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A Conceptual Framework of Culturally-Based Planning for Sustainable Spatial Development in Indigenous Villages

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ABSTRACT

Indigenous villages face growing pressures from modernization and unplanned development, creating tensions between cultural preservation and spatial adaptation. This study develops a conceptual framework for culturally based planning in sustainable spatial development, using Kasepuhan Sinar Resmi, part of the UNESCO Global Geopark Ciletuh, as a case study. An integrative methodological design was employed, combining SWOT analysis for situational diagnosis, multi-criteria analysis (MCA) for structured prioritization, and the Delphi method for stakeholder consensus-building. Results show that socio-cultural values, particularly rituals, rice barns (leuit), and customary governance, emerged as the highest priority, confirming the central role of intangible heritage as active planning criteria. MCA indicated that culture anchors planning (40%), environment sustains it (35%), and economy complements it (25%), while the Delphi process demonstrated that authenticity can be reframed as a negotiated construct, reconciling preservation with modernization. The study produced a zoning model comprising a core preservation area, a culturally aligned buffer zone, and a sustainable development zone, offering both local solutions and globally transferable lessons. Theoretically, the research enriches heritage conservation discourse by operationalizing the concept of living heritage and advancing participatory governance as a mechanism for adaptive authenticity. Practically, it highlights the need to recognize customary authority as a legitimate planning infrastructure and to integrate cultural values into zoning regulations. The findings demonstrate that indigenous communities can transform modernization–preservation tensions into opportunities for adaptive resilience, providing insights applicable to other indigenous settlements worldwide.

Keywords: culturally-based planning, indigenous villages, cultural heritage, community-based tourism, sustainable land management.

INTRODUCTION

Indigenous villages represent socio-cultural systems that preserve traditional architecture, land-use practices, and intangible heritage, making them vital for cultural diversity and sustainability worldwide [1]. International scholarship stresses that these settlements face significant risks from urbanization, tourism expansion, and modernization, which often erode authenticity and weaken cultural resilience [2] [3]. Within global heritage discourse, indigenous villages are positioned not only as heritage landscapes but also as active contributors to sustainable development. The UNESCO Global Geopark initiative, for instance, emphasizes the role of indigenous communities in linking heritage preservation with sustainable territorial planning [4].

The case of Kasepuhan Sinar Resmi, located in Sukabumi, Indonesia, exemplifies these tensions. This indigenous village, acknowledged as part of the UNESCO Global Geopark Ciletuh, retains traditional wooden houses, rice barns (leuit), and communal spaces [5], while increasingly surrounded by modern residential and infrastructure development [6]. The juxtaposition, as shown in Figure 1, illustrates how traditional and modern buildings coexist within the same settlement, raising concerns about cultural integrity, visual landscape, and long-term heritage sustainability. Such dynamics highlight the urgent need for planning strategies that respect cultural authenticity while accommodating modernization pressures [7] [8].

Figure 1. Traditional and modern buildings in one area

Several studies have examined indigenous settlements, including research on spatial morphology [9], ritual and cultural transformation [10], and the role of local wisdom in shaping identity [11]. Internationally, studies have also linked cultural landscapes to sustainable planning and geopark management [12] [13]. However, these works remain fragmented, often focusing either on cultural conservation, tourism development, or environmental management in isolation. They lack integrative approaches that embed cultural values into holistic spatial planning [14]. As illustrated in Figure 2, prior studies outline relevant components but fall short of offering a comprehensive conceptual framework for long-term indigenous settlement planning.

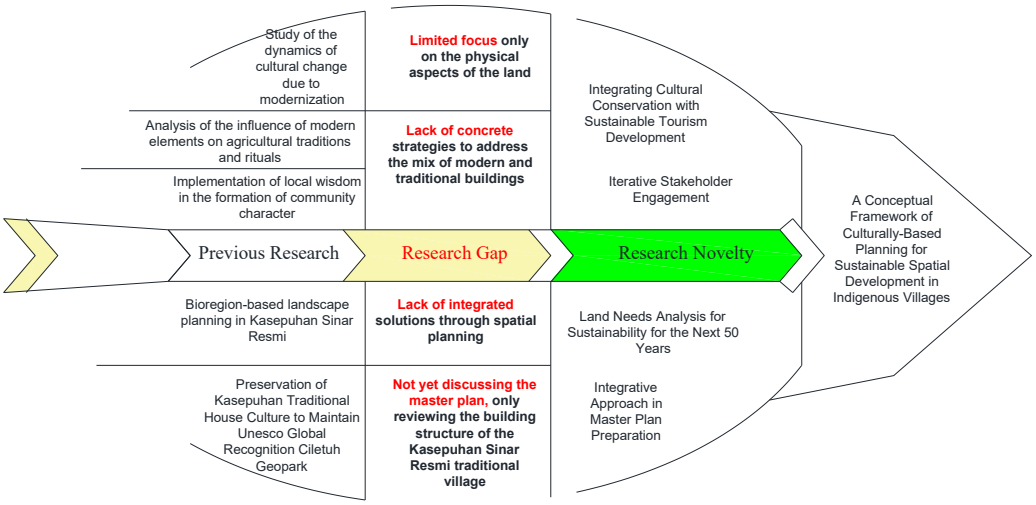

Figure 2. State of the art and novelty

The central gap is the absence of a systematic framework that unites cultural heritage preservation with spatial planning for sustainability. Conservation studies emphasize physical protection, while tourism studies focus on economic potential [15], yet few integrate these with demographic projections, zoning strategies, and multi-stakeholder participation. The problem addressed in this

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study is therefore: how can indigenous cultural systems be systematically embedded into spatial planning frameworks to ensure sustainable development while maintaining cultural authenticity?

To address this problem, the study is guided by the following research questions:

1. How can a conceptual framework be developed to embed cultural values into spatial planning for indigenous settlements?
2. What strategies are required to balance traditional land-use patterns with modernization and long-term sustainability needs?
3. In what ways can participatory approaches enhance the effectiveness and legitimacy of planning in indigenous contexts?

Accordingly, the study aims to construct a conceptual framework of culturally-based planning for sustainable spatial development, tested through the case of Kasepuhan Sinar Resmi.

This paper contributes to the global literature by advancing the theory of culturally-informed planning, moving beyond descriptive accounts to offer a replicable conceptual model. Practically, it provides planning guidelines that empower policymakers, local governments, and indigenous communities to reconcile heritage conservation with sustainable development. The framework demonstrates that indigenous traditions can serve as active resources in designing adaptive and resilient settlement strategies, relevant to both local and international contexts.

The remainder of this article is structured as follows: Section 2 presents the integrative methodological approach; Section 3 reports empirical findings including demographic projections, spatial zoning, and socio-economic impacts; Section 4 discusses theoretical and practical contributions in light of global literature; and Section 5 concludes with key insights, policy implications, and recommendations for future research.

RESEARCH METHODS

Methodological Approach

This study adopts an integrative methodological approach that combines multiple analytical tools to ensure a holistic examination of indigenous settlement planning. Rather than applying methods in isolation, the design sequentially integrates SWOT analysis [16], multi-criteria analysis (MCA) [17] [18], and the Delphi method to address the multidimensional nature of culturally-based planning [19]. This integrative design allows the study to capture socio-cultural, economic, and environmental dimensions while ensuring stakeholder participation and consensus building. The methodological novelty lies in embedding cultural heritage values directly into spatial planning models, an approach rarely adopted in previous studies that tend to treat culture, tourism, and environment as separate domains.

Case Study Design

The research employs a case study strategy with Kasepuhan Sinar Resmi as the focal site, recognized within the UNESCO Global Geopark Ciletuh. The case study approach enables in-depth exploration of local cultural dynamics, traditional spatial patterns, and ongoing modernization pressures [20]. This site was chosen for its unique combination of strong cultural heritage and high exposure to development pressures, making it an exemplary case for testing the proposed conceptual framework.

Data Collection

Data collection integrated both primary and secondary sources.

- Primary data were obtained through field observations, mapping of settlement patterns, and semi-structured interviews with traditional leaders, community members, and local policymakers. Participatory observation of cultural practices further enriched contextual understanding [21].
- Secondary data included government planning documents (RTRW, RDTR), UNESCO reports, demographic statistics, and previous academic studies. These sources supported triangulation and ensured methodological robustness [22].

Analytical Procedures

1. SWOT Analysis was applied to identify internal strengths and weaknesses, as well as external opportunities and threats related to cultural heritage, socio-economic dynamics, and environmental conditions [23] [24].
2. Multi-Criteria Analysis (MCA) operationalized the prioritization of planning dimensions by assigning weights to social, economic, and environmental criteria, based on stakeholder inputs. This step provided a structured basis for decision-making beyond qualitative description [25] [26].
3. Delphi Method involved iterative consultations with a panel of experts, including academics, planners, and indigenous leaders, to refine planning scenarios and reach consensus on zoning strategies and development priorities [27] [28].

The integration of these methods created a three-layered validation process: SWOT generated baseline insights, MCA structured quantitative prioritization, and Delphi ensured consensus and legitimacy [29].

Novelty and Rationale

The methodological contribution of this study lies in combining culturally-grounded insights with structured decision-making tools. By embedding cultural values into technical planning analyses, the research bridges the gap between heritage preservation and sustainable spatial planning. This integrative process demonstrates how indigenous traditions can function as active planning resources, rather than static cultural artifacts, offering a replicable model for indigenous settlements globally.

Research Workflow

The sequential research design is summarized in Figure 3, which illustrates the logical flow of activities from problem identification to the development of the conceptual planning framework.

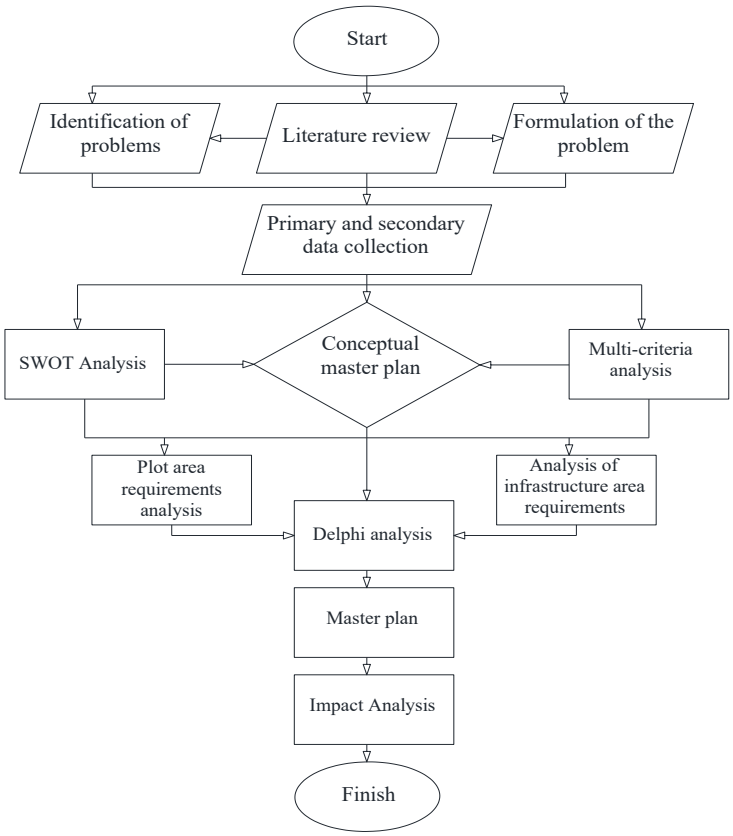

Figure 3. Research Flow Diagram

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As shown in Figure 3, the research begins with problem identification, literature review, and problem formulation to establish the foundation of inquiry. The next stage involves program formulation and data collection from both primary and secondary sources, which include field observations, interviews, and official planning documents [30] [31]. The data are then analyzed through an integrative process [32][33]: SWOT analysis is used to assess internal and external conditions [34] [35], while multi-criteria analysis (MCA) provides a structured prioritization of social, economic, and environmental dimensions [36] [37]. These analyses converge in a conceptual master plan that is refined through the Delphi method, incorporating expert consensus to validate priorities and development scenarios [38] [39]. The results are consolidated into a comprehensive plan, followed by impact analysis to evaluate sustainability implications, before concluding with the final reporting and recommendations.

This workflow demonstrates the study's methodological novelty, as it integrates qualitative and quantitative approaches into a single framework while embedding cultural values at each stage. Such an approach ensures that the outcomes are not only locally relevant but also transferable to global debates on indigenous settlement planning and sustainable development.

RESULT AND DISCUSSION

This section presents the empirical findings and integrated analyses, structured into five components: (i) the contextual profile of the indigenous settlement, (ii) a SWOT analysis drawing on both primary and secondary data, (iii) a Multi-Criteria Analysis (MCA) that formalizes planning priorities, (iv) a Delphi analysis used to build multi-stakeholder consensus, and (v) the theoretical and policy implications. The discussion is framed within the mandate of the UNESCO Global Geopark Ciletuh–Palabuhanratu, which emphasizes the interlinkage of heritage conservation—geological, ecological, and cultural—education, and sustainable local development [40]. This mandate provides the normative foundation for evaluating spatial development strategies in Kasepuhan Sinar Resmi.

Kasepuhan Sinar Resmi is located in Sirnaresmi Village, Cisolok Subdistrict, Sukabumi Regency, within the broader network of Banten Kidul customary communities, and is designated as part of the UNESCO Global Geopark Ciletuh–Palabuhanratu [41]. Sirnaresmi Village spans approximately 4,900 hectares, consisting predominantly of forest and agricultural land, underscoring the community's profound dependence on agrarian and forest ecosystems.

Recent demographic records indicate that the community comprises approximately 11,000 inhabitants (around 2,500 households), distributed across several hamlets under the leadership of the Abah (customary chief) [41]. The governance system is multi-layered, incorporating roles such as pamakayaan (guardian of ritual farming cycles), tukang leuit (rice barn keeper), penghulu (religious leader), paraji (birth attendant), and kokolot lembur (village elders). Collectively, this institutional structure codifies the community's ritual calendar, spatial norms, and daily governance, ensuring both cohesion and continuity in the management of customary territory.

Architectural and settlement studies reveal a spatial pattern deeply rooted in the "rice culture" that underpins the community's identity. Clusters of stilted wooden houses encircle the Imah Gede (the traditional longhouse and ceremonial hall) and the buruan gede (communal courtyard). The leuit (granaries) serve as enduring symbols of food security and communal wealth, while rice fields and dryland plots are directly integrated with residential areas [20]. The settlement lies at an elevation of approximately 570–630 meters above sea level, at the foothills of tropical montane forest. Although some houses now incorporate modern materials such as asbestos or corrugated iron roofing, the vernacular architectural character continues to guide cultural and ethical design.

The community's agrarian identity is embodied in the practice of cultivating rice once annually, followed by a cycle of rituals culminating in the storage of harvests in the Leuit Si Jimat, the sacred communal rice barn. The annual Seren Taun festival, highlighted by the ceremonial procession ngampih pare ka leuit led by the Abah, serves not only as a thanksgiving ritual but also as a mechanism for food security, intergenerational cultural transmission, and geo- and eco-tourism [42].

Relationship with Conservation Areas and the Geopark Mandate. Historically, Kasepuhan Sinar Resmi has maintained an intricate relationship with the Gunung Halimun–Salak National Park (TNGHS), particularly with regard to access to customary resources. Current spatial arrangements—including rice fields, leuweung (customary forests), huma (swidden fields), and settlements—must therefore be adaptively managed to balance indigenous rights, conservation regulations, and the sustainability objectives of the Global Geopark [43].

SWOT Analysis.

The SWOT analysis was conducted to identify the internal strengths and weaknesses of Kasepuhan Sinar Resmi, alongside external opportunities and threats shaping its spatial development [44]. Data sources combined primary data (field observations, community interviews, participatory mapping) and secondary data (government planning documents, demographic statistics, and previous research). By integrating both sources, the analysis provides a balanced understanding of how cultural heritage, socio-economic conditions, and environmental factors influence planning [45].

Table 1 presents the synthesized SWOT matrix. Each category includes both qualitative descriptions and frequency/weight values assigned by stakeholders during participatory workshops.

Table 1. SWOT Matrix of Kasepuhan Sinar Resmi

Strengths (S)	**Frequency (%)**	**Weaknesses (W)**	**Frequency (%)**
Strong cultural leadership under *Abah* and customary council	85	Limited modern infrastructure (roads, sanitation, health facilities)	72
High social cohesion and mutual cooperation (*gotong royong*)	80	Economic dependence on subsistence agriculture	68
Sustainable rice barn (*leuit*) system ensuring food security	78	Limited adoption of environmentally friendly building materials	55
Recognition as part of UNESCO Global Geopark Ciletuh	74	Outmigration of youth to urban centers	49
Strong ritual calendar reinforcing identity (*Seren Taun*)	71	Limited disaster risk preparedness and waste management	44
Opportunities (O)	**Frequency (%)**	**Threats (T)**	**Frequency (%)**
Eco- and cultural tourism development linked to Geopark	83	Uncontrolled modernization eroding cultural identity	79
Government recognition and policy support for indigenous resilience	76	Land conversion and encroachment into paddy fields	71
Growing market for organic rice and palm sugar products	69	Environmental risks: landslides, erosion, heavy rainfall	67
NGO and academic partnerships for community-based projects	62	External investors influencing land use without cultural sensitivity	58
Potential for youth engagement in creative economy	58	Climate change impacts on agriculture and water resources	55

Graphical representation to visualize stakeholder perceptions, Figure 4 summarizes the weighted priorities of SWOT categories, highlighting the relative importance assigned to each quadrant.

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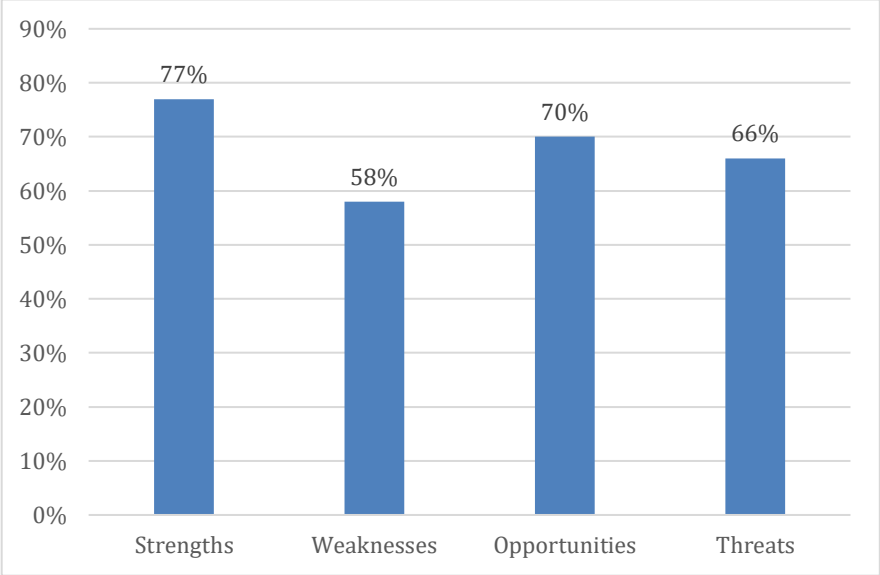

Figure 4. SWOT analysis weight priorities (%)

Strengths (77%) emerged as the most dominant factor, driven by cultural leadership and social cohesion. Opportunities (70%) are considerable, particularly through Geopark-linked eco-tourism and policy support. Threats (66%) highlight risks of cultural erosion and environmental hazards that require mitigation. Weaknesses (58%), though less dominant, underscore pressing infrastructure and demographic challenges.

The SWOT results highlight that cultural strengths provide the most stable foundation for sustainable planning. The role of the Abah and ritual systems (such as Seren Taun and leuit storage) not only preserves identity but also delivers functional resilience—particularly in food security. This aligns with studies showing that indigenous rice barn systems provide adaptive strategies for climate variability [46] [47].

At the same time, weaknesses such as inadequate infrastructure and youth outmigration indicate that without targeted interventions, the community's cultural resilience may not translate into economic sustainability. For example, poor road access constrains market expansion for palm sugar and eco-tourism [48].

Opportunities reinforce the importance of linking local initiatives with external frameworks. Being part of the UNESCO Geopark generates visibility and attracts support, while also placing responsibility on the community to meet sustainability standards [49]. However, threats underscore the fragility of this balance: unregulated development could quickly erode the very cultural assets that give the village its global significance.

In conclusion, the SWOT analysis establishes a critical insight: the village's strengths and opportunities are largely cultural and policy-driven, while its weaknesses and threats are socio-economic and environmental. This duality confirms the necessity of integrative planning, where cultural heritage is not isolated but embedded as the axis around which development strategies revolve.

Multi-Criteria Analysis (MCA)

While the SWOT analysis identified key internal and external factors, a Multi-Criteria Analysis (MCA) was employed to translate these qualitative insights into structured, quantitative priorities. MCA enables decision-makers to assign weights to social-cultural, economic, and environmental dimensions, reflecting stakeholder preferences collected from interviews, participatory workshops, and Delphi survey inputs [50]. By combining both primary data (community and expert evaluations) and secondary data (statistical indicators, planning reports), MCA provides a robust foundation for identifying which development dimensions should dominate the conceptual framework.

Stakeholders (community leaders, youth representatives, local government, and Geopark officials) were asked to distribute 100 points across three dimensions. The aggregated results are presented in Table 2, and visualized in Figure 5.

Table 2. MCA Weighting Results for Planning Dimensions

Planning Dimension	Assigned Weight (%)	Key Considerations
Socio-Cultural	40	Preservation of traditional architecture, ritual practices, and customary governance
Environmental	35	Protection of forests, water sources, and agricultural land; disaster risk reduction
Economic	25	Tourism development, palm sugar and organic rice markets, infrastructure improvement

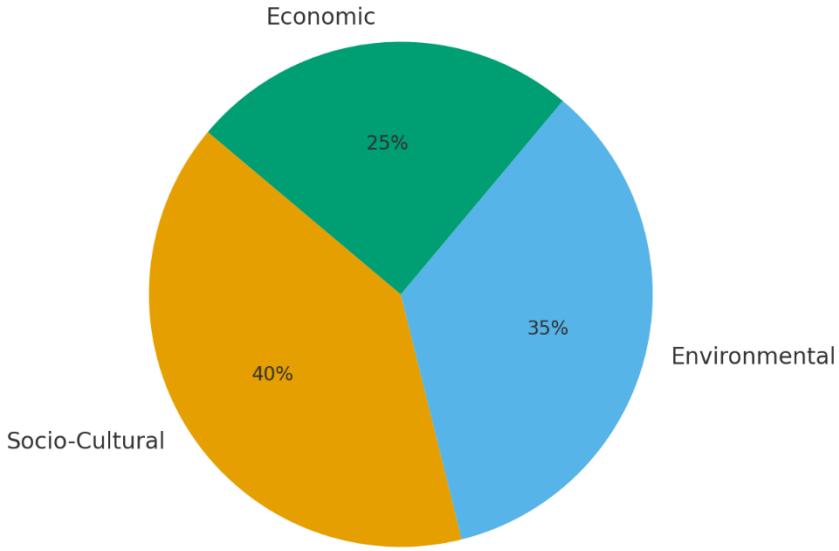

Figure 5. MCA weight distribution (%)

The MCA results clearly indicate that socio-cultural sustainability (40%) emerges as the top priority, confirming that cultural preservation is regarded as the indispensable axis of future development. This reflects both community sentiment and external expert validation: cultural assets such as the Imah Gede, leuit system, and Seren Taun festival are considered irreplaceable and thus must form the non-negotiable core of spatial planning.

The environmental dimension (35%) ranks second, highlighting the importance of safeguarding forests, terraces, and water resources that not only sustain local agriculture but also mitigate hazards such as landslides and soil erosion. This priority reflects the recognition that ecological stability is intimately tied to cultural survival, as rituals and agrarian practices depend on healthy landscapes.

The economic dimension (25%), though essential, is intentionally weighted lower. Stakeholders emphasized that while tourism and market opportunities for local products are valuable, these must not override cultural and environmental imperatives. Economic strategies should therefore be designed to complement, not compete with, heritage and ecological values—for example, by promoting community-based tourism and sustainable agriculture rather than external, large-scale investment.

Overall, MCA demonstrates a deliberate prioritization framework:

1. Culture anchors the plan,
2. Environment sustains it,
3. The economy complements it.

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This structured prioritization provides the basis for scenario testing in the Delphi process, where zoning and land-use strategies are negotiated.

Delphi Analysis

The Delphi method was used to integrate diverse perspectives—customary leaders, youth representatives, women's groups, local government officials, and Geopark experts—into a shared vision of spatial planning for Kasepuhan Sinar Resmi. Unlike descriptive planning exercises, Delphi here is interpreted as a cultural negotiation platform, consistent with international debates on participatory heritage governance and inclusive conservation [51] [52].

The results of the Delphi process demonstrate a progressive convergence of opinions over three rounds. As summarized in Table 3, stakeholders reached a strong consensus on preserving the cultural core and regulating buffer-zone development, while moderate consensus emerged on residential expansion and economic cooperatives.

Table 3. Delphi Consensus Results

Strategy	Agreement (%)	Consensus Status	Notes
Preserve core cultural zone (*Imah Gede*, *leuit*)	93	Strong consensus	No modern structures permitted
Controlled buffer-zone development	87	Strong consensus	Facilities allowed if culturally aligned
Tourism facilities in outer zone	80	Strong consensus	Visitor centers, homestays only
Prohibit paddy-field conversion	76	Consensus	Minor feasibility concerns
Residential expansion into upland	72	Consensus	Accepted compromise
Tourism cooperative	71	Consensus	Ensures equitable income
Waste & disaster preparedness	68	Near consensus	Debate on resources

As visualized in Figure 8, average agreement rose from 55% in Round 1 to 65% in Round 2, reaching 78% in Round 3, confirming the Delphi process as effective in narrowing disagreements.

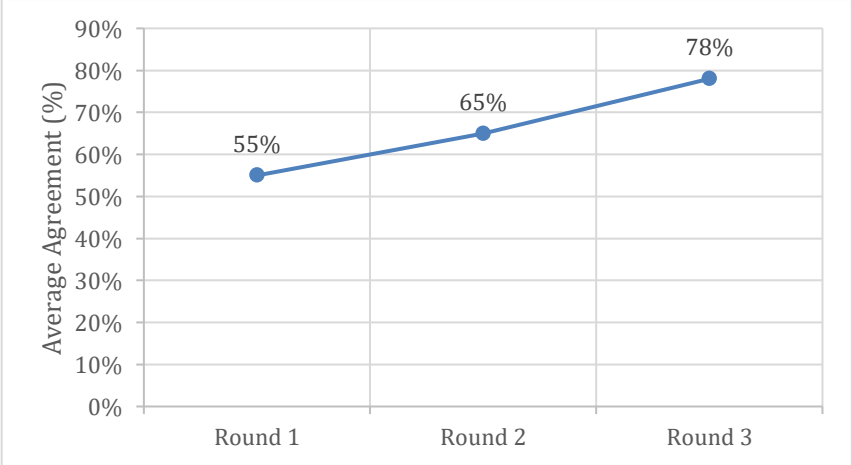

Figure 8. Delphi consensus convergence across three rounds

The figure illustrates the progressive convergence of stakeholder opinions through three Delphi rounds. Average agreement rose from 55% in Round 1 to 65% in Round 2, and finally reached 78% in Round 3, demonstrating the iterative effectiveness of Delphi in transforming divergent views into adaptive consensus.

The Delphi analysis is significant not only for producing agreements but also for enriching international theories of heritage conservation:

1. Heritage as Negotiated Authenticity. The broad consensus on protecting the core cultural zone demonstrates that heritage is regarded as non-negotiable authenticity. At the same time, stakeholders were willing to accept modernization in the buffer zone provided it adhered to cultural aesthetics, thereby illustrating that authenticity can be strategically redefined. This highlights heritage as dynamic and negotiable rather than fixed [53].
2. Constructive Tension Between Preservation and Modernization. Initial divisions—youth favoring infrastructure development and elders prioritizing sacred landscapes—were eventually reconciled through hybrid solutions such as upland housing expansion and culturally regulated tourism. This process reflects how conflict can function as a driver of resilience and innovation rather than as a zero-sum opposition [54].
3. Customary Governance as Planning Infrastructure. The formal involvement of the Abah and the customary council demonstrates how "adat" authority operates as an institutional infrastructure rather than merely symbolic leadership. This shows how traditional authority can be effectively embedded within modern planning instruments [55].

The case of Sinar Resmi provides important insights that extend beyond its local context and enrich the international body of knowledge on heritage conservation and sustainable spatial planning. First, it offers theoretical enrichment by demonstrating how intangible heritage elements—such as ritual cycles, rice barns, and customary law—can be formalized as explicit planning criteria. This finding expands existing frameworks of cultural landscapes, which have often emphasized material artifacts, by showing that intangible practices can function as operational tools for spatial governance. Second, the case illustrates practical transferability through the zoning model developed for Sinar Resmi, which delineates a core preservation area, a buffer transition zone, and a sustainable development zone. This model presents a replicable framework that can be adapted in other indigenous settlements worldwide, particularly those negotiating the delicate balance between cultural authenticity and modernization. Finally, the study contributes methodological innovation by reframing Delphi not only as a technical instrument for consensus-building but also as a cultural mediation mechanism. In this role, Delphi fosters adaptive consensus and legitimizes planning through community ownership, offering a valuable methodological contribution to participatory heritage governance in diverse global contexts [56].

The conceptual role of Delphi in mediating preservation–modernization tensions is illustrated in Figure 9. It visualizes how Delphi transforms conflict into adaptive consensus, leading to culturally informed sustainable planning.

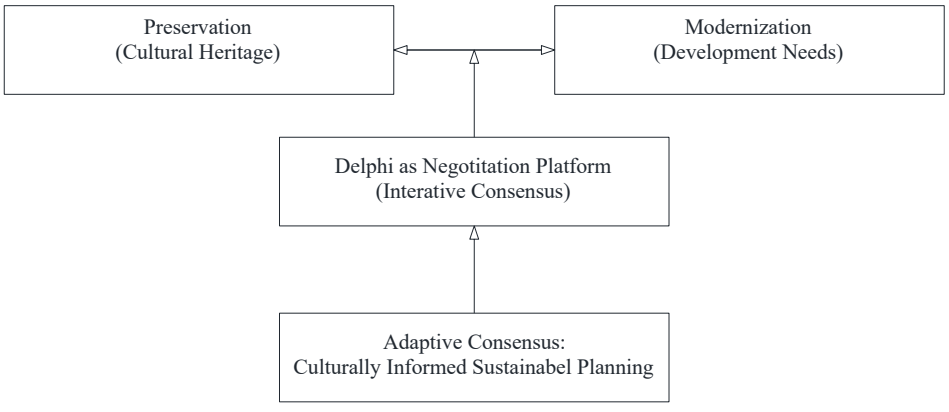

Figure 9. Conceptual Framework: Delphi as a Cultural Negotiation Platform

The framework illustrates how Delphi mediates between opposing forces of preservation (cultural heritage) and modernization (development needs). Through iterative negotiation, the process generates an adaptive consensus, resulting in culturally informed and sustainable spatial planning.

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This demonstrates Delphi's role not only as a methodological tool but as a theoretical mechanism of heritage governance.

Synthesis of Findings

A critical reflection on the methods applied—SWOT, MCA, and Delphi—reveals both their specific contributions and inherent limitations, as well as the novelty generated when they are integrated into a single framework.

SWOT analysis proved useful as a diagnostic entry point, capturing both internal capacities (cultural strengths, community cohesion) and external dynamics (tourism, policy support, environmental threats). Its strength lies in its simplicity and its ability to structure complex qualitative data into a coherent matrix. However, SWOT on its own is often criticized for being descriptive and static, offering a snapshot without prioritization or pathways for action. The novelty of its use here lies in explicitly embedding intangible cultural assets (rituals, rice barns, customary law) within the matrix—an aspect rarely formalized in heritage or planning literature. By treating culture not as context but as a variable of analysis, this study advances the operationalization of heritage values in spatial planning.

Multi-Criteria Analysis (MCA) addressed SWOT's limitation by providing a quantitative prioritization mechanism. Its strength lies in transforming qualitative preferences into measurable weights, making it possible to compare socio-cultural, environmental, and economic dimensions on a structured scale. Yet MCA is also limited, as weighting exercises can oversimplify complex realities and sometimes reflect biases of dominant voices. The innovation here is in calibrating MCA with indigenous perspectives, ensuring that the prioritization of socio-cultural criteria was not imposed but expressed by the community itself. This represents a methodological enrichment of MCA, which is rarely applied in heritage planning contexts, let alone grounded in indigenous epistemologies.

The Delphi method added the final and arguably most transformative layer: a platform for negotiation and consensus. Its strength lies in facilitating iterative dialogue among stakeholders with divergent interests, enabling conflict to be reframed as a source of adaptive solutions. Its limitation, however, is that it demands time, trust, and willingness to compromise—conditions not always present in contested landscapes. The novelty here is twofold: first, Delphi was reframed as a cultural mediation tool rather than a mere technical instrument, and second, it demonstrated that authenticity itself can be co-constructed through deliberation, not dictated externally. This reframing enriches international theory on heritage conservation, which has often struggled to reconcile the rigidity of "authenticity" with the fluidity of living communities.

The integration of all three methods—SWOT, MCA, and Delphi—constitutes the central novelty of this study. SWOT provided the foundation, MCA added structured prioritization, and Delphi transformed tensions into adaptive consensus. Together, they form an iterative three-layered validation system: diagnosis (SWOT), prioritization (MCA), and legitimization (Delphi). This integration moves beyond project-level planning into theoretical advancement: it offers a replicable methodological framework for embedding culture as a planning resource, thereby enriching the field of heritage conservation with an empirically tested, participatory, and transferable model.

From a theoretical standpoint, the study contributes to heritage conservation theory by operationalizing the concept of living heritage. The prioritization of rituals, rice barns, and customary governance as non-negotiable planning criteria demonstrates that intangible heritage can guide land-use decisions as concretely as tangible monuments or landscapes. This challenges dominant conservation paradigms that privilege the material over the intangible, extending the cultural landscape discourse toward a more integrative biocultural approach.

From a global perspective, the Sinar Resmi case provides a powerful lesson on the modernization–preservation tension. It demonstrates that this tension need not be framed as an opposition but as a dialectical process, where conflicting interests generate hybrid, adaptive solutions. Youth aspirations for infrastructure and elder insistence on sacred landscapes initially clashed, yet through Delphi these tensions were mediated into compromises such as upland housing zones and culturally

regulated tourism. This resonates with global cases—from the Ifugao rice terraces in the Philippines to Maori marae zoning in New Zealand—where communities similarly redefine authenticity to remain both modern and traditional. The key lesson is that authenticity is not lost when communities adapt; it is rearticulated through participatory governance.

In deep interpretation, the Sinar Resmi study demonstrates that heritage conservation is not simply about freezing traditions but about enabling communities to continuously reinterpret their traditions as planning resources in the face of external pressures. The zoning model and consensus outcomes are not just local solutions but contributions to international discourse, showing that indigenous governance can co-produce sustainability with modern planning instruments. Thus, the novelty lies not only in the results but in the process itself, which illustrates that when culture anchors planning, modernization can be reframed as continuity rather than disruption.

CONCLUSION

This study aimed to develop a conceptual framework of culturally based planning for sustainable spatial development, using Kasepuhan Sinar Resmi as a case study. The research has shown that intangible heritage elements—ritual cycles, rice barns (leuit), and customary governance under the Abah—are not static cultural expressions but can be systematically operationalized as active planning criteria. By doing so, the study enriches the theory of heritage conservation, particularly the notion of living heritage, which emphasizes heritage as a dynamic and functional system embedded in daily practices rather than a fixed artifact. The prioritization of cultural values, confirmed through SWOT and MCA, underscores that indigenous identity provides both symbolic and practical resilience against the pressures of modernization. The integration of SWOT, MCA, and Delphi created a three-layered validation system that represents the novelty of this research. SWOT offered a structured diagnosis of internal and external conditions, MCA translated these conditions into weighted priorities across social, environmental, and economic dimensions, and Delphi transformed conflicting perspectives into adaptive consensus. While each method has its limitations—SWOT being largely descriptive, MCA potentially oversimplifying complex preferences, and Delphi requiring iterative engagement—their combination produced a comprehensive framework that moves beyond descriptive accounts into actionable and legitimate planning strategies. This methodological integration not only addresses practical challenges but also contributes conceptually by bridging heritage studies with planning science. The findings also reveal critical lessons for the global debate on the tension between modernization and preservation. In Sinar Resmi, modernization pressures—youth migration, infrastructure demand, and tourism expansion—did not result in cultural erosion, but rather in negotiated compromises such as upland housing zones and culturally regulated tourism. This demonstrates that authenticity is not inevitably lost in the face of change; instead, it is reconstructed through participatory governance, reinforcing the argument that heritage conservation must be inclusive and adaptive. Such insights resonate globally, particularly in indigenous settlements facing similar dilemmas in Asia, the Pacific, and Latin America. From a policy perspective, the study highlights the importance of recognizing customary governance as a legitimate planning infrastructure. Embedding indigenous authority in zoning decisions strengthens both cultural legitimacy and institutional resilience. For governments, UNESCO Geopark managers, and policymakers, the implication is clear: empowering local traditions as co-drivers of planning leads to more sustainable and accepted outcomes. Thus, the framework developed in this study is both theoretically enriching and practically transferable, providing a model that can guide heritage conservation and sustainable community development worldwide.

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