition, there are Malay architectural elements in the roof covering. The portico with a concrete flat roof is adorned with classic Tuscan-style Roman columns, leading visitors to the interior of the building. The building plan is symmetrical, divided into two principal axes, north-south and east-west. Under the hemispherical dome, there is a rotunda surrounded by seven rooms. The main rooms have double-leaf doors flanked by two Tuscan-style pillars, adding to the aesthetic value of the interior. Natural light enters the rotunda through windows in the upper wall or clerestory. Between the seven rooms, a small triangular space is currently used as a warehouse.

During the Japanese occupation, the dome of the building was damaged and was replaced with a new dome. The current dome is no longer hemispherical, the ribs have disappeared, and the cupola on top of the dome has become an element integrated into the structure of the new dome, taking away the characteristic Renaissance dome. The interior walls separating the rotunda from the rooms were used to install collection photos and paintings. The doors have been replaced with new models that match the old ones. The interior floor has been replaced with ceramic tiles, while the floor in the foyer still retains the yellow motif tiles. The windows in the clerestory have also been replaced with jalousie windows to improve cross ventilation.

From the main entrance, the ±90.02 m2 rotunda is surrounded by seven rooms. Several photo collections hung on the walls detract from the aesthetics of the space. Demonstration materials in the form of mannequins wearing traditional traditional clothes in vitrines are static, as are miniature traditional houses in vitrines along the walls. The collection on display includes a duplicate of the Sultan of Langkat's aisle, three pairs of bridal mannequins in traditional Javanese, Karo, and Malay traditional dress, three miniature traditional houses, and a collection of photographs.

There are no rooms and multimedia facilities that support activities in the museum. The rotunda is also often used for socialization events and scientific discussions that require more space, so chairs are often added by moving vitrines and other collections. The seven rooms function as a permanent exhibition system and an office space. The exhibition layout is thematically organized according to the museum's collection.

Although there are existing chandeliers, the main lighting still uses conventional white incandescent lamps. The museum collection is mostly a duplicate of the Langkat Sultan Palace. Policies, regulations, implementation, and supervision must manage, protect, develop, and utilize this collection. The museum collection is still limited and poorly maintained, with classifications that include archaeology, geography,

ethnography, history, numismatics, ceramology, and fine arts. The Regional Museum of Langkat Regency has excellent potential in preserving local history and culture. Still, the exhibition layout and collection management need improvement to provide a better experience for visitors.

3.1.2 Limited Exhibition Space
The cramped and fragmented interior space limits the scope of exhibitions. Artifacts are often unlabeled or poorly contextualized, diminishing educational impact.

Table 1. Museum Existing Data

No	Room and Area (m2)	The Current Condition and Challenges Faced by the Interior of the Museum.
1.	**Room I.** Amir Hamzah's Room (28.621 m2)	This room displays a collection of Tengku Amir Hamzah's relics, such as an iron safe, a wooden buffet with radio and records, a judge's table and chairs, a miniature of Amir Hamzah's house, a set of chairs and a guest table, a collection of photos, and his poems. The extensive collection makes it difficult for visitors to explore freely. Collection information is presented using conventional methods, such as banners on the walls with less attractive graphics. The collection labels are also unclear, making it difficult for visitors to find information. Simple lighting uses white incandescent lamps and natural lighting from the window glass.
2.	**Room II.** Tuan Guru Babussalam 's Room (22.724 m2)	This room displays collections related to Tuan Guru Babussalam, the Sultan of Langkat, and Islam. The collection includes a large handwritten Qur'an, a medium-sized Qur'an, a kentongan, tables, chairs, and real and prayer beads. The photo collection fills part of the wall with less attractive graphic banners.
3.	**Room III.** Struggle for independence's room (27.378 m2)	This room displays the history of the nation's struggle through replicas of weapons that do not have clear descriptions, a collection of photos in poor condition, swords, and helmets. Other collections include photos of Langkat regents from past to present, demarcation line dioramas, photos and paintings of struggle events, and bicycles that were once used by fighters.
4.	Museum Office (22.724 m2)	This room is used by museum employees as an office area because there is no other room that can be used for administration and storage purposes.
5.	**Room IV.** Langkat Arts and Culture Room (27.378 m2)	This room displays a collection of Langkat Regency cultural arts, such as traditional playing instruments (gasing, congklak), horse braids, and wayang, as well as traditional musical instruments such as *demong, kempul, saron, gong, keteng-keteng, sarune*, flute, *marwas*, violin, accordion and tambourine. Many collections are placed directly on the floor without a special base or place, reducing the aesthetic value and quality of the collection.
6.	**Room V.** Art's Room (22.724 m2)	This room displays a collection of Langkat Malay weaving in various colors, Malay bridal equipment, wedding containers, and various old photos of the Langkat Sultanate.
7.	**Room VI.**	This room displays ethnographic objects from Langkat Regency, such as ceramic equipment, wickerwork, duplicates of human skulls and bones from the Bukit Kerang site, livelihood tools, and miniature fishermen's houses and boats.

No	Room and Area (m2)	The Current Condition and Challenges Faced by the Interior of the Museum.
	Etnography Room	A collection of cooking utensils such as pottery, teapots, harps, and various serving vessels are also exhibited without an optimal layout.
	(28.621 m2)	

3.1.3 Museum Management Challenges

Another significant issue is that museum management faces various challenges that affect operational sustainability. These difficulties include funding constraints, staffing shortages, a lack of professional development opportunities, and poor institutional networking. Financial constraints are the most serious worry. The museum's financial stability is heavily reliant on government financing, which is currently being impacted by efficiency-driven budget practices. To ensure long-term viability, the museum must take strategic methods, such as building independent financial models that lessen reliance on external funding (Stamatoudi & Roussos, 2024). In addition, the rapid growth of digital technology necessitates speedy adaptation by museums, emphasizing the insufficiency of present personnel levels. The limited number of workers and budget constraints make it difficult to invest in the essential training for digital skill development. Low incomes, insufficient incentives, unclear career trajectories, and limited access to training opportunities all contribute to a reduction in human resource quality, exacerbating the problem (Šveb Dragija, 2024).

Furthermore, networking and collaboration are critical in improving museum management's financial and operational elements. Strong partnerships with stakeholders, such as government entities, local communities, and non-governmental organizations, can offer up options for sponsorships, charity events, and other forms of support that boost financial outcomes (Zhang et al., 2018) . These collaborations are also valuable in facilitating training and knowledge-sharing, particularly for initiatives involving technology integration into collection management and exhibition strategies (Li & Li, 2024). The museum's physical infrastructure also significantly influences organizational performance. Adequate spatial arrangements are essential for supporting staff productivity and minimizing workplace conflict. Poorly designed office layouts, inadequate lighting, and disorganized workspaces can negatively affect staff concentration and morale, ultimately diminishing service quality and managerial efficiency (Wang & Lu, 2024) (Iriansyah et al., 2024) (Raditya Firmana & Rabbani Raditya, 2024). Creating a comfortable and functional working environment is thus a fundamental component of sustainable museum management.

3.1.4 Digital and Community Disconnection

Visitor engagement at Museum Langkat is notably constrained, characterized by low attendance, few educational programs for schools, and an absence of community-oriented events. The lack of an online presence further alienates the museum from younger audiences and individuals beyond the local area. The identified limitations underscore the necessity for a more inclusive and adaptive operational model. To address these challenges, it is essential to integrate digital technologies with improved promotional strategies to enhance outreach and engagement. The museum's tourism potential remains significantly underutilized. Insufficient promotion, inadequate informational content, and the absence of appealing tour packages contribute to its low attractiveness as a tourist destination. The absence of infrastructure suitable for larger visitor groups is further exacerbated by initiatives that promote public involvement. The interrelated deficiencies impede the museum's capacity to operate as an active cultural venue. The primary challenge in the contemporary digital landscape is the insufficient integration of technology into the museum experience. Despite the global momentum of the Fourth Industrial Revolution, characterized by rapid advancements in digital technologies and artificial intelligence, Museum Langkat remains predominantly dependent on traditional exhibition methods. The digitization of archives and collections is insufficient, constraining their effectiveness for research and educational applications. Financial constraints intensify these challenges, hindering the museum's development and revitalization efforts.

An interactive website can function as an essential instrument for broadening audience reach, facilitating global communication, and promoting cultural exchange (Giannini & Bowen, 2022). Interactive virtual and hybrid exhibition concepts have demonstrated efficacy in enhancing visitor engagement (Pietroni, 2019). The

optimization of tourism potential via digital marketing strategies, including the use of social media platforms to promote tour packages and share information, can enhance the museum's visibility and attractiveness (Giannini & Bowen, 2023). Museum Langkat must implement a comprehensive digital strategy to enhance its engagement with younger and geographically diverse audiences while reinforcing its status as a cultural tourism destination. The integration of digital technology and the enhancement of marketing strategies can increase the museum's appeal, broaden its audience, and improve its effectiveness in cultural preservation and education.

3.1.5 SWOT Analysis: Strategic Assessment of the Museum Langkat

To provide a structured understanding of the museum's internal capabilities and external environment, a SWOT analysis was conducted. This analysis helps identify the strengths, weaknesses, opportunities, and threats relevant to revitalizing the Langkat Museum.

Table 2. SWOT of Museum Langkat

No	Strengths	Weakness	Opportunities	Threats
1.	Robust structure despite being over 100 years old	Altered dome design that reduces architectural authenticity	Eligible for revitalization and conservation grants	Weathering and decay due to aging
2.	Renaissance-style architecture with octagonal layout and classical elements	Reduced ventilation due to clerestory windows being replaced	Integration of modern technology (e.g., LED lighting, AR)	Natural disasters such as flooding
3.	Strategic central location in Tanjung Pura	Limited space for collection display	Collaboration with academic institutions	Limited funding for maintenance and renovation
4.	Adapted to tropical climate with surrounding verandas	Lack of modern visitor technology (lighting, sound)	Optimization of unused spaces for exhibitions or reading rooms	Low public awareness about heritage value
5.	Diverse functional spaces that enhance visitor experience	Deteriorating roof and floor conditions	Integration with local heritage tourism routes	Urban development threatening historical integrity
6.	Strong historical value as former Sultan's Council Hall	Lack of architectural and historical documentation	Interactive signage with QR codes and narratives	Vandalism or damage due to lack of security
7.	Iconic architectural features like the dome	Underutilized small rooms used as storage	Enhanced environmental controls (humidity, temperature)	Competition with other historical attractions
8.	Continued function through history with preserved architecture	Limited accessibility for people with disabilities	Use of eco-friendly materials in restoration	Risk of inappropriate functional repurposing
9.	Grand octagonal main hall with well-composed interior	Inconsistent window and door replacements	Community engagement in conservation programs	Air pollution and heavy vehicle vibration affecting structure
10.	Classical decorative details (arches, trims)	Few resting areas for visitors	Hosting temporary exhibitions on Langkat history	Regulatory challenges in heritage conservation
11.	Blends Renaissance and Malay architectural elements	Conventional, non-interactive exhibition displays	Development of outdoor cultural space	Lack of skilled conservation professionals in the region
12.	Unique design compared to other museums in North Sumatra	No dedicated educational or training rooms	Collaboration with architects and interior designers	Disinterest from younger generations without digital adaptation
13.	Potential for multipurpose use: exhibitions, research, workshops	Weak governance or unclear management roles	Hosting cultural events and public discussions	Mismanagement or delays due to bureaucratic issues
14.	Strong cultural identity and community sentiment	Inadequate staffing and conservation expertise	Development of a hybrid museum model	Limited support from cultural institutions or policy enforcement

No	Strengths	Weakness	Opportunities	Threats
			combining digital and physical content	

3.2 Hybrid Museum Model: A Strategic Opportunity
3.2.1   Definition and Global Relevance

The concept of the hybrid museum emerges as a contemporary response to the evolving expectations of museum audiences in the digital era. A hybrid museum integrates physical experiences with digital technologies to enhance visitor engagement and foster community involvement. Through the use of tools such as virtual reality (VR), augmented reality (AR), and interactive digital platforms, hybrid museums create immersive and personalized experiences that transcend the limitations of traditional exhibitions (Chai-Arayalert et al., 2025). This approach is demonstrated by initiatives such as the Smithsonian Institution's virtual exhibitions and the interactive content of the Ullen Sentalu Museum in Yogyakarta, Indonesia, which combines Javanese traditional storytelling with natural ambiance and mixed architectural features. Hybrid museums provide dynamic spaces that stimulate exploration and learning by mixing tangible heritage with digital overlays such as projection mapping and MadMapper.

Interactive visualization and gamification are central features of the hybrid museum model, significantly increasing visitor satisfaction and participation. For instance, personalized and social experiences may involve digital pinboard platforms (e.g., Miro), where visitors can leave messages and photos during or after their visit. In collaboration with local communities, these initiatives can include digital vouchers redeemable at nearby souvenir entrepreneurs, thereby contributing to the local creative economy. Integration with technologies such as GrabGifts, ShopeePay, or QRIS barcodes could further streamline this process, allowing visitors to shop at local markets using e-vouchers. Notably, the hybrid museum model enables broader audience reach by offering virtual tours and online accessibility, a feature that proved essential during the COVID-19 pandemic (Sánchez-Amboage et al., 2023). This accessibility expands the museum's cultural impact and ensures sustained public relevance in a post-pandemic context. Nurcahyanti, Dzikrullah Salman Mohammadi Saragih, and Arty (2024) define social media as a digital platform for exchanging information. Visitors who contribute images to social media present a variety of recordings and replies, including job remediation. Where the desire to visit is transmitted through encouragement in documents. Even Instagram hashtags can establish virtual archives (Bruhn, 2017). However, realizing meaningful hybrid experiences requires effective collaboration among curators, designers, and technology experts. These interdisciplinary efforts are crucial to ensure that digital content complements physical exhibitions in a scientifically accurate and engaging manner (Pietroni, 2019). In conclusion, the hybrid museum represents a significant evolution in the way cultural institutions engage with their audiences. By integrating digital and physical elements, hybrid museums offer personalized, interactive, and accessible experiences that enhance both learning and enjoyment. This model not only attracts a wider and more diverse audience but also supports the museum's mission of education and cultural preservation in a rapidly changing world.

3.2.2   Localizing the Hybrid Museum Model in Langkat

Given the global significance of hybrid museums, it is essential to examine the adaptation of this model to the unique sociocultural and institutional context of Langkat. Langkat, characterized by its historical narratives and challenges related to infrastructure, resources, and public awareness, significantly benefits from a hybrid approach that integrates digital innovation with traditional museum functions.

The localization of the hybrid museum model in Langkat necessitates the integration of digital and physical components to tackle spatial, institutional, and community challenges. This method encompasses the digitization of collections, provision of virtual tours, establishment of adaptable exhibition spaces, and initiation of educational programs. This document presents a synthesis of research findings pertinent to these components. At the conclusion of the tour, visitors are encouraged to scan a QR code that directs them to a digital wall, which functions as an interactive and sustainable substitute for conventional message boards, serving as a repository for collective memory and feedback. Museums can enhance visitor experience and foster social engagement by implementing indirect promotional strategies, such as inviting visitors to share photos or narratives using the hashtag #MuseumDiHatiku associated with Indonesia's Museum.

Digitization and Cataloging as a Strategic Response to Spatial and Environmental Constraints

Digital collections are integral to long-term preservation and access, guaranteeing their authenticity, accessibility, and sustained usability over time (Guidelines for the Selection of Digital Heritage for Long Term Preservation, 2016). The digitization and cataloging of museum collections function as a strategic response to spatial constraints. Due to the museum's constrained exhibition and storage capacity, especially considering the increasing volume of artifacts, digitization presents a viable method to enhance access without necessitating physical enlargement. This strategy is particularly important given the museum's geographical susceptibility to flooding, attributed to its location near a river and its historical experiences with substantial floods. In addition to spatial efficiency, digitization provides numerous opportunities.

Museums and archival collections have historically served to preserve, research, educate, and exhibit. Digitization of collections enhances public accessibility, allowing a broader spectrum of users, including independent researchers and non-public repositories, to interact with and benefit from these resources. Digital cataloging systems enhance inventory management efficiency by enabling improved tracking, cross-referencing, and interpretation of collections with increased accuracy. The shift to digital enhances institutional visibility and promotes the global dissemination of knowledge, as internet access overcomes geographical limitations. This broadens audience reach and improves accessibility for various user groups. Digitization processes must account for the delicate nature of numerous cultural artifacts, necessitating stringent handling protocols. Objects are often scanned or photographed only once to avoid deterioration caused by repeated exposure to light or handling (Horan, 2013). Capacity-building initiatives, including staff training in digitization techniques and conservation-sensitive imaging, are essential for maintaining the integrity and sustainability of the digital archive.

Virtual Tour

The advancement of Virtual Reality (VR) technology has significantly transformed the ways in which cultural heritage can be experienced, allowing for the simulation of real-world environments with increasing levels of realism and immersion (Loaiza Carvajal et al., 2020). Since the 1990s, virtual museums have continued to evolve as an alternative and complementary mode of cultural engagement, offering diverse audiences new avenues for exploring historical narratives beyond physical constraints.

Designing a virtual museum, however, demands more than digitization; it requires a comprehensive spatial and architectural approach. Effective virtual environments must still consider principles of layout design, interpretive signage, circulation flows, and even the simulation of museum furniture and lighting to create an intuitive and meaningful user experience. One of the key advantages of virtual museums lies in their capacity to facilitate close, detailed interaction with artifacts—surpassing the physical and regulatory limitations often imposed in conventional settings (Bruhn, 2017). Additionally, virtual tours offer boundless spatial and temporal accessibility, allowing audiences to explore exhibitions at their own pace and from any location.

This becomes particularly relevant in the context of the Langkat Museum, which currently suffers from limited physical accessibility due to inadequate supporting infrastructure, such as pedestrian pathways and signage. A virtual museum model thus presents a strategic solution to these barriers, enabling broader engagement with Langkat's cultural heritage. Through immersive digital reconstructions, users can explore significant landmarks associated with the former Sultanate of Langkat—including the Azizi Mosque, peranakan shop houses, the historic post office, and architectural remnants such as stone columns and palace fragments—regardless of their geographic location.

A comparable precedent is found in the transformation of ArtJog, Indonesia's premier contemporary art festival. Amid the COVID-19 pandemic, ArtJog launched its first entirely virtual edition in 2021 to prevent viral transmission. While approximately 75% of visitors reported reduced enjoyment compared to physical attendance, the virtual format successfully reached a broader and more diverse audience, including international participants across Southeast Asia (Gusriza, 2022). This example highlights the potential of virtual platforms not only as temporary substitutes but as inclusive extensions of cultural institutions. In the case of Langkat, a virtual tour component could serve as both a transitional and permanent feature of the hybrid museum model, expanding the reach and relevance of local heritage in the digital era.

Heritage Tour Program; Launching School and Cultural Programs

Museums offer an educational role with a supportive environment for collective cultural understanding and interaction. Gamification encourages interactive, collaborative, engaging learning. Gamification especially for young audiences provides a role to control interactions. Museums become public education laboratories for students to explore. Based on the theory of cognitive development, it is believed that by collaborating, early childhood experiences an increase in learning. Providing tools for gamification techniques combined with augmented reality. Treasure hunt games by exploring archaeological areas. Finally, the implementation of school and cultural programs fosters deeper community involvement and intergenerational transmission of local knowledge. Collaborations with schools, artists, and cultural groups can take the form of co-created exhibitions, heritage storytelling sessions, or digital art installations. Such initiatives promote cultural pride while also embedding the museum within the social fabric of the community.

In sum, localizing the hybrid museum model in Langkat involves not merely adopting digital tools, but embedding them within culturally grounded and socially inclusive strategies. By doing so, the museum can serve as both a heritage preservation center and a participatory platform that reflects and revitalizes the identity of Langkat. The hybrid museum model integrates digital technologies with traditional museum functions to enhance preservation, accessibility, and engagement. This approach adapts to local contexts, combining physical and digital spaces to create flexible, interactive environments (Psychogyios, 2011). For instance, mixed reality technologies can provide immersive experiences, promoting cultural heritage preservation and global recognition, as demonstrated by the Ulos Heritage museum project in Indonesia (Ciolfi & Bannon, 2007). The design of hybrid museum spaces should consider geographical notions of space and place, incorporating local knowledge and resources to create meaningful interactions between visitors and augmented physical spaces (Ciolfi & Bannon, 2007). This aligns with the concept of appropriate museology, which advocates for adapting museum practices to local cultural contexts and socioeconomic conditions, fostering community involvement and utilizing indigenous museological traditions where suitable (Kreps, 2008). These approaches collectively support the development of culturally grounded and socially inclusive museum strategies.

3.3 Reimagining the Langkat Museum as a Heritage Center
3.3.1 Building Restoration and Revitalization

The conceptual design of the Hybrid Museum and Heritage Center in Tanjung Pura integrates architectural conservation principles with contemporary museography, storytelling, and spatial choreography to foster an immersive cultural experience. The architecture narrates not only the physical past of the Langkat Sultanate but also repositions its cultural memory within a modern, participatory, and forward-looking framework.

Lobby and Reception Area: The Transitional Threshold

The lobby functions as a transitional threshold between the public realm and the curated narrative of Langkat's heritage. In addition to housing ticketing and visitor information counters, the area is designed to accommodate a waiting space integrated with large-scale graphic panels. These panels present cartographic narratives tracing the territorial evolution of Langkat Regency from its earliest formations to the present day. By situating visitors within a spatial-historical context upon entry, the lobby fosters an immediate connection between place, identity, and memory.

Central Hall and Throne Installation

Upon entering the central octagonal hall, visitors encounter the symbolic centerpiece of the revitalized museum: a reinterpretation of the Sultan's throne. The original throne—measuring approximately 5.08 x 2.73 meters—had previously overwhelmed the spatial dynamics of the hall. In response, the throne is reconstructed and spatially reconfigured based on archival references, including royal wedding photographs, to reflect ceremonial grandeur without compromising spatial fluidity. The installation features a central vitrine displaying mannequins dressed in traditional wedding attire, complemented by standing panels that communicate the architectural and cultural significance of the throne. Seating elements are integrated along the perimeter to provide moments of rest and reflection.

Thematic Narrative Galleries

A sequential exhibition layout organizes the museum into six thematic rooms, each articulating a distinct dimension of Langkat's cultural and historical trajectory. The design employs immersive strategies—soundscapes, lighting, and multimedia—to cultivate a multi-sensory environment that engages visitors both intellectually and emotionally.

**Integration of Public Spaces and Cultural Programs**

The revitalization concept extends beyond the building envelope to incorporate the museum's landscape and immediate surroundings. Public amenities such as shaded pathways, seating areas, and green spaces are introduced to improve accessibility and user comfort. Outdoor spaces will also function as venues for performances, festivals, and educational programs, thus reinforcing the museum's role as an active cultural node. These interventions aim to transform the museum from a static repository of artifacts into a vibrant civic space embedded in the everyday cultural life of Tanjung Pura.

3.3.2   Research Gaps and Theoritical Contribution
Restoration should follow ICOMOS guidelines, emphasizing architectural conservation and functional redesign. Modular interiors can accommodate exhibitions, workshops, and events.

The potential of adaptive reuse in transforming Museum Langkat into a dynamic cultural hub.

Langkat Museum has great potential as a cultural hub, where its location is in the heart of the city of Tanjung Pura. The area has historical value where the center of the Langkat Sultanate stands. The Langkat Sultanate is the largest and oldest kingdom in the context of the Malay Kingdom on the east coast of Sumatra whose glory was obtained from the results of tobacco and rubber plantations. And currently it is also the center of the palm oil industry.

3.3.3   Research Gaps and Theoritical Contribution
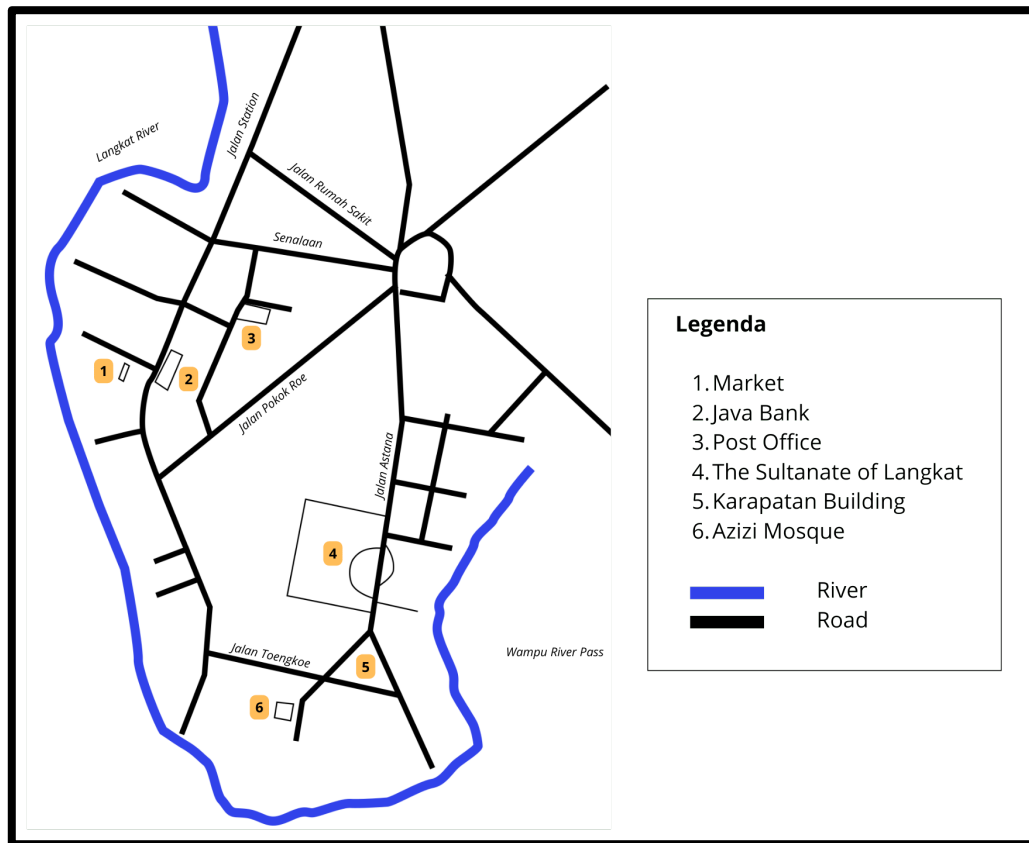
Figure 3. Potential Map of Cultural Heritage Assets in Tanjung Pura

3.5 Revitalization Concept for the Museum Langkat

In the lobby area, in addition to being provided with a ticketing and information area, a waiting area is also added with several graphic information such as maps of Langkat district from the past to the present-to-present information about Langkat in the region in general.
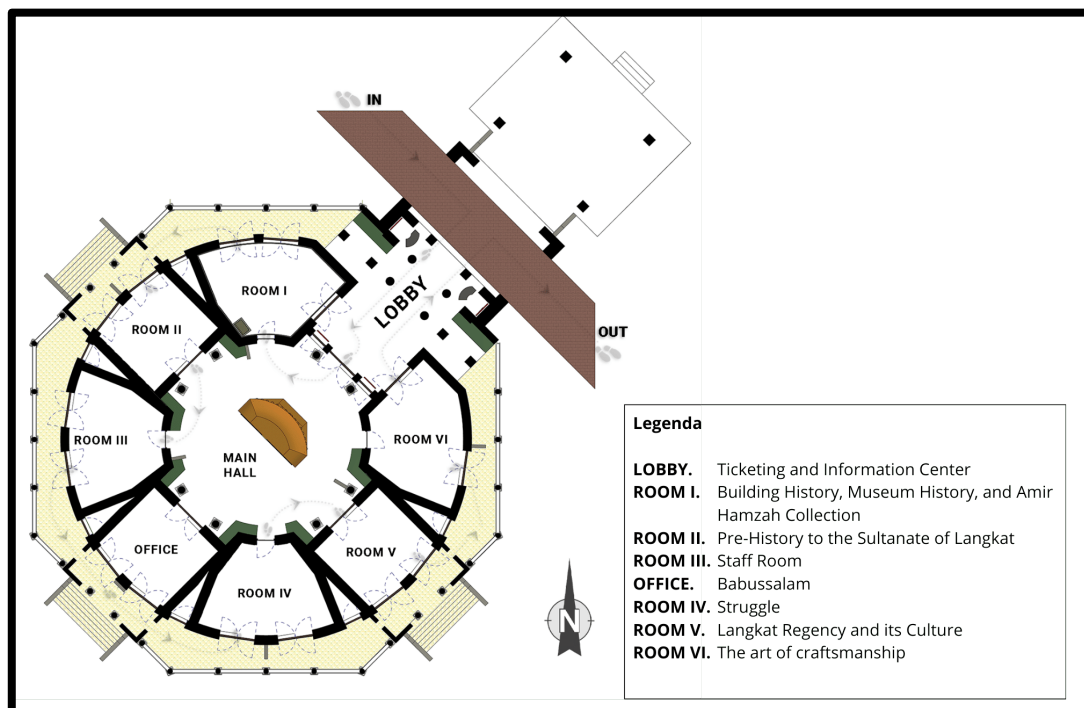
Figure 4. Floor Plan Design of Museum Langkat

a b
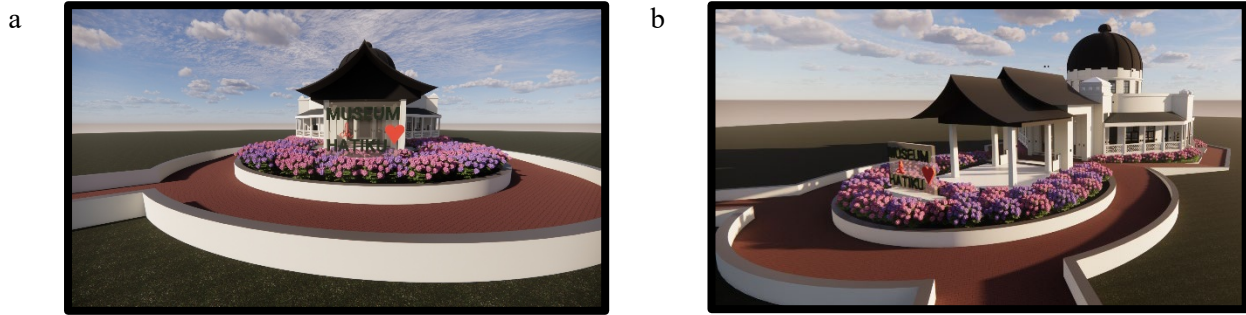
Figure 5. Exterior Design of Museum Langkat

a b

c d

Figure 6. (a) Ticketing; (b) Information; (c) Entrance; (d) Waiting Area

a b

Figure 7. (a) Hall and Singgahsana; (b) Signage Panel

a b

Figure 8. (a)(b)(c) Interior Design of Room I; (d) Vitrine Model on Amir Hamzah's Miniature House

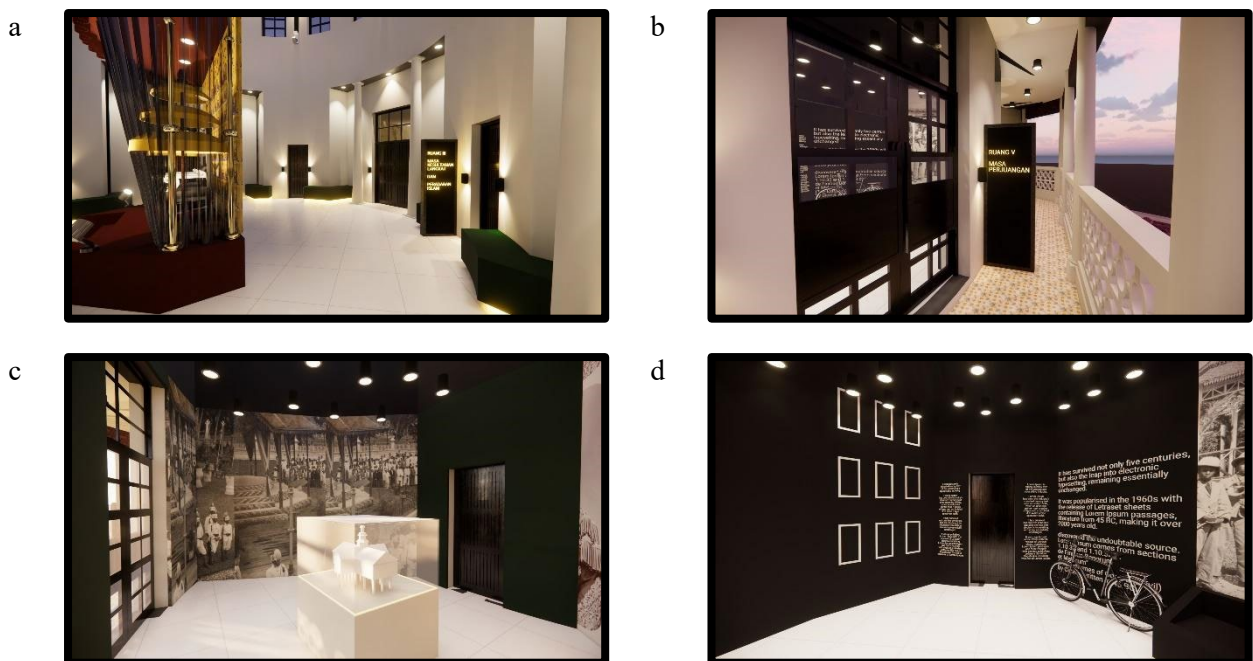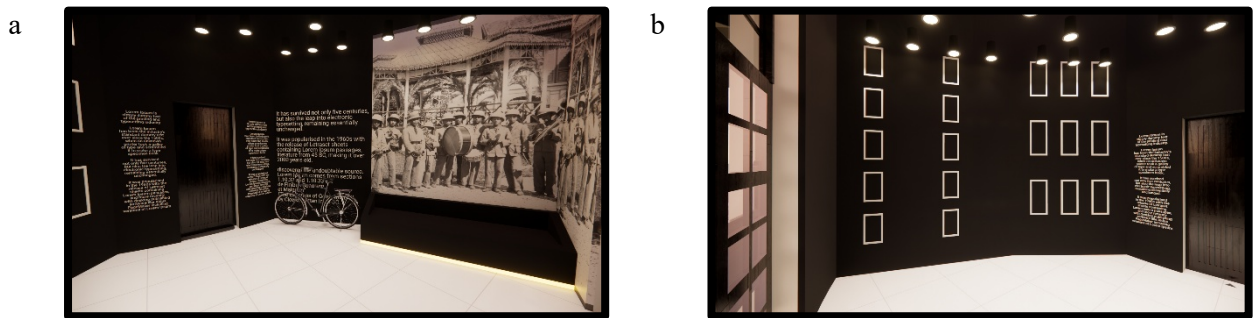**Figure 9**. (a) Museum Veranda (b)(c)(d) Interior Design of Room II

Figure 10. (a) Additional seating around the hall (b) Museum Veranda (c)(d) Interior Design of Room III

a
b

c
d

Figure 11. (a) Museum Veranda (b) (c)(d) Interior Design of Room IV

a
b

Figure 12. Interior Design of Room V

a
b

a
b

Figure 13. Interior Design of Room VI

4. Conclusion

The Langkat Museum occupies a significant position at the convergence of history, memory, and potential. The museum, situated in a former administrative building of the Langkat Sultanate and in proximity to other culturally significant sites like Masjid Azizi and the remnants of the Sultan's palace, holds considerable symbolic and historical significance. The present condition—characterized by physical deterioration, spatial constraints, and institutional obstacles—compromises its ability to operate as a significant cultural institution. This paper proposes a transformative vision for the Langkat Museum by developing a hybrid museum and cultural heritage center. Integrating physical restoration with digital innovation, while aligning historical preservation with community involvement, allows the museum to transform into a dynamic space that functions as both a repository of Langkat's history and a vibrant center for cultural continuity, education, and engagement.

The hybrid model provides a sustainable and inclusive framework that responds to local requirements while aligning with global museum trends. The museum is enabled to: - Address spatial and infrastructural constraints, - Digitize and broaden access to its collections, - Integrate fragmented historical sites into a cohesive heritage experience, and - Promote local identity and community pride through participatory programming. This model addresses significant research and practice deficiencies in Indonesian museology and heritage management, especially in underrepresented areas like North Sumatra. The statement advocates for increased national and academic focus on regional museums as essential venues for decentralized cultural development. The study recommends the subsequent steps are advised to achieve this vision as follows:

- Perform a thorough structural evaluation of the museum building and formulate a restoration strategy in partnership with heritage architects.
- Initiate a digitization project for the museum's collection, emphasizing preservation and accessibility.
- Form collaborations with universities, non-governmental organizations, and cultural institutions to leverage technical expertise and mobilize resources.
- Create community-oriented programs that engage local knowledge holders, educational institutions, and artists in the development of content and events.
- Promote the incorporation of the museum within local tourism and education frameworks to secure sustained institutional backing.

Implementing these recommendations will enable the Langkat Museum to reestablish itself as a key element of regional identity, serving as a venue where historical legacies intersect with future creative opportunities.

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