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Original Article

ASSESSING THE OPPORTUNITIES FOR ADAPTIVE REUSE AND TOURISM DEVELOPMENT OF COURTYARD HOUSES WITHIN THE TEMPLE PRECINCT OF KAVLEM, GOA

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ABSTRACT

This study aims to evaluate the structural conditions, social perspectives, and adaptive reuse potential of two historic courtyard houses in Kavlem, Goa. The study adopts a mixed-methods approach, combining spatial documentation, stakeholder interviews, people's perceptual surveys, and expert consultations with structural engineers. On-site audits, plan analysis, and photographic documentation were used to analyze two case houses: Dubashi and Gaitonde. A reuse-readiness matrix was created, and intervention techniques were suggested based on condition, cultural alignment, and community feedback. Among the two century-old courtyard houses, the structurally sound Dubashi house is deemed suitable for limited cultural use after minor repairs as per all the surveyed architects and engineers. All interviewed respondents indicate that traditional Goan courtyard houses can be adapted with minimal intervention if done sensitively. In comparison, the more fragile Gaitonde home requires considerable structural restoration before usage, with 75% of specialists citing difficulties such as foundation erosion, timber rot, and roof instability as prevalent vulnerabilities that require major intervention. According to community surveys, 94% of respondents support the preservation of these properties, while 59% prefer adaptive reuse for culturally relevant, non-commercial activities such as museums, cultural art shows, or spiritual places.

Keywords: Adaptive Reuse, Goan Vernacular Architecture, Heritage Conservation, Temple Precincts, Traditional Courtyard Houses

INTRODUCTION

Traditional buildings resonate the cultural heritage of a place thereby reflecting the socio-cultural characteristics of that place. These buildings are largely constructed with locally available materials and techniques Amro et al. (2023). The socio-cultural significance of these buildings diminishes with time due to various reasons like urbanization, changing life styles and mind set of the youth, and changing economic backgrounds Udeaja et al. (2020). To protect these invaluable heritage buildings from deteriorating, adaptive reuse may be employed judiciously without compromising on the architectural and cultural values Amro et al. (2023), Plevoets and Van Cleempoel (2011). Courtyard residences are one of the commonest types of residential structures that can be found in several cultures around the world. While open courtyard residences can be observed in several western countries, inward-

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facing courtyard houses are common features in China and India Chen et al. (2024). Courtyard houses have been part of Indian architectural history with these houses being adopted across the nation due to socio-cultural and climatic changes. The sky-lit courtyard house design, which helped regulate movement within the building, control the climatic conditions, and create a spiritual center of religious practices, has been the center of attention in the home designs of early Indian villages and traditional practices. By looking at the function of traditional Goan courtyard dwellings as sacred-domestic hybrid venues where spiritual activity, family life, and architectural expression come together, this study offers a new perspective on their adaptive reuse. With legacy and spiritual sites driving this expansion, India's domestic tourism surged by 133% following COVID, according to the Ministry of Tourism Government of India (2023). Although known for seaside tourism, Goa has witnessed an increase in demand for cultural and legacy paths, especially in Ponda and the hinterland temple belts. More than 60% of vernacular homes in Goan temple towns exhibit physical deterioration, including timber rot, roof leaks, and foundation damage, according to INTACH Goa Chapter (2020)

Around 40–50% of religious residential structures inside temple grounds are either partially occupied or semi-vacant, depending on generation migration and inadequate maintenance funding. In their 2024 poll on the adaptive reuse of Wadas in Nashik, Mahale and Rai discovered that 68% of respondents favored cultural purposes such as galleries and libraries, while only 12% preferred business uses such as eateries or shops. This mirrors comparable community tastes found in the Kavlem environment. Moreover, UNESCO (2021). Living Heritage Report names sacred-domestic hybrids as an understudied category worldwide and proposes adaptive reuse techniques that retain intangible ritual customs while also addressing structural damage. Though these courtyard dwellings are inside working temple complexes, their usage for religious or daily purposes has decreased. When these spaces are neglected, they slowly begin to deteriorate over time Rong and Bahauddin (2023). Random tourism-based ideas can disturb the sacred atmosphere of such places Gahalot and Gupta (2024), Shinde (2012), while converting them into museums often overlooks the fact that they were once part of active living traditions Byrne (2008), Smith (2006). Therefore, a more sensitive adaptive reuse approach is needed, one that respects their ritual importance and cultural identity Avrami (2016). Still, scholarship on Indian heritage reuse has mostly concentrated on palatial or metropolitan secular structures, neglecting sacred-domestic hybrids Jain (2020), Tillotson (1989). This study bridges that vacuum by highlighting priests' points of view, followers' expectations, and experts' evaluations of practicability and looks for design concepts that balance holiness with adaptive purpose.

Around 40–50% of religious residential buildings in temple grounds are either partially occupied or semi-vacant, as a result of generational migration and constrained maintenance resources. According to a 2024 survey by Mahale and Rai on the adaptive reuse of Wadas in Nashik, 68% of responders preferred cultural uses like galleries and libraries, while only 12% preferred business uses like cafes or stores. This mirrors community preferences much like those observed in the Kavlem vicinity. Furthermore, UNESCO (2021). Living Heritage Report notes that holy-domestic hybrids are a less researched topic worldwide and offers reuse techniques meant to maintain ritual customs and structures.

LITERATURE REVIEW

Heritage preservation and adaptive reuse research across Asia progressively stresses the compromise between architectural integrity and socioeconomic transformation. In 19 locations in Hong Kong's Kam Tin communities, Li and Lo (2005) used the Market Appeal Robusticity Matrix to identify issues such as inadequate infrastructure and dispersed stakeholder involvement. According to their argument, the sustainability and long-term preservation of tourism require considering socio–cultural complexity in strategic planning. They found that there is a conflict between losing space for ceremonies and making money. Their research confirms reuse techniques maintaining spiritual geometry as well as material authenticity. Menon (2020) stresses that an essential component of any adaptive reuse of buildings is also material restoration. Mahale et al. (2024) analyzed Nashik's Wadas in the Indian context, highlighting issues of structural decay, typological loss, and inadequate regulatory oversight. They also discussed the practice of decentralization in India. Participatory governance was identified as a key aspect of effective cultural management by Routh et al. (2025), in the meantime. The contribution of vernacular architecture to sustainable construction in various regions was studied by Halder and Kumar (2025). They also talked about cultural symbolism and climate-responsive design methods. Among the common themes in these studies are the underestimation of vernacular spatial logic, tourism and commercialization pressures, and the lack of models for reuse that considers ritual. The work done earlier is still confined to the specifics of the home level, particularly in temple precincts, where sacred spatial use is more prevalent and where heritage, spirituality or daily life intersect.

Unlike Hong Kong's tourism-centric heritage initiatives and Yogyakarta's commodified changes, this study advocates for ritual continuity and community-authored conservation techniques. The novelty stems from investigating under-documented architectural characteristics such as the Devkud (home shrine), sacred kitchens, and pilgrimage-facing verandas. These are culturally encoded locations that influence daily routines, seasonal celebrations, and multigenerational living, not just geographical features. The study extends beyond façade preservation to include material change tracking, stakeholder interviews, and adaptive reuse assessments, particularly in non-touristic, semi-rural settings. It questions dominant narratives that oversimplify Goan homes into "Portuguese" typologies by emphasizing regional, ritual, and caste-based differences that are typically disregarded in popular heritage discourse. The study's methodology includes ethnographic interviews, visual documentation, and on-site material audits to capture the lived experience of architecture. This multi-scalar, culturally sensitive structure is rarely used to preserve Goan heritage homes, but it offers a unique conservation perspective that stresses spiritual logic over commercial functionality. The research

highlights the importance of ritual continuity and community-led conservation techniques, unlike Hong Kong's tourism-focused heritage initiatives and Yogyakarta' commodified transformations. An important element in this originality is the study of less-documented architectural features, such as the Devkud (home shrine), sacred kitchens and veranda facing the pilgrimage path. Cultural significance shapes the ways we live, celebrate, and engage as multigenerational families by creating culturally significant spaces within our communities. The research consists of methods used to preserve facades from any form of degradation, such as monitoring the materials used, interviewing cultural stakeholders, performing adaptive reuse assessments of residential buildings located outside urban or touristic areas, and summarizing their findings. Through the examination of regional, ritual, and caste-based differences that are frequently not acknowledged in popular heritage discourse, it challenges the dominant narratives that simplify Goan houses into "Portuguese" typologies. Additionally, the study employs ethnographic interviews, visual documentation, and on-site material audits to gain insight into the lived experience of architecture. Also, the focus on tourist-friendly areas like Panaji or Fontainhas, which are historically significant, is being largely ignored due to academic and conservation efforts. The voices of those who actively inhabit, preserve, and ritualize these spaces, such as residents, priests on the streets or working in a church building, are not adequately heard during academic and policy discussions. The aim of this study is to address these gaps and help shape a more holistic portrayal of Goan history, emphasizing spiritual sustenance, human experience among people, social justice, and preservation of architecture. This study records the architectural, cultural, and historical importance of courtyard houses located in the Kavlem temple vicinity. The study scrutinizes their current state in terms of structural integrity, ownership patterns, usage, and maintenance procedures. Additionally, the research examines whether these residences are still being used as homes, or if they have been renovated, abandoned and converted to other uses.

METHODOLOGY

Goa is a state located on the western coast of India. It was a Portuguese colony from 1510 to 1961 Government of Goa – South Goa (2025). This ruling had an enormous impact on their culture and social structure. The population is a mixture of Christians, Hindus, Muslims, Jains, Sikhs, and so on. Among the Hindus, Brahmins form one caste, and one of the sub-castes among the Brahmins is the GSB- The Gaud Saraswat Brahmins. The kuldevatas of the Saraswats are Shree Shanta Durga, Shree Mahalakshmi, Shree Manguesh, Shree Saptakoteshvara, Shree Mahamaya, and Shree Nagesh Shree Shantadurga Saunsthan (2025). The temples of these deities had come up in various parts of Goa until the invasion of the Portuguese in 1510. They imposed their famed Inquisition on the Goan populace to forcefully convert indigenous Hindus to Roman Catholics. A lot of people chose to migrate to the neighboring areas owing to the ruthless methods, which included destroying the Hindu temples and burning important Sacred texts Nurani (2024). The Taluka of Ponda has been a conscious witness to numerous religious upheavals that have occurred in Goa. The land of Antruz Mahal (Ponda) was located right at the center of the state and thus provided a huge contrast physically as well as culturally to the other coastal areas. Surrounded by rivers and not being directly under Portuguese rule, it offered an abode for a large section of people who chose to move across the river in search of a safe destination for their gods and goddesses and their religious beliefs Shree Shantadurga Saunsthan (2025).

The Saraswats who were the Mahajans of the temples along with Brahmin priests- the Purohits brought their deity to Antruz Mahal from the old conquest. According to Dhume (1985), the native inhabitants were beyond blessed and happily moved out of the land to house the deities. The Mahajans and priests resided around the temple to serve the deity, and the minor shrines soon turned into temples. While the Mahajan settlement was replaced by agrashalas, the Brahmin priests continued to reside close to the temple and performed daily rituals of the deity along with the local inhabitants of the new site who were assigned with the other duties of the temple. Thus, the Goan settlements have traditionally developed around a central temple, sustained by a caste- and guild-based social framework. Brahmin priests, who were in charge of ritual and festival obligations, often lived inside or near the temple grounds, assuring ceremonial continuity and accessibility Henn (2009). These residences were part of a structured sacred environment, with each caste group overseeing certain temple activities and sharing community resources Khedekar (2016). Courtyard houses in these precincts were traditionally built with lime plaster, laterite, Mangalore tiles, and timber joinery. They were designed with central courtyards and shaded porches, which enhanced the natural climate control while providing space for ritual practices. Material differences have been observed in the long-term through informal repairs such as reinforced rafters, cement patches, and asbestos extensions. However, presently, structural issues consist of termite-induced damage to timber (including roof leakage), and surface erosion (in particular laterite block). Postcolonial demographic shifts, urbanization, and alternate livelihoods have reduced occupancy in many of these houses. Despite the continuous presence of priests, much of Kavlem and Ponda's buildings remain underutilized or deteriorating for much of the year. Without specialized conservation efforts, these sacred-domestic hybrids risk losing their practical, architectural, and ritual significance. These types of houses evolved from Hindu temple settlements and Portuguese colonial influence, thus, striking a compromise between ritual purity and togetherness as seen in their deep verandahs, central mutram (courtyard) and door thresholds that indicate the neighborhood's relationship to the temple. The courtyard house will continue to give service to Brahmin priest families, and therefore continue to provide for ritual functions and visual and physically close relationships to the temple. In contrast to Indio-Portuguese mansions, these types of houses have limited styling, are sacredly influenced, and operate closely on the timetable of temple activities, therefore providing the Goan people with cultural/architectural identity markers that remain very important. One can find such Brahmin priest courtyard house clusters at Kavlem towards the southern side of the Temple which is east facing. All of these Brahmin priest houses are situated right outside

the Temple prakara and have their entrance opening to the inner route leading to the Temple from the second entrance to the temple complex directly connecting them to the temple by a designated entry. This is the sacred path connecting the Brahmin households to the Temple. The placement of the Brahmin houses and their entrances is thus very controlled such that it clears visibility and helps in the movement to and from the temple. These households possess limited entry and exit points similar to the Temple complex in order to maintain the sanctity and keep their beliefs and culture intact. The entrances to their houses act as the threshold to identify the community within the neighborhoods while also acting as the initial boundary of the house consisting of a verandah space called the "sopo". This study is looking at two traditional courtyard homes (Dubashi and Gaitonde) that exist in the temple precinct (Kavlem, Ponda), which two Brahmin priest families have occupied historically. Both properties reflect the same typology of vernacular architecture (Goan courtyard homes); however, each has unique characteristics regarding the size, configuration, and use of the buildings.

Figure 1

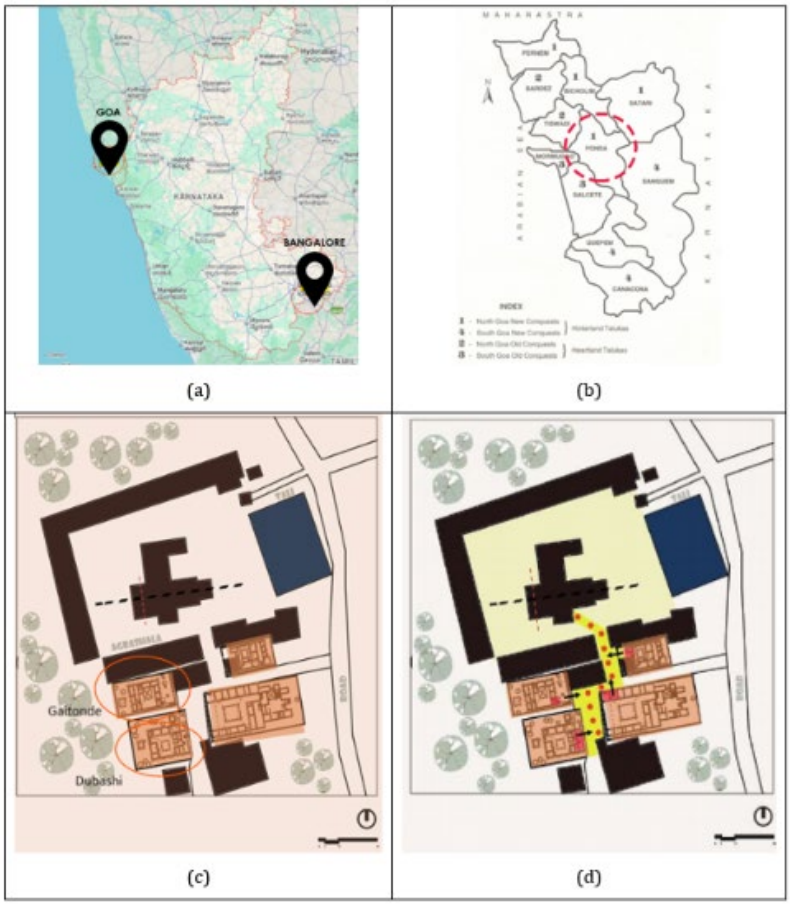


Figure 1 (a) Location plan; (b) Location plan of Ponda in Goa; (c) Site plan showing priest houses outside temple prakara; (d) The sacred path to the temple from the southern side

The Dubashi House, covering 220.45 sq. m, is a single-storied, rectangular Brahmin priest residence designed around a central courtyard that supports both spatial circulation and climatic comfort. The layout consists of private sleeping chambers, a Devkud (prayer room), storerooms, baths, traditional service zones, and a front verandah. Its spaciousness and the existence of unused spaces make it an excellent option for adaptive reuse, supporting both daily functions and ceremonial programs. Constructed with load-bearing laterite masonry and finished with lime or cement plaster, the house features a Mangalore tile roof over timber rafters and purlins, with floors of red oxide or stone slabs-some now covered with matting. Timber columns/traditional framing support the house structurally. Mossy dirt/stone/tile are used to create a courtyard area. Signs of fatigue are found throughout this home; rot and moisture damage on timber roof areas (chiefly kitchen) and external PVC pipe drainage systems are not original to the structure. Organic overgrowth and signs of neglect are particularly visible around service areas.

Figure 2

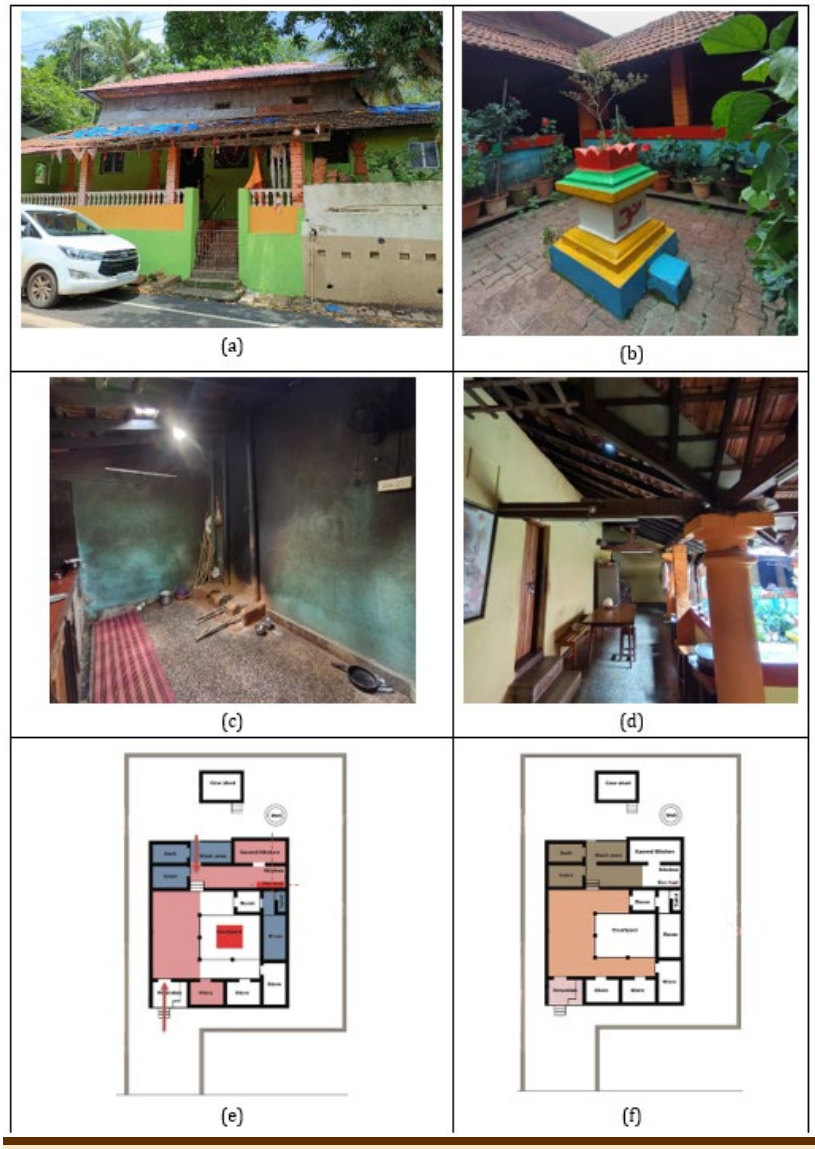


Figure 2 Views of the Dubashi House (a) Front Elevational View; (b) View of the Central Courtyard; (c) VIEW of the Kitchen; (d) Entrance View of Foyer and Prayer Room; (e) Defensible Spaces Concerning Sacrality;(f) The Pathways and the Boundaries.

The Gaitonde House is a single-story (178 m^2), rectangular Brahmin priest residence constructed of load-bearing laterite block walls. The house consists of a central courtyard, a Devkud (place of worship), two kitchens (one for worship and one for food storage), eight bedrooms, three bathrooms, and laundry areas. The house is zoned spatially with a high degree of complexity for use of rituals and general household activities to be performed within a limited amount of area. The house materials show signs of deterioration due to regular wear and tear. Structurally, the timber rafters supporting the Mangalore tile roof are showing deterioration and sign of leaking; red oxide concrete floors have been patched with either vinyl or tiled surface coverings; the walkways and courtyard have been constructed out of terracotta tiles or compacted earth. The soot-laden and lack of adequate ventilation of the sacred kitchen show signs of rotting timber, deterioration of plaster and significant cracking of the ceiling, and lots of neglected areas containing moss, debris, overgrown vegetation, and clogged drainage. The outer structures (gates and boundary walls) are showing signs of rust and excessive overgrowth.

Figure 3



Figure 3 Views of the Gaitonde House (a) Utility Area View; (b) View of the Central Courtyard; (c) View of the Entrance Foyer; (d) Entrance View of Public Dining Area; (e) Defensible Spaces Concerning Sacrality; (f) The Pathways and the Boundaries.

Both houses exemplify the integration of sacred, functional, and climatic logic within domestic architecture. Their selection allows for comparative spatial analysis, stakeholder interviews, and feasibility assessment regarding culturally sensitive adaptive reuse. Dubashi house is slightly larger and more ceremonial in its entry sequence. Gaitonde house appears more compact, but has more storage segmentation. Both houses retain strong ritual spatial logic, but Dubashi is currently more active in community functions like shared meals. Both primary (first-hand) and secondary (indirectly obtained) sources were used during the research process. Primary data included interviews with homeowners, members of temple committees, architects and engineers in order to understand their lived experiences, the regulations restricting their use of adaptive reuse and their feasibility for doing so. Data from surveys done by local residents and visitors provided insight into usage patterns of the buildings, cultural memories and acceptance within the community. Secondary data included the house's original blueprints to explore the spatial arrangement, the zoning, circulation and style of the houses, as well as photographs to document materials used in the construction of the houses, details of craftsmanship, and structural modifications made. The data was analyzed using thematic analysis on qualitative responses, spatial

analysis of the original architectural drawings, SWOT or matrix analyses to determine if the houses could be reused and photographic evidence of heritage characteristics and decay. Semi-structured interviews were created to obtain in-depth qualitative data with ten key informants, including owners of courtyard homes, members of local temple committees, and professionals working in the field of historic preservation. Housing owners (2 participants) provided insight on regular use and lived experience, as well as physical changes that have occurred over time in courtyard housing. Temple committee participants (2 participants) described some of the regulatory concerns regarding these houses, religious considerations as they relate to the homes and limitations on public access to the homes. The structural engineers and architects who participated in the study (4 participants in total) assessed structural integrity, condition of materials, and viability for adaptive reuse of courtyard housing. Surveys were conducted with a total of 33 individuals (6 residents and 27 visitors) to assess perceived emotional attachment, memory association, connection to physical and spatial context, and receptivity to change related to the courtyard homes. Overall, this data provided for a comparative understanding of the perceptions of the community regarding existing trends in use and community support for adaptive reuse, with 30 of the surveyed (94%) indicating support for continued preservation of courtyard dwellings and 19 (59%) indicating support for adaptive reuse of the properties.

Expert Surveys: Targeted surveys were distributed to 4 architects and structural engineers to assess adaptive reuse strategies. The survey looked at technical feasibility, material deterioration, risk assessment, and suggested intervention strategies. All respondents (4/4) ranked constraints like timber decay and roof issues and opportunities related to retrofitting sacred and vernacular structures, with 100% emphasizing stakeholder involvement and 75% (3/4) noting structural vulnerabilities requiring major intervention. House Plan Analysis: Original house plans were analyzed to examine architectural elements such as zoning, circulation, spatial hierarchy, and structural composition. Comparative geographical analysis helped discover typology and adaptability tendencies between the two case sites. Systematic photo documenting was carried out to record material conditions, construction procedures, weathering, and previous modifications. Annotated pictures were utilized to visually distinguish between places of heritage significance and zones that needed restoration or adaptive redesign. A combination of quantitative and qualitative methods was used to analyze the collected data. Qualitative analysis consisted of thematic analysis of interviews and open-ended survey responses, which identified major trends and stakeholder views. A comparative spatial analysis of house plans examined aspects of zoning, circulation and typological characteristics. A SWOT or matrix evaluation was conducted to assess the feasibility of adaptive reuse, where adaptive reuse was assessed based on the structural, cultural and community characteristics of each structure. A photographic analysis was conducted to record and categorize all locations of aesthetic significance, materials and deterioration and previous intervention based on captioned photographs.

RESULTS AND DISCUSSIONS

A triangulation of social perception with physical reality was carried out through three processes: (i.) the use of surveys/questionnaires from 33 local individuals and visitors; (ii.) the use of technical surveys from five architectural/engineering professionals; and (iii.) the physical audit of spatial conditions of both priestly courtyard houses. Summary tables for both the quantitative data (Tables 1 and 2) and cross-mapping of architectural condition with new potential uses (Table 3) were developed. Figures 1–3 (see preceding charts) visualise key percentages and preference patterns that underpin the narrative below.

Table 1

Table 1 Locals & Visitors (n = 33)

Indicator	Result	Notes
Visit Frequency	73 % occasional, 12 % weekly	Coded open text
Heritage Awareness	82 % know the houses	–
Historic Value Belief	94 % “Yes”	–
Preferred Preservation Mode	64 % reuse with new function; 36 % preserve as-is	Coded open text
Top Concerns	Loss of originality (17), noise/tourism (6), disrespect (3)	Fig. 4 Bar chart
Desired Functions	Cultural-art display (9), museum (7), visitor stay (7), archive/library (8), yoga (1	Fig. 5 Bar chart

Responses regarding how frequently the respondents visited the temple precinct indicate that visitors had very low levels of routine engagement. No respondent visited the temple precinct on a daily basis, and only 12.1% of them indicated that they visited regularly. In contrast, a large majority of respondents (72.7%) indicated that they visited occasionally with only 15.2% indicating that they visited on special occasions. These results indicate that the temple precinct is generally not an integral part of people's daily

religious and cultural routines but that it is important to them to participate on a limited basis only. Regarding the preferred mode of preservation for the two priestly courtyard houses, the survey results found a strong preference for adaptive reuse instead of replacing the structures. Of the total respondents, 63.6% want to see the two houses reused with new uses while remaining culturally compatible; however, 36.4% of respondents want to leave both houses as they currently exist. Additionally, none of the participants in the survey expressed support for replacing the two houses; thus, there is a consensus among them regarding how important the two houses are as a cultural heritage resource and how important it is to preserve them within the temple precinct through the use of culturally appropriate methods of adaptation.

Figure 4

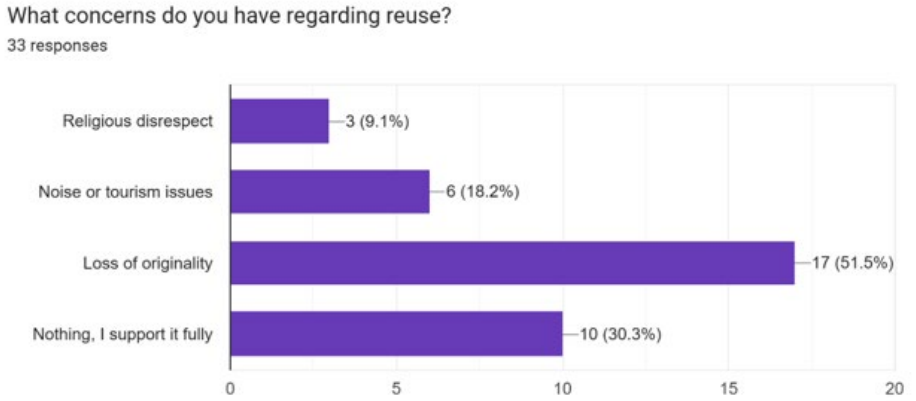


Figure 4 Bar Graph Showing the Results of Top Concerns

Figure 5

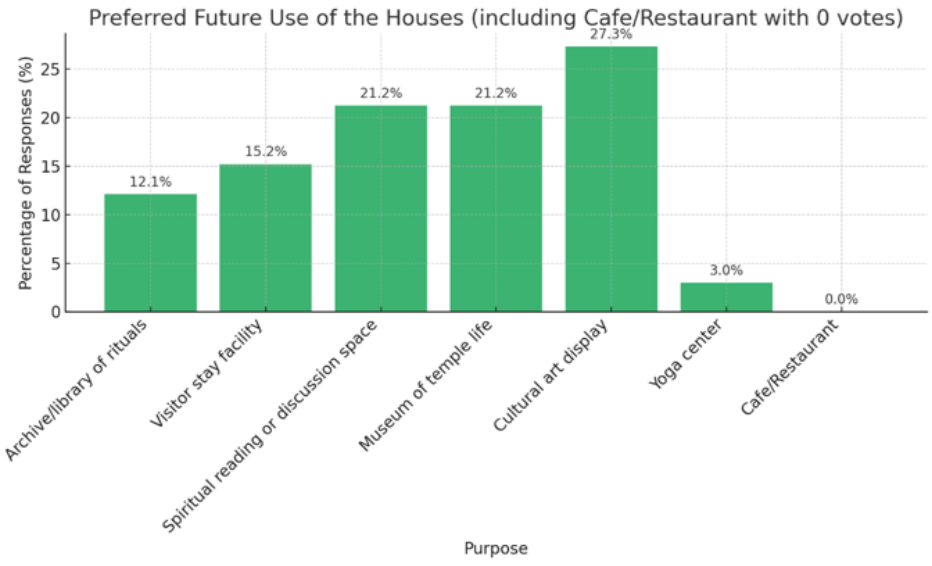


Figure 5 Bar Graph Showing the Results of Desired Functions

Preferred Functions for Adaptive Reuse – A bar chart highlighting strong community interest in museums, cultural displays, and libraries, with minimal support for yoga spaces and none for cafés or shops.

Table 2

Table 2 Architects, Consultants & Engineers (n = 5)

Metric	Response Pattern	Notes
Compatibility with Ritual Context	3 "highly," 1 "moderately," 1 "rarely" compatible	Fig.6 Bar chart
Seen Precedents?	60 % cite Goa, Kerala, UNESCO sites	–
Reported Success Factors	Minimal intrusion, discreet services, strong community engagement	Coded open text
Recurrent Structural Risks	Tile failure → timber rot → foundation settlement → laterite erosion	Coded open text
Preferred intervention approach	Contextual design preferred over extremes.	Fig. 6 Bar chart

Figure 6

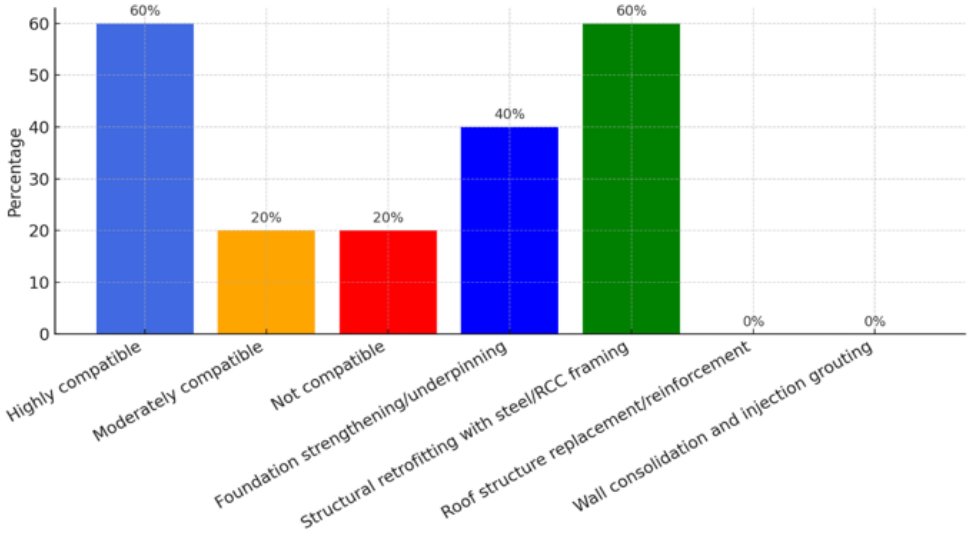


Figure 6 the Combined Results of Reuse Compatibility with Ritual Context and Preferred Intervention Approach

Professional Assessment of Reuse Compatibility - A chart showing most architects and engineers view adaptive reuse as highly compatible if sensitively approached. Architects identified little physical intrusion, discreet integration of services, and significant community engagement as critical success criteria in adaptive reuse projects. These methods help to conserve heritage value while maintaining functional relevance. Recurrent Structural Risks: Common structural difficulties observed include tile failure resulting in timber rot, which causes foundation settlement and, eventually, laterite wall erosion. These challenges are important for determining how to assess an entire building's structure and what materials will last over time. The study that asked architects what they prefer as far as design solutions when working with historic buildings was part of this information-gathering process. It demonstrates if experts prefer minimalist, maximalist, contextual, or hybrid approaches in adaptive reuse projects.

Table 3

Table 3 Spatial & Condition Matrix – Dubashi vs Gaitonde

Criterion	Dubashi House	Gaitonde House
Floor Area	220 m^2	178 m^2
Spatial Surplus	Large dining corridor; dry courtyard	Tight sacred core; limited surplus
Immediate Defects	Blocked drains, minor gutter misalignment	Rotten rafters, smoke-blackened Devkud
Reuse Readiness	High (gallery, communal dining)	Low–medium (edge interpretation only)
First Repair Step	Drainage cleaning, gutter reset	Rafter & ridge replacement, ventilation
Stakeholder Match	Priests' meal-hall request aligns	Engineers' "roof first" warning aligns

Across stakeholder groups, residents and priests, lay devotees, and professionals there is a shared priority: to preserve the religious integrity of the space while addressing its current underuse. While professionals' express optimism, noting that reuse is "highly compatible if done sensitively," residents remain cautious, fearing commercial intrusion. The survey findings reflect this alignment, suggesting a spectrum of acceptable reuse where libraries and archives are broadly welcomed, while cafés and gift shops are widely viewed as crossing a line of cultural inappropriateness. All surveyed engineers (4/4) identify roof systems and termite-prone timber as significant structural failure sites, with 15% of residents (5/33) citing monsoon-related roof maintenance issues. This common concern lends support to a monsoon-aligned preventative maintenance plan focusing on roofs and lumber, with 66% of respondents (22/33) willing to attend events, showing potential for community participation. Latent programmatic demand. Visitor surveys show that 45% (15/33) choose interpretive places such as museums or cultural art exhibitions, while 9% (3/33) prefer spiritual reading areas, which corresponds to priests' interest in Vedic study or history galleries. This supports a dual-use model: ritual assistance during festivals and low-impact cultural interpretation generally, which is consistent with Menon (2022) "bi-functional reuse model," with 59% (19/33) supporting non-commercial cultural adaptive reuse. The Dubashi house, with its wide dining hall and dry courtyard, is perfect for immediate group eating or heritage displays, and all experts (4/4) support delicate adaptive reuse. The Gaitonde house's compact sacred zone requires progressive minor repairs and peripheral interpretation, with 75% of engineers (3/4) pointing out timber degradation and roof concerns. Priests' supper hall preferences complement Dubashi's design, whilst Gaitonde's rafter and ventilation requirements reflect engineers' emphasis on targeted timber renewal, setting Dubashi for public usage and Gaitonde for skilled conservation. These findings are supported and nuanced by comparisons to regional case studies. Thickett et al. (2023) analysis suggests adjusting conservation depth to both historic value and material condition; the various statuses of Dubashi and Gaitonde support this. Gaitonde exemplifies Menon (2020) claim that genuine material repair comes before program change, stating that no reuse is legitimate until structural and ventilation faults are remedied. Conversely, Dubashi's surplus dining-hall capacity parallels Chettinad mansion conversions where secondary ballrooms were transformed into museums without compromising ritual chambers illustrating a rare instance of ritual-compatible surplus space in Goan context. Studies on Kerala's nalukettu dwellings depict minimal spatial redundancy, underscoring how Goan priestly houses offer different reuse opportunities. Finally, the project echoes ICOMOS "living heritage" charters in prioritizing continued ritual function over static monument preservation, but extends them by introducing a condition-responsive layer: structural integrity determines the ceiling for permissible new uses.

The temple precinct contains century-old courtyard dwellings. Adaptive reuse is one potential means of preserving the existing character of these courtyard dwellings, but any changes to these dwellings must respect the spiritual and socio-cultural values. These dwellings are active places of worship, with resident priests occupying each dwelling. Civic uses were intended to help maintain a link to the regional Community and should be respected in terms of how civic visitors and services will interact with the dwellings. Existing dwellings that are looking to be rehabilitated for reuse should retain their original function of providing support for religious ceremonies and providing places for worship and reflection, not to be used for commercial purposes such as restaurants, retail stores, offices, etc., or to have additional levels added above the existing level of the dweller. Adding another level to existing structures will significantly add to and place increased stress on the existing foundation and existing beams, many of which are already in need of replacement, causing a risk of collapse. Both the spiritual nature of these dwellings and the structural characteristics of these dwellings dictate that reuse of these dwellings must be approached conservatively and respectfully, in a manner that enhances the spiritual environment without introducing the negative impacts associated with modern, commercial, and structurally taxing alterations.

CONCLUSION AND FUTURE WORK

The evidence available to stakeholders indicates a guarded, yet strong, consensus for the adaptive reuse of the courtyard houses of the Goan priests as long as the new use is respectful of the sacred essence of the buildings. The priests and the temple officers are favorably disposed towards using these buildings for libraries, archives and space for training in ritual, but they are decidedly against their use for cafes, retail and noisy tourism operations. This attitude is also confirmed by community surveys where approximately sixty percent of respondents would support the reuse of the buildings on the condition that their sanctity was preserved. Others involved in the architectural engineering analysis have indicated that while there are significant structural risks (roofs with leakage, beetle damaged timber and erosion of laterite), each building is still physically capable of being used. On-site investigations demonstrate that the priest's homes are still spiritually meaningful; however, the current structural condition of each varies significantly. Dubashi's home has a generous dining hall with good structure and could be slowly activated in a low-impact manner almost immediately; whereas Gaitonde's home has a smaller, more hieratic space and an unsound roof and would require more extensive restoration work before it could become functional. Matching social attitudes with material conditions provides a basis for developing practical approaches to activate these buildings: initiate public-facing pilot uses where the structural integrity of the building is intact and phase in further repairs where the ritual value of that area is the highest and the condition is most serious.

In theory, the study adds a condition responsive layer to living heritage discourse by showing that spiritual continuity must co-exist with spatial redundancy and material integrity in order to make intervention more effective. It provides a practical, replicable toolkit for use with mixed methods stakeholder interviews, perceptual surveys and documentation of the comparative plan, leading

to resulting decision matrix that crosses boundaries of acceptability (redundancy) and fabric health. Practical outcomes comprise seasonal maintenance schedules based on monsoon cycles, participatory programming guidelines, and community participation protocols specific to India's sacred home environments. Next steps begin with non-destructive timber-density scans and laterite-moisture mapping to validate visual diagnostics. A one-season pop-up heritage gallery in Dubashi's dining hall will test visitor flow, acoustics, and ritual coexistence, offering metrics for permanent programming. In parallel, Gaitonde's roof overhaul will embed craft-skills documentation, creating a live registry of local carpenters and masons for future temple-precinct projects. A wider range of research is needed, which involves involving pilgrims and youth as well as regional temple trustees, and incorporating spatial analysis through thermal comfort modelling and circulation heat maps. Constructing a conservation trust that is jointly administered by temple officials, professionals, and residents to manage the operation of funding and oversight.' By combining surveys on willingness to pay with lifecycle cost analysis, the long-term economic viability of phased, conditional reuse will be assessed and financial sustainability for cultural stewardship is ensured.

DECLARATION

The authors declare that this manuscript is original and has not been published or accepted for publication elsewhere, in print or electronic format.

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