

From Living Spaces to Multifunctional Venues: Transformation Mechanisms for the Revitalisation of Chuanxi Chuandou Vernacular Dwellings

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Abstract. Against the backdrop of urbanisation and rural transformation, Chuanxi Chuandou vernacular dwellings are facing problems like declining functionality and underutilised spaces. This paper looks at the topic from three dimensions: adaptive foundations, adaptive reuse patterns, and transformation mechanisms. The research shows that the continuity of spatial organisation, the structural adaptability of the Chuandou timber-framing system, and the regenerative capacity of local culture collectively support their revitalization. The author summarises four main usage patterns: cultural exhibition, commercial consumption, boutique accommodation, and comprehensive services, showing a trend toward multifunctionality. Based on this, the paper proposes a transformation mechanism comprising 'functional coupling, spatial reorganisation, place regeneration, and value reinterpretation,' revealing the underlying logic of traditional living spaces evolving into multifunctional places. It offers practical insights for reviving vernacular dwellings.

Keywords: Chuanxi Chuandou vernacular dwellings, adaptive reuse, transformation mechanisms, multifunctional venues, place regeneration.

1. Introduction

Chuandou timber-framed dwellings are an important type of traditional wooden architecture in southwest China. You can see them all over Sichuan, Chongqing, Guizhou, and Hunan. Among these, Chuanxi Chuandou dwellings have developed into a distinctive regional architectural system, shaped by the Linpan settlement environment. In recent years, accelerated urbanisation, transformations in rural social structures and changing patterns of habitation have gradually weakened the original residential functions of traditional dwellings, leaving many buildings vulnerable to underutilisation and deterioration [1]. Driven by rural revitalisation, traditional village conservation and the integration of cultural tourism development, adaptive reuse has increasingly become an important pathway for sustaining the value of traditional dwellings [2]. Numerous Chuandou dwellings have been transformed into new types of programmes, including boutique accommodation, cultural exhibition spaces, cafés and community shared spaces. Through this process, buildings have gradually evolved from spaces primarily serving domestic life into multifunctional venues open to the public.

Existing studies have primarily focused on three aspects: architectural forms, spatial configurations and construction techniques; regional cultural values and settlement environments; as well as conservation strategies and practical approaches for traditional dwellings. Most existing research has concentrated on the intersection of adaptive reuse, rural revitalisation and cultural heritage conservation [3]. However, limited attention has been given to the interactions among functional organisation, spatial restructuring, place-making and value reinterpretation during the adaptive reuse process. A holistic understanding of the processes and underlying mechanisms through which traditional living spaces evolve into multifunctional venues remains insufficient.

Based on these circumstances, this study tries to answer the following key questions:

- (1) What are the adaptive foundations supporting the revival of Chuanxi Chuandou vernacular dwellings?
- (2) What are the main adaptive reuse patterns that have emerged, and how do their characteristics differ?

(3) How do traditional residential spaces evolve into multifunctional places, and what are the mechanisms behind this transformation?

This paper conducted field research on the Chuanxi Chuandou vernacular dwellings, and combined literature review, case analysis, and comparative research methods [4]. The model of the research methods is shown in the figure below.

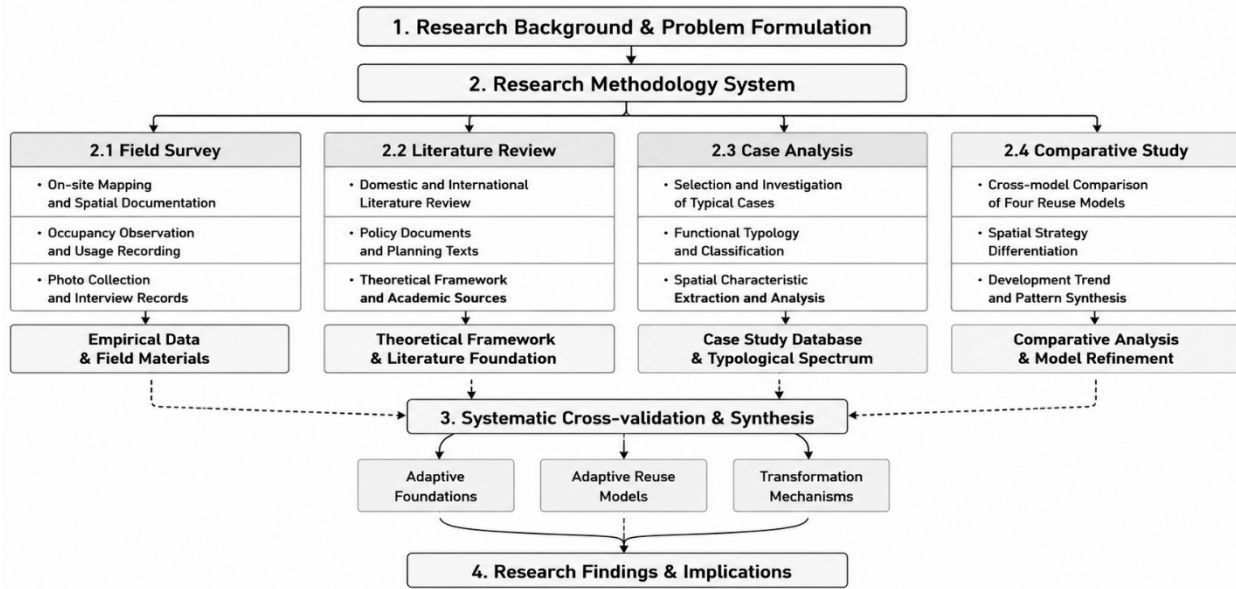


Figure 1. Research Methodology Diagram

2. Adaptive Foundations for the Revitalisation of Chuanxi Chuandou Vernacular Dwellings

Existing studies show that the success of adaptive reuse is closely linked to the architectural characteristics, structural condition, and sociocultural value of heritage buildings. These architectural features are considered to be important factors which ultimately determine the sustainability and viability of heritage adaptive reuse [5]. With this background, the renewable potential of traditional Chuanxi Chuandou vernacular dwellings can be explored in the following three aspects, which are interwoven: continuous spatial coherence, flexible structural adaptability, and localised cultural value empowerment.

2.1 Continuity of the Spatial Organisation System

The layout of the vernacular dwellings of Chuanxi Chuandou is connected and consists of courtyards, skywells and eave galleries. The courtyard forms the central space, providing daylight, ventilation, and a place for social interaction. The skywell connects indoor spaces with the external environment and helps regulate light and airflow. The eave gallery links the indoor spaces to the courtyard, and facilitates the transition from interior rooms to exterior areas [6]. Together, these elements constitute a continuous spatial network. This spatial continuity provides a flexible basis for accommodating activities of varying intensities, enabling traditional dwellings to achieve a certain degree of spatial adaptability through allocation and subdivision.

2.2 Adaptability of the Chuandou Timber-Framing System

The Chuandou structural system achieves stability through the frictional interaction between columns and horizontal members [7]. In this system, walls primarily serve enclosure and partitioning functions, resulting in a relative separation between structural support and spatial enclosure. This characteristic provides considerable flexibility for internal spatial adjustment, particularly in relation to non-load-bearing interfaces. Meanwhile, the exposed timber-framing system demonstrates clear

tectonic expression, providing these dwellings with strong spatial recognisability and considerable potential for interpretation and display during adaptive reuse.

2.3 The Regenerative Nature of Regional Cultural Value

Chuanxi Chuandou vernacular dwellings developed in the region's plains and plateaus. They are closely connected with forests, waterways, and farmland, forming a unified residential landscape. This connection gives the houses a strong sense of place and supports local identity. The architecture also reflects the cultural values of local building traditions [8]. These houses have long been part of farming and daily social life, so their layouts are closely linked to local ways of living. They also carry long-term living practices and strong local memories.

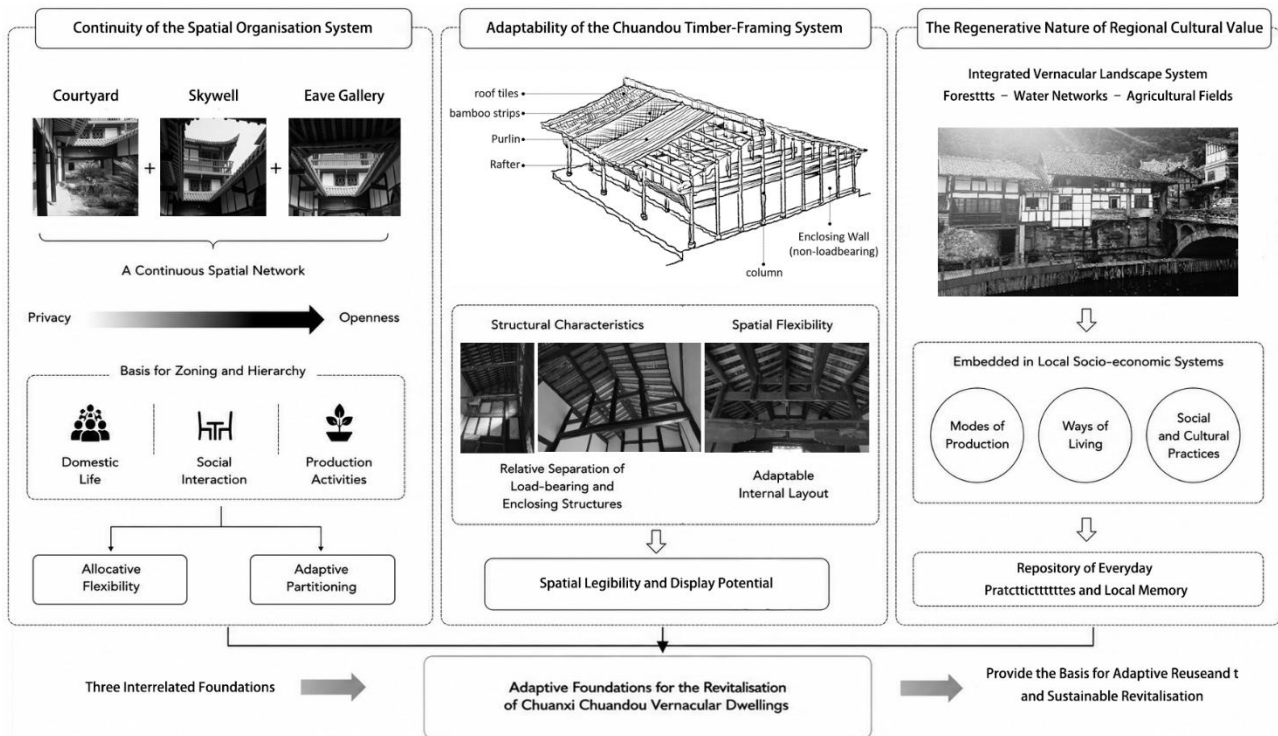


Figure 2. Adaptive Foundations for the Revitalisation of Chuanxi Chuandou Vernacular Dwellings

3. Adaptive Reuse Models of Chuanxi Chuandou Vernacular Dwellings

Chuanxi Chuandou vernacular dwellings show a clear trend towards integrating functions. Based on their main purpose, they can be categorized into four main types of use, as shown in Figure 3.

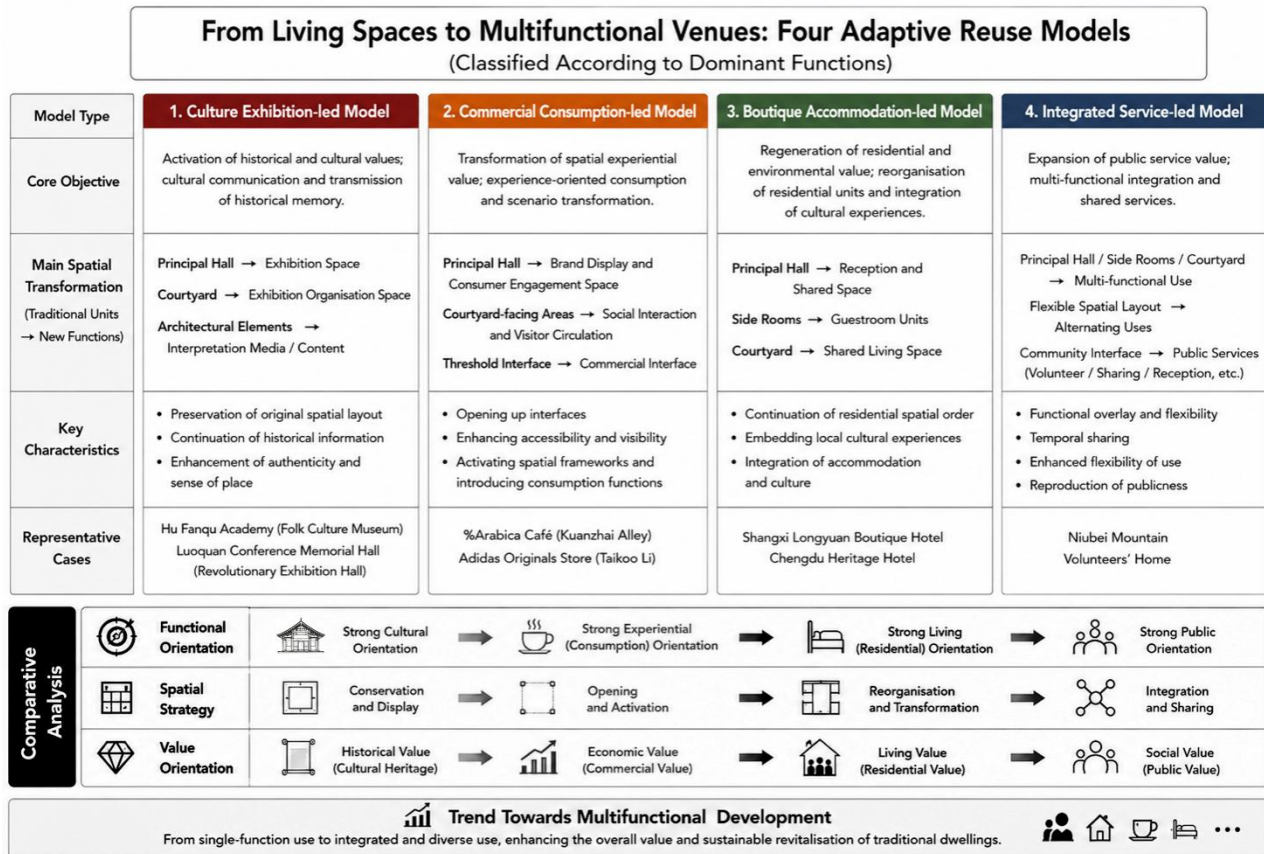


Figure 3. Comparison of Revitalisation Models

3.1 Cultural Exhibition-Oriented Model—Revitalisation of Historical and Cultural Value

Many cultural exhibition projects use historic sites, such as former homes of famous people, academies, and revolutionary monuments. Their primary function is to impart cultural knowledge and preserve cultural memory. These places have value because of their history, as evidenced in the buildings. For example, Hu Fanqu Academy was turned into a folk culture museum, but its courtyard layout and wooden structure were kept. The spatial arrangement of the original exhibition is also followed in the exhibitions. The Luoquan Conference Memorial Hall is another one. It explores the revolutionary history in a traditional house. The exhibition links the building, its interior spaces, and historical events. The traditional Chuandou houses offer a more realistic historical environment than the new exhibition buildings. With their old materials and original spaces, they are more connected with the past.

3.2 Commercial Consumption-Oriented Model—Market Transformation of Spatial Experience Value

Some commercial ventures such as cafés, retail outlets, cultural outlets and restaurants. They are typical in historic neighbourhoods and urban centers. The special spatial experience becomes an important attraction for these projects, which transform old buildings into useful ones for customers. Designers use the courtyard layout and wooden column grid of chuandou houses. They are open to enter the interior and to make the façades more visible from the street. The main hall may serve as a product display area, and areas adjacent to the courtyard may be transformed into meeting areas, walkways. The space is transparent and has an identity, with exposed wooden beams linking the interior. For instance, the %Arabica café in Kuanzhai Alley preserves the original wooden structure and the courtyard size while introducing a modern interior. The Taikoo Li Adidas Originals location makes use of the courtyard format to design the product zones and movement of customers.

3.3 Boutique Accommodation-Oriented Model—Continuation and Regeneration of Residential Environmental Value

The model of the most common adaptive reuse of Chuanxi Chuandou vernacular dwelling units is that of boutique accommodation. It consists primarily of boutique hotels and Guesthouses. This model transforms the original homes into accommodation spaces through the reorganisation of the spaces in houses. Main hall for reception and common area and side halls as guest rooms. The courtyard is used as a common living space. These spaces combine to create an accommodation system following the original residential layout. Most projects retain the courtyard structure and room zoning, and then infuse the area with cultural activities. For instance, Shangxi Longyuan Boutique Hotel houses its rooms around a traditional courtyard design of three sides. Chengdu Heritage Hotel also preserves the original courtyard and timber frame, and introduces exhibitions and cultural activities.

3.4 Comprehensive Service-Oriented Model—Expansion and Sharing of Public Service Value

A service-based architecture that integrates public facilities, social spaces and short-term accommodation within a single structure. The key advantage is the space in the modules which can be readily repurposed from one area to another. This will enable the building to accommodate a variety of activities and accommodate different users. The Niubei Mountain Volunteer Station is based on this design concept. Retaining the original structure and spatial organization, it includes spaces for reading and discussion, volunteer service, visitor reception and short-term accommodation. These functions are made available with the help of spatial changes and new management plans. Consequently, a space that in the past was primarily for family use is now used by visitors, volunteers, locals, and operators. The same space can support different functions at different times, thereby optimising space use and increasing flexibility. These groups also make the building a shared space of interaction and cooperation. Its public role is strengthened through daily use, communication, and joint activities.

3.5 Comparison of Models and Development Trends

The four models use different spatial strategies. The cultural exhibition model focuses on preserving historical information and the original character of the space. The commercial model opens spatial boundaries and creates spaces for visitor experiences. The boutique accommodation model keeps the residential function by reorganising rooms. The service model combines several functions and allows flexible use of space. These differences show how Chuandou vernacular dwellings are adapted for different uses. Courtyards, main halls, side rooms, and timber column grids are arranged in different ways to support new functions. The original spatial structure remains the basis for these changes. The boundaries between the four models are becoming less clear. Spaces designed for one function are gradually being changed to support several related functions.

4. Transformation Mechanisms of the Revitalisation of Chuanxi Chuandou Vernacular Dwellings

4.1 Functional Coupling: The Generative Mechanism of Multifunctional Use

Spaces do not develop functionally coupled relations by themselves. Such connections come about when people change original spatial frameworks to meet outside practical needs. Cultural display spaces, retail businesses, lodging facilities, and communal events have become core functional parts. Each part supports the others during daily operation. Cultural displays present the site's local culture and identity. Commercial activities provide steady income for long-term management. Accommodation increases the daily use of the space, while public programmes make the site more open and strengthen community belonging. These functions are not simply added to the building. They are arranged according to the original spatial structure of Chuandou vernacular dwellings. Courtyards, main halls, side rooms, and eave galleries are closely connected, which allows different

activities to take place in the same building. This arrangement improves space use and helps meet the needs of different users.

4.2 Spatial Reorganisation: An Adaptation Mechanism under Structural Constraints

Reorganising the internal layout is the main way to combine functions without changing the original structure. The flexible Chuandou timber frame supports this change. After renovation, the courtyard becomes a public activity space, while the main hall is used for reception and cultural displays. The adjoining rooms are converted as needed into guest rooms, sales booths, or workspaces. This flexible change is thanks to a key feature of the traditional timber structure. The load-bearing frames and wall enclosures are separate parts. Designers can move partition walls, change connecting points, and redirect foot traffic to redefine building functions. They do all this without touching the main load-bearing timber skeleton. Also, the column grid is built on standard bay units. It gives a steady spatial backbone. This allows new functional zones to be added and combined freely. So these traditional buildings gain a lot of flexibility to split, rearrange, and extend interior spaces. With this mechanism, the spatial layout gives up the old rigid household-centered setup. It takes on a modular way of use. Its operating logic changes from static fixed zoning to dynamic, adaptable space allocation.

4.3 Place Regeneration: A Meaning-Making Mechanism through Multi-Actor Participation

A place does not take shape just from its physical form. It comes into being when people give special meanings to a space through daily activities that happen again and again. This matches key ideas in place theory. Place theory says that place is a social idea, and it comes from people's own lived experiences [9]. Changing building spaces changes what a site means. This change happens mostly because more kinds of visitors and activities come in. Chuanxi Chuandou vernacular dwellings used to be only for resident families. Now they welcome managers, shoppers, tourists, and local community members. Spaces that were once private homes have turned into places for public exchange. The symbolic value of these sites no longer comes from fixed daily routines. Instead, ongoing social exchanges keep adding new layers of place meaning. Regional cultural heritage also gives a basic frame for this process of making meaning. It ties people's physical surroundings to three connected layers: built space, collective cultural memory, and face-to-face social contact.

4.4 Value Reinterpretation: The Formation Mechanism of Cultural Capitalisation

Changing the symbolic meaning of these historic places also changes the value of traditional buildings. Spaces once used for daily life are now seen as cultural resources with new development potential. The timber frames, room layouts, and village settings of Chuanxi Chuandou dwellings have been included in cultural and creative industries. They are now used for exhibitions, local retail, and homestay services, which create both economic and social value for local communities [10]. During this change, the building components are no longer seen only as practical materials. They also become cultural symbols with clear local features. The original residential layout becomes a cultural experience for visitors, while the village setting changes from a simple background into an important cultural landscape resource. As a result, the value of these dwellings shifts from residential use to cultural display and public communication. Heritage value is therefore shaped by continued social use and participation rather than being fixed in the building itself [11].

4.5 A Model of Transformation Mechanisms

The renewal of Chuanxi Chuandou vernacular dwellings develops as a gradual cycle driven by changes in building use. The process includes four stages: combining different functions, reorganising space, creating cultural meaning, and redefining value.

Four elements support this cycle. New mixed-use functions provide the main driving force, while the original timber frame limits how the building can be changed. The creation of meaningful cultural places is a key stage in the renewal process. New cultural and economic benefits then support further

changes to the building. These benefits influence later decisions about spatial zoning and renovation, which allows the project to be adjusted and improved over time.

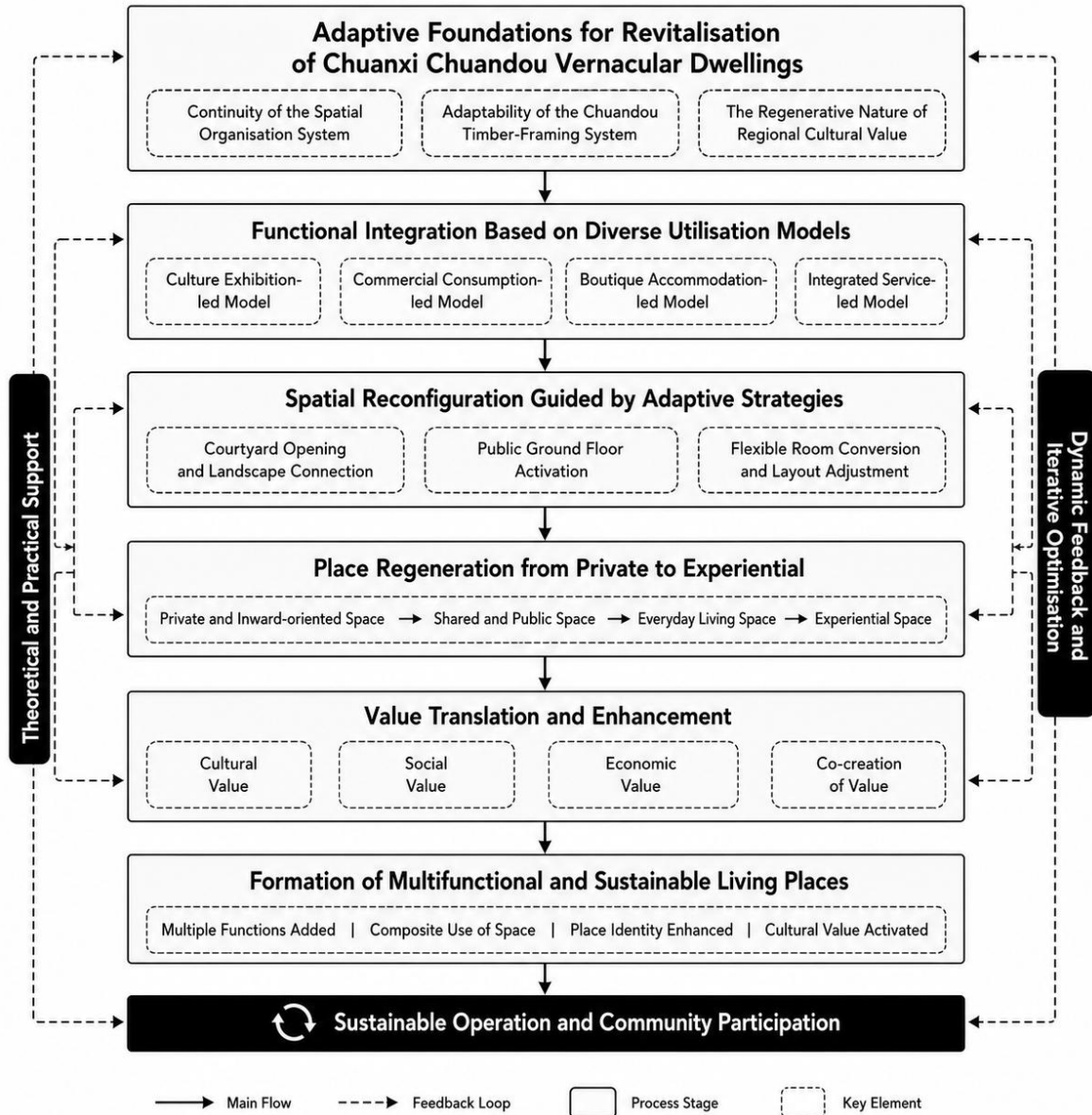


Figure 4. Diagram of the Internal Mechanisms of Revitalisation

5. Conclusion

The study confirmed that Chuandou structural system offers great spatial flexibility. It also showed that they are highly adaptable in functional terms. With proper renovations, these vernacular dwellings are no longer just static living spaces. They become living supports of the local cultural heritage. Ongoing changes and daily use help revitalize both the building's structure and the local popular culture. It investigates their adaptive renewal and spatial evolution process. It shows how conventional residential spaces are upgraded to take on different public functions. Many people think building revitalisation is just simple functional replacement. But this research argues that the renewal of these vernacular dwellings is an ongoing, constraint-based practice of structural optimisation. It relies on the built-in spatial, structural, and cultural traits of local Linpan settlements. These traits are used to add new functions and improve spatial layouts. Field-based case analysis sums up four distinct renewal models from real renovation practices. These models show a clear trend from isolated single-function use to combined multi-functional integration.

This research sets up a four-stage analytical logic. It covers functional coupling, spatial restructuring, place reconstruction, and value reinterpretation. It unpacks the self-circular internal mechanism of dwelling revitalisation. Outside social needs set off structural adaptation. This changes spatial meanings. And then architectural value keeps being updated and improved over time. The findings also confirm the strong adaptability of the local column-and-tie timber system. Rational adaptive renovation helps these traditional buildings get out of the problem of being idle, static residential spaces. They become important carriers for passing on local folk culture.

References

- [1] Zhao, D. (2023). Research on courtyard space of traditional dwellings in Chengdu region [Master's thesis]. Southwest Jiaotong University. (in Chinese)
- [2] Ren, P. P. (2017). Study on the relationship between architectural art and environment of traditional western Sichuan dwellings [Master's thesis]. Wuhan Institute of Technology. (in Chinese)
- [3] Qi, H. H., & Lei, H. Q. (2023). Modern translation of spatial elements in traditional western Sichuan dwellings—Taking Xibian Hotel as an example. *Urban Architecture*, 20(2), 135–137. (in Chinese)
- [4] Groat, L. N., & Wang, D. (2013). *Architectural research methods* (2nd ed.). John Wiley & Sons.
- [5] Vafaie, F., Remøy, H., & Gruis, V. (2023). Adaptive reuse of heritage buildings: A systematic literature review of success factors. *Habitat International*, 142, 102926. <https://doi.org/10.1016/j.habitatint.2023.102926>
- [6] Li, X. B. (2026). Exploration of multiple paths for the conservation and adaptive reuse of traditional dwellings. *Oriental Collection*, 4, 85–87. (in Chinese)
- [7] Zhao, Y., & Shen, Y. (2021). Beyond the terminology of traditional timber construction: A case study of Chuandou vernacular dwellings in Sichuan. *Architectural Journal*, 4, 114–119. (in Chinese)
- [8] Wei, C., Bao, J. G., Cheng, Y. Q., et al. (2026). Conservation, renewal and revitalisation of traditional villages in the new era: Institutional innovation, collaborative governance and technological empowerment. *Journal of Natural Resources*, 41(4), 963–992. (in Chinese)
- [9] Relph, E. (1976). *Place and placelessness*. Pion.
- [10] Zeng, X. J., Wang, K., Wang, W. L., et al. (2025). Research progress on the revitalisation of traditional villages in China. *Journal of Natural Science of Hunan Normal University*, 48(2), 59–73. (in Chinese)
- [11] Smith, L. (2006). *Uses of heritage*. Routledge.