

Research Article

Adaptive Reuse of Acehese Traditional Houses into Cafés: Sustainable Vernacular Conservation Strategies

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Abstract

The increasing number of cafés in Banda Aceh reflects a continuing transformation in spatial needs, particularly in the demand for spaces that facilitate both social interaction and economic activity. A significant development within this shift is the adaptive reuse of traditional Acehese houses (Rumoh Aceh) as cafés. At the same time, many of these heritage structures face abandonment due to societal preference for modern housing and high maintenance costs. This duality raises important questions about how adaptive reuse can preserve the cultural and architectural integrity of these traditional dwellings. This study examines five selected Rumoh Aceh in Banda Aceh that have been transformed into cafés, assessing their contribution to the sustainable conservation of vernacular heritage. The research employs a qualitative method with diachronic–synchronic morphological analysis to examine historical transformations and assess current spatial conditions. Data were collected through in-depth interviews, field observations, and visual documentation, and were analyzed using adaptive reuse typologies and the shearing layers framework. The study aims to identify adaptive reuse strategies that support functional transformation while preserving cultural identity. These strategies include maintaining spatial hierarchies, applying context-sensitive interventions, and conserving essential architectural components such as timber structures, layouts, and orientation. The findings indicate that structural elements such as still foundations, timber posts, and roof frames are generally preserved, while adjustments focus on services, spatial arrangements, and furnishings. Despite varying degrees of intervention, adaptive reuse has extended the life cycle of Rumoh Aceh and ensured their relevance in the contemporary urban context.

Keywords: Adaptive reuse; Acehese traditional house; Sustainable conservation; Conservation Strategies; Vernacular architecture.

Introduction

The development of urban areas in Banda Aceh reflects a growing demand for public spaces that integrate social and economic functions. Cafés have expanded rapidly as both commercial and

Article History

Received: 18 March, 2026; Revised: 2 June, 2026;

Accepted: 5 June, 2026; Published: 11 June 2026



social spaces, increasing in number from 270 units in 2022 to 333 units in 2024, according to data from the Aceh Tourism and Culture Office. This trend accelerated in the post-COVID-19 period, when cafés emerged as alternative workspaces for remote workers. Moreover, coffee culture has long been deeply rooted in Aceh, where coffee houses traditionally function as important social spaces within everyday community life.

This phenomenon has driven the adaptation of residential houses into café, including traditional Acehnese houses (Rumoh Aceh), which hold significant architectural, historical, and cultural value. Adaptive reuse is defined as any work and intervention in a building to change its capacity, function, or performance to adjust, reuse or upgrade a building to suit new conditions and requirements [1,2]. It is also described as the process of repurposing an existing building into a new function [3,4]. Furthermore, adaptive reuse is recognised as a form of sustainable urban regeneration, as it extends the building's life and avoids demolition waste, encourages reuses of the embodied energy and also provides significant social and economic benefits to the society [5,6].

At the same time, Rumoh Aceh embody cultural significance, traditional construction methods, and spatial patterns that represent local identity. Pressures of modernization and high maintenance costs have placed many Rumoh Aceh at risk of neglect or demolition. Adaptive reuse emerges as a strategy that integrates contemporary functional needs with architectural preservation, ensuring that historic structures remain part of the urban landscape. The application of adaptive reuse to traditional Acehnese houses aligns with Law of the Republic of Indonesia No. 11 of 2010 on Cultural Heritage, which emphasizes the protection, development, and utilization of cultural heritage [7]. Challenges in this context include the preservation of architectural elements, adjustment to new functions, and community acceptance.

Despite the increasing scholarly interest in adaptive reuse as a sustainable strategy, research specifically examining the transformation of vernacular stilt houses in Southeast Asia remains limited. Existing studies on Rumoh Aceh primarily address cultural meaning, construction techniques, and preservation challenges, yet few provide systematic assessments of how these houses are spatially reconfigured when adapted for commercial purposes.

This study analyzes the practice of adaptive reuse of Rumoh Aceh into café in Banda Aceh, assessing its implications for vernacular conservation, and formulating design and policy recommendations to support sustainable preservation. The findings of this research are expected to strengthen the discourse on vernacular heritage conservation, provide guidance for architects and policymakers in implementing adaptive reuse, and raise community awareness regarding the cultural significance of Rumoh Aceh.

Beyond documenting case studies, this research proposes a transferable evaluative framework that integrates adaptive reuse typologies with shearing layers analysis to assess the degree of conservation and intervention in vernacular architecture. By identifying a gradient of authenticity retention across cases, the study advances adaptive reuse discourse from descriptive analysis toward a structured conservation-oriented assessment model applicable to similar vernacular contexts in Southeast Asia.

Materials and Methods

Literature Review

This literature review formulates a conceptual framework that positions adaptive reuse as a dual strategy for sustainable transformation and architectural preservation. Brooker and Stone distinguish three categories of adaptation: intervention, which involves minimal change to safeguard original character; insertion, which introduces new elements that contrast yet remain

in dialogue with the old; and installation, which focuses on reorganizing interior spaces while retaining the primary structural framework [8]. Bollack advances the discussion by identifying six typologies of old–new interaction, including insertions, parasites, wraps, weavings, and transplanting, emphasizing not only operational techniques but also the conceptual dialogue between heritage and contemporary demands [9]. Brand further complements these perspectives through the notion of shearing layers, highlighting that buildings consist of layers ranging from the most permanent structural components to the most flexible elements such as spatial divisions and furniture [10]. This concept provides a means of mapping the depth of intervention and its potential to alter architectural identity.

Taken collectively, these frameworks provide a comprehensive lens for examining the transformation of vernacular architecture such as the Rumoh Aceh. This traditional stilted timber house is constructed without nails, using wooden posts placed on stone bases, mortised beams, and removable floorboards that enhance flexibility and adaptability [11]. The structural system, which relies on wooden pegs and joinery rather than rigid metal connections, enables the building to respond adaptively to environmental forces and seismic disturbances. In addition, the elevated stilt configuration and permeable envelope support natural ventilation and passive cooling strategies suited to Aceh's warm-humid tropical climate [12]. Its spatial hierarchy, consisting of *seuramoe keue* as a semi-public front veranda, *seuramoe tunggai* as the main chamber with the *rumoh inong* and *anjong*, and *seuramoe likot* as a more private rear section, reflects the social order, cultural norms, and gender roles embedded within Acehese tradition [11-13]. Historically, Rumoh Aceh functioned as residences for nobility, clergy, and community leaders, but over time their functions and spatial use have adapted to meet modern living and societal needs [13,14]. Preservation of Rumoh Aceh is therefore not limited to architectural maintenance but also involves safeguarding economic, social, and cultural values that reinforce community identity and heritage continuity [14,15].

Previous studies on the adaptive reuse of houses and historic buildings [16-18] reinforce the view that functional transformation can simultaneously serve as a sustainable conservation strategy. These works illustrate how the reinterpretation of traditional spaces through adaptive reuse not only preserves material authenticity but also ensures cultural continuity within modern contexts. Accordingly, the theoretical foundation outlined here provides the basis for evaluating how adaptive reuse can be applied to the Rumoh Aceh, balancing the integration of new functions with the preservation of architectural heritage in the local Acehese context.

Methods

The research method is qualitative and descriptive, employing a diachronic–synchronic morphological approach to architecture. The diachronic–synchronic morphological approach is adopted to analyze both the temporal evolution of each house and their present spatial configuration. The diachronic component allows the study to trace historical transformations across relocations, material replacements, and functional shifts, while the synchronic analysis captures the current spatial organization and intervention layers. This dual lens provides a more holistic understanding of how adaptive reuse reshapes vernacular houses over time.

The sample criteria were established rigorously to ensure the architectural and historical relevance of the research objects (**Figure 1**). The criteria included: (a) the building was a traditional Acehese house characterized by a timber stilt-house system and identifiable local architectural features; (b) the building had undergone functional transformation into a café and was actively operating as a commercial space; and (c) the building retained original architectural or structural elements that enabled analysis of spatial modification, adaptation processes, and the degree of physical intervention within the adaptive reuse practice.

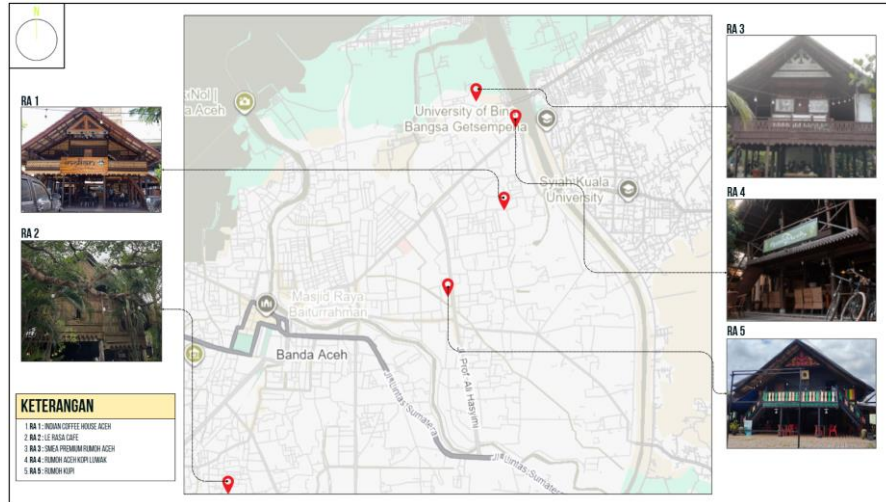


Figure 1. Study site (Source: Personal Documentation).

Data were collected through semi-structured interviews with owners, managers, and workers, supported by field observations, visual documentation, and literature review. The overall analytical procedure is presented in **Figure 2**. The analytical framework integrates adaptive reuse typologies proposed by Brooker and Stone (2004) and Bollack (2013) with Brand’s (1994) shearing layers concept. Adaptive reuse typologies were used to classify intervention strategies, while shearing layers analysis identified changes across the site, structure, skin, services, space plan, and stuff layers.

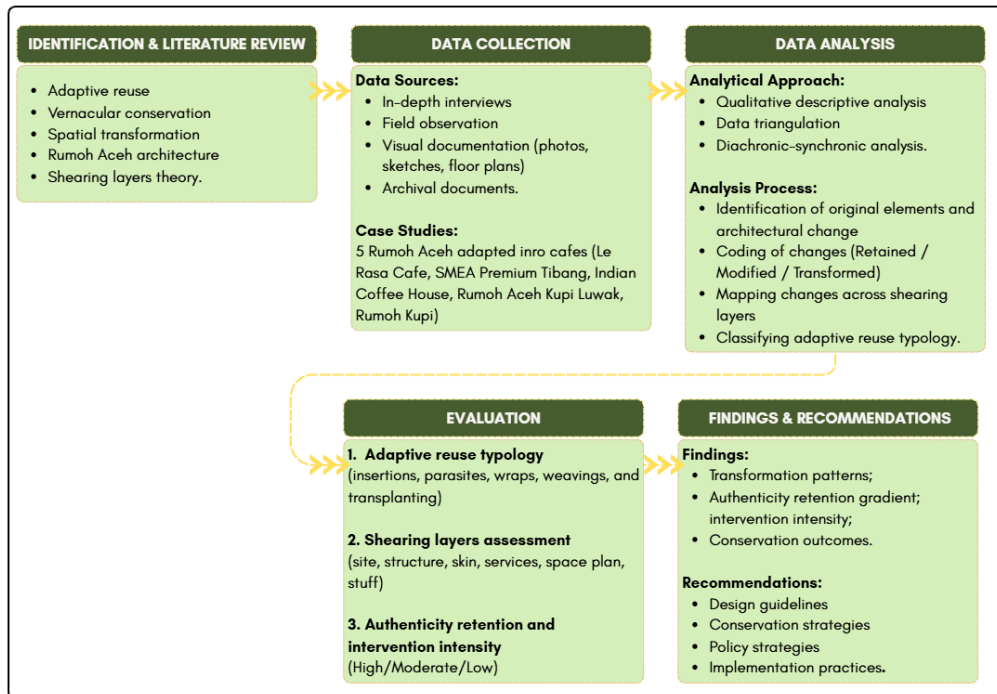


Figure 2. Research Methods Flow.

Architectural changes were coded into three categories: retained, modified, and transformed. Each case was then classified according to its dominant adaptive reuse typology and mapped using the shearing layers framework. Authenticity retention was assessed based on the continuity of structural systems, spatial hierarchy, vernacular architectural features, and material characteristics. To ensure reliability, source triangulation was applied by comparing interview findings, field observations, photographs, and archival documentation. Finally, cross-case comparison was conducted to identify recurring patterns of transformation, intervention intensity, and conservation outcomes, forming the basis for the proposed evaluative framework for sustainable vernacular conservation.

Results

Description of Case Studies and Transformations

This study examines five Rumoh Aceh that have been repurposed into cafés, namely Le Rasa Cafe, SMEA Premium Tibang, Indian Coffee House, Rumoh Aceh KUPI Luwak, and Rumoh KUPI. These cases were selected because they were originally residential houses that have undergone transformation into cafés. The analysis focuses on the adaptive strategies applied, particularly in relation to structural conservation, the addition of new elements, and spatial functional changes.

Indian Coffee House, located on Jl. Jeumpa, Lambhuk, Banda Aceh City, represents the fusion of two *Rumoh Aceh* units, each approximately two centuries old, relocated from Pidie Regency, Sigli City. The original front facades have been preserved to maintain the traditional identity, while a connecting structure was introduced to unify the two houses into a larger single space as illustrated in **Figure 3**. The upper floor is used as a communal seating area, and several original elements such as doors and carvings have been repurposed as wall ornaments in the kitchen. This case illustrates how authentic components can be preserved and simultaneously reinterpreted through integration with contemporary functions.

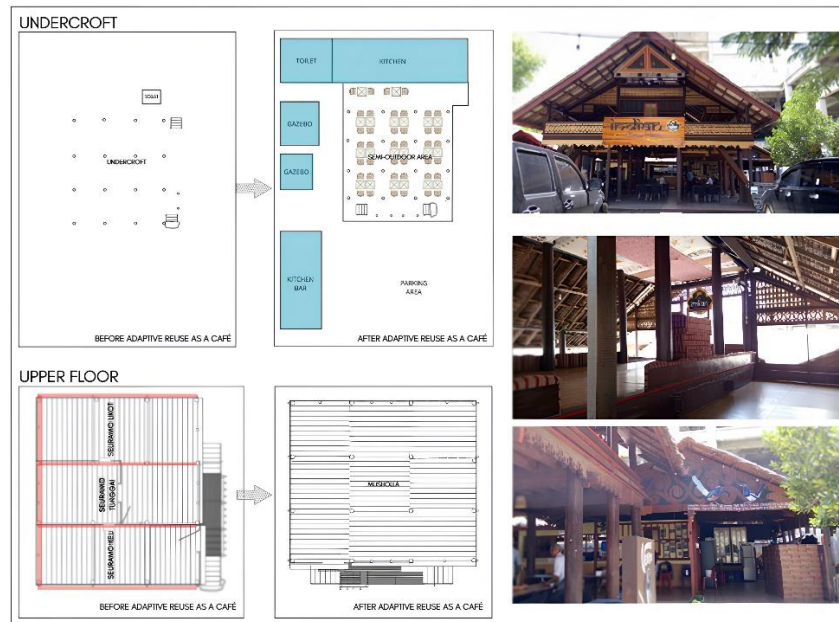


Figure 3. Indian Coffee House.

Le Rasa Cafe, situated in Ateuk Munjeng, Banda Aceh City exemplifies a Rumoh Aceh relocated from Garot, Pidie Regency. The timber stilt house retains its original structural features such as tameh, timber posts, and connecting beams. The undercroft, once an empty space, has been adapted as the main café area with seating and a barista counter, while the front veranda continues to serve as a semi-public reception space as presented in **Figure 4**. The traditional triangular roof remains intact, providing protection against rain and direct sunlight. Although some elements such as the tulak angen are no longer present, the building continues to express its vernacular character while accommodating modern commercial needs.



Figure 4. Le Rasa Cafe.

SMEA Premium Tibang is located in Tibang Village, Syiah Kuala District, Banda Aceh City. The building originated from Teupin Raya, Pidie Regency, and was relocated between 2016 and 2017. The reconstruction process, carried out by specialized craftsmen, lasted approximately one month. Initially, the house served as a family resting place with private rooms on the upper floor. Over time, additional functions were introduced, including a prayer room, media space, and garden, as shown in **Figure 5**. Eventually, it developed into a café in response to increasing social needs. This transformation demonstrates how a traditional house can evolve from a private domestic setting into a public social space, while still maintaining its wooden frame reinforced with anti-termite treatment and restored carvings.

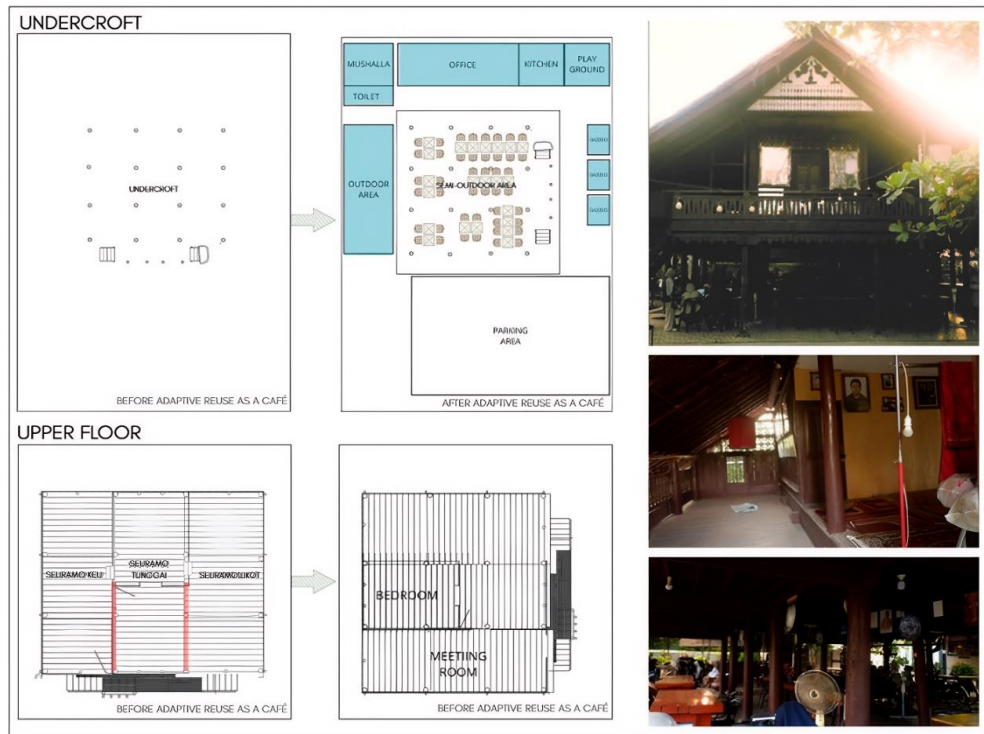


Figure 5. SMEA Premium Tibang.

Rumoh Aceh Kupi Luwak, located in Jeulingke, was relocated from Pidie Regency, Sigli City and is estimated to be over a century old. The house was acquired as a gesture of appreciation toward traditional Acehnese architecture, which is increasingly abandoned due to high maintenance costs. During relocation, several components such as doors and windows were damaged and later replaced, though the main structural framework remained intact. The roof, originally thatched with palm leaves, was replaced with corrugated metal sheets after the 2004 tsunami, with plans to restore the original material in the future. Additional facilities, such as a VIP room and supporting structures, were constructed adjacent to the house, creating a visual contrast with the original form but enhancing its operational functionality as seen in **Figure 6**. The house has since become a cultural attraction, drawing visitors from both local and international communities.

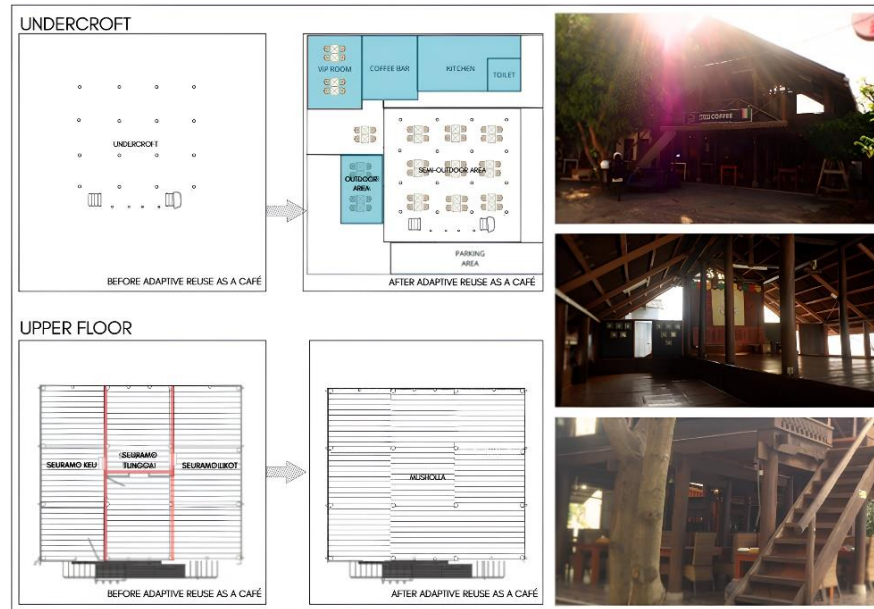


Figure 6. Rumoh Aceh KUPI Luwak.

Rumoh KUPI in Pineung, Syiah Kuala District, Banda Aceh City, is the only case that remains on its original site. Estimated to be sixty to seventy years old, the house was initially abandoned but later preserved and restored, with nearly 80 percent of its components reconstructed. The remaining original features include the main timber posts and part of the roof frame, while other elements such as the staircase and facade were rebuilt. The undercroft was adapted to include staff facilities, a kitchen, and restrooms, complemented by a separate covered outdoor dining area, as seen in **Figure 7**. The upper floor continues to function as a prayer space, highlighting the continuity of religious values within the adaptation despite the reduction of authentic material.

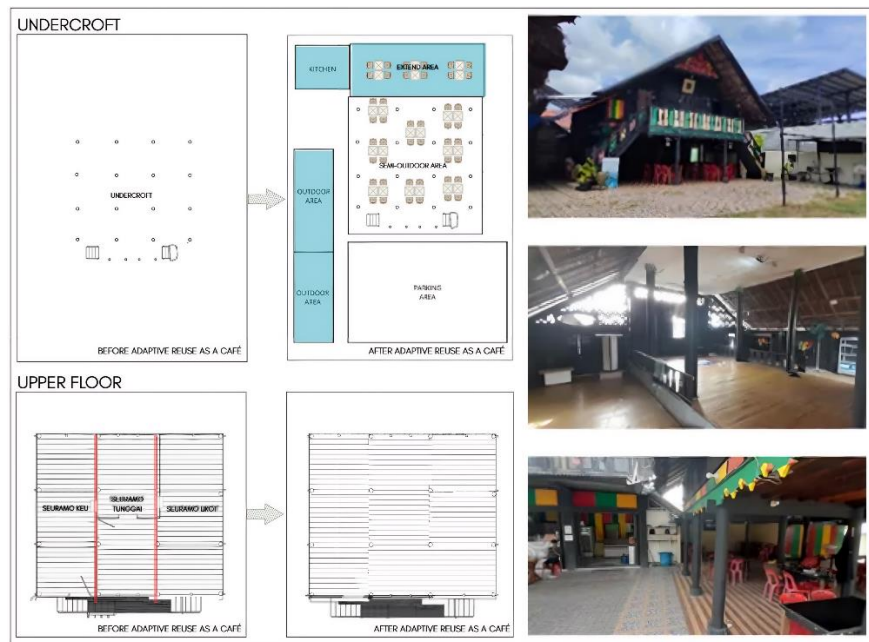


Figure 7. Rumoh KUPI.

This example, along with the other cases, emphasizes how traditional Acehese houses can be adapted to serve new functions while preserving their symbolic architectural identity. When viewed comparatively, the cases demonstrate a clear gradient of authenticity retention. Indian Coffee House and Le Rasa Cafe maintain a strong visual and structural identity, with interventions concentrated in non-structural layers. SMEA Premium Tibang reflects hybrid use, balancing family heritage with commercial adaptation. Meanwhile, Rumoh Aceh Kupa Luwak and Rumoh Kupa show more extensive reconstruction and juxtaposed additions, indicating a pragmatic orientation where operational needs outweigh strict conservation principles. This gradient highlights how adaptive reuse practices navigate the tension between cultural continuity and economic function.

Across all five cases, interventions were concentrated primarily in the services and space plan layers, while structural components remained comparatively stable. This pattern suggests that adaptive reuse in Rumoh Aceh tends to prioritize functional adaptation through reversible or semi-reversible modifications while preserving the structural framework that carries vernacular identity. Consequently, authenticity is maintained not through complete material preservation but through the continuity of spatial hierarchy and structural logic.

Adaptation Patterns and Adaptive Reuse Typologies






The five case studies demonstrate diverse adaptation patterns, yet generally reveal a tendency to preserve the core structure of the stilt house as a symbol of Acehese architectural identity. Fundamental elements such as the stilt foundation with *tameh*, timber posts, and the distinctive triangular roof are consistently retained as visual and technical frameworks considered irreplaceable. These findings reinforce the view of Plevoets and Van Cleempoel that adaptive reuse in vernacular buildings typically safeguards the structural core, while modifications are more often made to functional layers such as spatial divisions, services, and interiors [19]. Thus, the façade and external structure maintain cultural continuity, while interior spaces and extensions become areas of negotiation between traditional needs and modern demands.

The motivations behind adaptation also strongly influence the nature of interventions. At Le Rasa Cafe and SMEA Premium Tibang, the background is closely linked to the preservation of family heritage houses. The adaptations pursued are not solely economic in orientation but also emphasize the continuity of kinship values. Spatial reconfiguration is carried out carefully, with the undercroft transformed into a café space while the prayer room and family areas remain intact. This reflects a strategy that balances conservation with commercialization. By contrast, Indian Coffee House, created through the merger of two Rumoh Aceh, represents not just an expansion of space but an effort to reinforce the role of the traditional house as a medium of architectural appreciation. Old elements are woven together with new ones, creating a space that is not only functional but also symbolic. Meanwhile, Rumoh Aceh Kupa Luwak and Rumoh Kupa adopt a more pragmatic approach. These houses are retained primarily at the structural level, but façades, ornaments, and timber details have been lost or replaced, alongside the addition of modern facilities to support café operations. As a result, visual and material authenticity is significantly reduced.

From the perspective of adaptive reuse typologies, variations in strategy are evident. Le Rasa Cafe and SMEA Premium Tibang apply the insertion strategy [8], embedding new functions in non-structural areas, particularly the undercroft and ancillary structures within the site. The traditional façade and stilt form remain intact, while secondary spaces are converted into public areas. Indian Coffee House illustrates Bollack's weaving strategy by merging two traditional houses into a single entity [9]. This is further enriched by a transplanting approach, where damaged ornaments are relocated and reused as decoration, producing an explicit dialogue between old and new. Rumoh Aceh Kupa Luwak aligns more closely with the parasites–

juxtaposition typology, adding a modern VIP room beside the original house. Here, material and architectural contrast is intentionally emphasized to reinforce a new identity as a café. Meanwhile, Rumoh Kupi demonstrates a more integrated parasites form, where staff areas, a kitchen, and an outdoor dining space are attached directly to the main house. This strengthens commercial functionality but diminishes the authenticity of the original material and form. The classification of the five case studies into these adaptive reuse typologies presented in **Table 1**.

Table 1. Adaptive Reuse Typologies of Rumoh Aceh Adapted into café.

| Case Study | Brooker & Stone Typology | Bollack Typology | Intervention Intensity | Description | |
|-----------------------|----------------------------|---------------------------|------------------------|---|---|
| Indian Coffee House | Installation and Insertion | Weaving and Transplanting | Moderate | Two traditional houses merged into a single structure; old doors and carvings reused as interior decoration. |  |
| Le Rasa Cafe | Insertion | Insertion | Low | The undercroft is transformed into the main café space, while the veranda remains a semi-public area. |  |
| SMEA Premium Tibang | Insertion | Insertion | Moderate | A family house adapted into a café through gradual reuse, with added functions such as a prayer room and media space. |  |
| Rumoh Aceh Kupi Luwak | Limited Insertion | Parasites–Juxtaposition | High | The stilt structure was preserved, while a modern VIP room was added adjacent to the original house. |  |
| Rumoh Kupi | Installation | Parasites | High | A largely reconstructed house where original posts remain; new service areas and an outdoor dining space were added. |  |

The diversity of these strategies highlights that adaptive reuse cannot be separated from its social, economic, and cultural contexts. Houses with strong family connections tend to be preserved more carefully, maintaining both their structural integrity and symbolic values, whereas those used primarily for business purposes are generally more open to pragmatic interventions. This underscores that adaptive reuse is not merely a technical conservation issue, but also an expression of value orientation. It reflects negotiated choices between preserving identity and pursuing functionality, and between maintaining authenticity and enabling

commercial opportunities. In the context of Banda Aceh, these adaptation patterns demonstrate how traditional houses can remain active components of the urban landscape, albeit with varying degrees of transformation.

Mapping Shearing Layers: Preserved and Intervened Elements

The analysis using Brand's framework of shearing layers provides a structured understanding of the extent of interventions carried out on each layer of the building [10]. The six layers: site, structure, skin, services, space plan, and stuff that receive different treatments across the five case studies. Overall, the adaptive patterns demonstrate that the structural core of the stilt house tends to be preserved, while the most significant changes occur in the layers of services, spatial planning, and furnishings. This pattern reflects the logic of adaptation, in which the most fundamental parts of architectural identity are safeguarded while the more flexible elements are modified to meet new functional requirements.

The site layer experienced the greatest intervention in the houses relocated from rural areas to urban Banda Aceh, as seen in Le Rasa Cafe, SMEA Premium Tibang, and Rumoh Aceh Kupi Luwak. This relocation brought changes not only to the physical context but also to the social meaning and identity of the houses. In contrast, Rumoh Kupi remains on its original site in Pineung, maintaining its continuity with the surrounding environment even though visual interventions on the façade have altered its traditional appearance.

The structure layer was consistently preserved across the cases. Wooden posts, beams, and the stilt configuration were maintained as the architectural core and essential technical elements. Le Rasa Cafe and SMEA Premium Tibang reinforced their structures with regular maintenance such as painting and termite protection. Indian Coffee House preserved the frameworks of two houses that were merged into one, while Rumoh Aceh Kupi Luwak maintained the basic stilt form. Rumoh Kupi also retained its main framework although most other components had been reconstructed.

The skin layer or the building envelope shows varying approaches. At Le Rasa Cafe and SMEA Premium Tibang, the main façades were preserved with minimal maintenance. Indian Coffee House emphasized the use of the old facades as a collective identity. Rumoh Aceh Kupi Luwak lost some of its original doors and windows, which reduced its visual authenticity even though the silhouette of the roof remained intact. Rumoh Kupi reconstructed its facade almost entirely with replicas, lowering the degree of authenticity despite retaining the general traditional form.

The services layer underwent the most extensive intervention in all cases. Modern electrical systems, lighting, fans, internet access, restrooms, and kitchens became standard requirements for café operations. SMEA Premium Tibang even added a two-story extension functioning as an office and meeting space. Rumoh Aceh Kupi Luwak and Rumoh Kupi incorporated additional facilities such as VIP rooms and staff areas attached to the main house, showing that services were the most flexible point of adaptation.

The space plan also transformed considerably. Internal partitions were removed, turning the upper floors into musholla or communal dining spaces, while the undercroft of the houses was adapted into café areas. Indian Coffee House combined two houses into one expansive collective space. At SMEA Premium Tibang, the upper floor continued to serve as staff quarters, demonstrating a hybrid use that balanced domestic and commercial functions.

The stuff layer, referring to furnishings and movable elements, was entirely replaced across all cases. Modern furniture such as tables, chairs, barista counters, air conditioning, and lighting substituted traditional household items. Nevertheless, some religious functions were preserved, as seen in Le Rasa Cafe and Rumoh Kupi, which maintained prayer areas on the upper floor.

This layer reflects the most visible aspect of transformation since it directly shapes how visitors interact with the space and symbolizes the shift of traditional houses into commercial venues.

To clarify these findings, a summary of the five cases based on the shearing layers is presented in **Table 3**. This table is placed immediately after the narrative discussion to provide readers with a concise comparison of which layers were preserved and which were modified in each case.

Table 2. Shearing Layers Mapping of Rumoh Aceh Adapted into café.

| Feature / Element (original) | Indian Coffee House | Le Rasa Cafe | SMEA Premium Tibang | Rumoh Aceh KUPI Luwak | Rumoh KUPI |
|---|----------------------------|---------------------|----------------------------|------------------------------|-----------------------------|
| Stone foundation (without cement) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Tameh</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mortise-and-tenon joints (wooden beams) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Lhue</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| Traditional roof frame (structure) | ✓ | ✓ | ✓ | (partially retained) | Replaced/repainted |
| <i>Seuramoe keue</i> (front veranda) | Opened | Opened | Opened | Opened | Opened |
| <i>Seuramoe tunggai</i> (central core) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Seuramoe likot</i> (rear kitchen area) | Opened | Opened | Opened | Opened | Opened |
| Traditional low staircase | x | ✓ | x | x | x |
| Undercroft (repurposed as café space) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Original carvings and ornaments | displayed/transplant | restored | partially replaced | many lost, some transplanted | new ornaments/reconstructed |
| Symbolic values (orientation, rituals) | ✓ | ✓ | ✓ | ✓ | ✓ |

The shearing layers analysis shows a clear and consistent pattern, the structural core of Rumoh Aceh, including stilt foundations, timber posts, and mortise-and-tenon joints, is largely preserved across cases and thus serves as the main bearer of architectural identity. By contrast, the most intensive interventions occur in services, spatial planning, and movable furnishings, where additions such as kitchens, sanitation, electrical systems, internet, and modern furniture are introduced to accommodate café operations, while the building envelope follows varied approaches from façade retention to partial reconstruction, reflecting a trade-off between material authenticity and commercial requirements.

These findings point to a pragmatic model for adaptive reuse that protects structural and visual identity while allowing flexibility in functional layers. Relocation of buildings significantly changes cultural context and meaning, so moves should be accompanied by thorough documentation and interpretive measures; policy and practice should therefore prioritize structural protection, permit controlled interventions in services and stuff, support traditional craft skills, and require contextual interpretation when site continuity is lost so heritage value and contemporary functionality can coexist.

Challenges and Recommendations

The adaptive reuse of *Rumoh Aceh* into cafés presents interconnected technical, social, and institutional challenges. Timber structures are vulnerable to termites, humidity, and decay, requiring continuous maintenance, while the declining number of skilled craftsmen limits the preservation of traditional construction techniques [20]. From a socio-cultural perspective, there is a risk that symbolic architectural elements are reduced to mere visual features without conveying their embedded meanings. Institutionally, the absence of clear adaptation guidelines often leads to pragmatic interventions that overlook conservation principles.

Despite these constraints, the transformation of *Rumoh Aceh* shows that commercial use and cultural preservation can coexist. Architectural elements are generally maintained not only as visual symbols but also as part of spatial and social practices, allowing adaptive reuse to function as a mediating strategy rather than a purely exploitative one.

Visitor responses indicate that the adaptive reuse of Rumoh Aceh generates values beyond commercial functions. Younger visitors often perceive these cafés as comfortable and familiar spaces that evoke memories of family homes, while older visitors associate them with childhood experiences and traditional social interactions in Acehese villages. These findings suggest that adaptive reuse preserves not only architectural features but also social meanings and cultural memories embedded within the traditional house. At the same time, the transformation of Rumoh Aceh into cafés reflects a process of heritage commodification, where cultural heritage becomes an economic asset. Nevertheless, visitor experiences indicate that the buildings are valued not merely as aesthetic attractions but also as places that continue to convey cultural identity and collective memory.

The comparative analysis further shows that commercialization does not necessarily undermine conservation outcomes. Cases such as Indian Coffee House, Le Rasa Cafe, and SMEA Premium Tibang retain higher levels of authenticity because adaptive interventions are guided by heritage continuity and family values, whereas Rumoh Aceh Kupu Luwak and Rumoh Kupu demonstrate more extensive reconstruction driven by operational requirements. These differences suggest that authenticity is shaped not only by economic considerations but also by stakeholder motivations. Moreover, authenticity should not be understood solely through the retention of original materials, since spatial hierarchy, structural systems, orientation, and symbolic functions remain recognizable despite physical modifications. In this sense, adaptive

reuse represents a form of dynamic conservation in which cultural meanings are transformed and reinterpreted rather than entirely lost.

Empirical findings indicate a consistent pattern in which structural elements tend to be preserved, while spatial configurations and supporting systems undergo greater transformation. This reflects a selective adaptation process, where the structure acts as the main anchor of identity, enabling functional changes without eliminating architectural legibility. The use of the underfloor space as the primary café area further demonstrates how traditionally secondary spaces can accommodate new functions while maintaining the symbolic hierarchy of the upper floor.

Changes in building materials, particularly in the envelope, represent a compromise between authenticity and durability in a tropical climate. Interior elements remain highly flexible and are often adjusted to meet market preferences, indicating that identity is primarily retained through structural and spatial characteristics rather than decorative components.

Based on these findings, adaptive reuse should be approached as a controlled transformation that balances preservation and functional demands. Structural elements must be treated as primary constraints, while spatial adaptation should focus on more flexible areas. Additional facilities should be accommodated through separate or semi-detached structures, and maintenance strategies must be integrated into the design process. Cultural interpretation is also essential to ensure that heritage values are not reduced to visual consumption.

Table 3. Adaptive Reuse Typologies of Rumoh Aceh Adapted into café.

| Building Element | Key Issue | Design Recommendation |
|-------------------------|---|---|
| Site | Relocation of buildings is common | Relocation is permissible with proper documentation, orientation consideration, and use of traditional construction methods |
| Structure | Core identity element | Must be preserved as the primary constraint; interventions should be minimal and non-destructive |
| Building Skin | Material deterioration and replacement | Maintain original form while allowing material substitution compatible with climate and durability |
| Underfloor Space | High functional demand | Prioritize as the main adaptive space for café activities without enclosing the structure completely |
| Upper Floor | Symbolic and private space | Maintain spatial hierarchy; allow limited and low-impact functional use |
| Services | Increased need for utilities | Integrate modern systems with concealed installation to avoid visual disruption |
| Additional Structures | Operational requirements | Provide separate or semi-detached supporting buildings to reduce impact on the main structure |
| Interior & Furniture | High flexibility and commercial influence | Use as a medium for cultural interpretation rather than purely aesthetic branding |
| Maintenance | High cost and material vulnerability | Integrate maintenance strategies, including termite protection and material durability, from the design stage |

In this context, adaptive reuse of *Rumoh Aceh* can be understood as a form of dynamic conservation, where heritage is not preserved as a static artifact but continuously reinterpreted through contemporary use. The contribution of this study lies in demonstrating that conservation can be operationalized through selective transformation, balancing structural permanence with spatial adaptability in response to evolving socio-economic demands.

Discussion

The findings indicate that the adaptive reuse of *Rumoh Aceh* into cafés represents a negotiated relationship between conservation and transformation, in which the structural system remains the principal carrier of architectural identity. This confirms the relevance of the shearing layers concept, where permanent elements such as structure are retained while more flexible components including spatial layout, services, and furnishings are modified. The variation in intervention reflects differing stakeholder motivations, as cases associated with cultural continuity tend to preserve authenticity more carefully, while commercially oriented adaptations prioritize functional efficiency, potentially reducing the depth of cultural meaning.

These findings are consistent with previous studies on adaptive reuse of vernacular and heritage buildings. Plevoets and Van Cleempoel (2013) argue that successful adaptive reuse commonly preserves structural and spatial characteristics while allowing modifications to more flexible functional layers. Similarly, Shao et al. (2018) found that the adaptive reuse of traditional dwellings in China maintained cultural continuity through the retention of spatial organization despite changes in use. However, unlike many adaptive reuse cases where material preservation serves as the primary indicator of conservation success, the *Rumoh Aceh* cases reveal a stronger dependence on the preservation of stilt-house structures, spatial hierarchy, and symbolic functions. This suggests that vernacular identity in Acehese architecture is maintained not only through physical fabric but also through the continuity of cultural practices embedded within the building.

At the same time, the transformation of *Rumoh Aceh* into cafés reflects a process of heritage commodification, whereby vernacular architecture becomes integrated into economic and commercial activities. The buildings function not only as heritage assets but also as branding devices that attract customers through their cultural distinctiveness. While this process contributes to the survival of traditional houses, it may also simplify or reinterpret cultural values according to market demands. In this process, vernacular identity is selectively represented through architectural forms, spatial atmosphere, and symbolic elements that appeal to visitors. While such commercialization may increase public awareness of traditional architecture, it also risks reducing complex cultural meanings into consumable aesthetic experiences.

Spatial adaptation, particularly the use of the undercroft as the main café area, demonstrates a context sensitive approach that maintains the original spatial hierarchy. This suggests that adaptive reuse in vernacular architecture is most effective when it reinterprets existing spatial logic rather than replacing it. However, material substitution and relocation introduce critical tensions. Changes in the building envelope often balance durability and maintenance with reduced material authenticity, while relocation alters the relationship between the building and its original socio-cultural context, requiring additional efforts to sustain intangible values.

The findings further contribute to ongoing debates on authenticity in heritage conservation. Rather than treating authenticity as the strict preservation of original materials, the cases demonstrate that authenticity may also be expressed through the retention of spatial hierarchy, construction logic, and cultural symbolism. This supports contemporary conservation perspectives that regard authenticity as a dynamic condition shaped by continuity and adaptation rather than material permanence alone.

Adaptive reuse can therefore be understood as a form of dynamic conservation in which continuity is achieved through selective intervention. Sustainable outcomes depend on maintaining structural integrity, limiting changes in culturally significant spaces, and accommodating new functions within adaptable layers. Despite its limited scope, this study highlights that the sustainability of vernacular architecture depends not only on physical preservation but also on the careful integration of cultural meaning, functional demands, and contextual sensitivity within contemporary urban development.

This study has several limitations. First, interviews were limited primarily to owners, managers, and workers, while visitor and community perceptions were not systematically investigated. Second, the analysis focused on architectural transformation and conservation outcomes without conducting a detailed economic assessment of adaptive reuse performance. Future research may incorporate broader stakeholder perspectives and economic indicators to provide a more comprehensive evaluation of adaptive reuse practices in vernacular architecture.

Conclusion

This study shows that the adaptive reuse of Rumoh Aceh into cafés can support sustainable vernacular conservation by maintaining core structural elements such as stilt foundations, timber posts, and roof frameworks, while allowing changes in services, spatial arrangements, and furnishings. This selective transformation enables new functions without removing architectural identity and spatial hierarchy. It also contributes to environmental sustainability by extending building life cycles, reducing material waste, and preserving embodied energy, while sustaining socio cultural values embedded in traditional forms.

The findings also reveal that the level of authenticity depends on the balance between conservation and commercial needs. In many cases, the absence of clear guidelines leads to pragmatic interventions that reduce material authenticity, especially in building envelopes and details. Therefore, adaptive reuse should be guided by a controlled approach that prioritizes structural preservation, allows flexibility in non-structural layers, and integrates cultural meaning. This study offers a framework that combines adaptive reuse typologies and shearing layers to support more consistent and sustainable conservation practices in vernacular architecture. The proposed evaluative framework may serve as a transferable tool for assessing intervention intensity, authenticity retention, and conservation outcomes in vernacular adaptive reuse projects beyond the Acehese context.

Acknowledgments

The authors would like to express their sincere gratitude to all parties who contributed to this research. Special thanks are extended to the owners and managers of the Rumoh Aceh cafés in Banda Aceh for their willingness to participate in interviews and share valuable insights.

Appreciation is also given to the academic supervisors and colleagues for their guidance and constructive feedback throughout the research process.

Conflict of Interest

The authors declare no conflicts of interest.

Author Contribution Statement

Anisa Salsabilla Conceptualization, Investigation, Data curation, Writing original draft. **Dyah Erti Idawati**: Supervision, Methodology. **Izziah**: Supervision, Methodology.

Data Availability Statement

The data used to support the findings of this study are included within the article. Additional data derived from interviews and field observations are not publicly available due to confidentiality and privacy considerations of the participants.

Ethics Approval

Not required.

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