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RESILIENCE IN THE FACE OF DISASTER: INTEGRATING ACEH-MUSLIM SPATIAL CULTURE INTO URBAN PLANNING

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Abstract

Urban resilience is crucial for disaster-prone regions like Aceh, Indonesia, where Islamic traditions and cultural identity significantly shape recovery and adaptation strategies. This study explores how Acehnese-Muslim spatial culture, such as communal living, mosque-centred layouts, and waqf-based spaces, can be integrated into urban and disaster planning. Data were collected through interviews with ten stakeholders and document analysis of relevant planning documents. NVivo software facilitated qualitative thematic and content analysis using a coding approach. The findings reveal that while cultural values are symbolically acknowledged, they are weakly implemented in policy and planning. The novelty of this study lies in identifying spatial indicators rooted in local culture that are relevant to resilience but underutilised in formal planning. The study recommends institutionalising these values through participatory planning processes. Future research should develop measurable frameworks to evaluate the impact of cultural practices on disaster resilience and examine the transferability of Aceh-based insights to other Muslim-majority urban contexts facing similar disaster risks.

Keywords: Aceh-Muslim spatial culture, qualitative research, spatial culture, urban planning, urban resilience

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INTRODUCTION

Urban resilience has become increasingly essential in contemporary urban planning, particularly in regions vulnerable to natural disasters and social disruptions. The ability of urban systems to absorb, recover from, and adapt to various shocks is crucial for ensuring the safety, stability, and sustainability of cities globally (Meerow et al., 2016). This concept encompasses not only physical and infrastructural resilience but also the social, economic, and cultural dimensions that collectively contribute to a city's capacity to withstand and recover from adversities.

Aceh, located at the northern tip of Sumatra in Indonesia, presents a unique model for enhancing urban resilience by integrating its rich cultural heritage and Islamic traditions into spatial planning. The region has long faced significant challenges, including the devastating 2004 Indian Ocean tsunami, which claimed over 167,000 lives in Aceh, and prolonged armed conflicts that disrupted socio-economic stability (Gaillard et al., 2008). Despite these adversities, Aceh has demonstrated remarkable resilience, largely attributed to its strong cultural identity and community cohesion rooted in Islamic values (Bashori & Moerdijat, 2023).

Urban resilience has traditionally been assessed through the lens of infrastructure and economic systems, often overlooking the pivotal role of cultural and social structures (Ni'mah & Setiawan, 2022). In Aceh, with its deeply embedded Islamic traditions, there is significant potential for enhancing urban resilience through the integration of Islamic spatial culture into urban planning. However, despite the clear importance of these cultural practices, there is a notable gap in understanding and documenting how these elements contribute to urban resilience in Aceh (Zuraidi et al., 2023). The existing literature largely overlooks the nuanced relationship between cultural heritage, religious practices, and urban resilience, leaving unanswered questions about how these elements strengthen resilience (Zuraidi et al., 2020, 2021; Zuraidi & Zainol, 2025). Furthermore, the lack of empirical evidence and documentation regarding the integration of cultural practices into resilience strategies hinders the development of culturally sensitive urban resilience frameworks.

Thus, this study aims to explore the role of Aceh-Muslim spatial culture in urban resilience by identifying key cultural practices that contribute to disaster preparedness and recovery. The specific objectives of this research are: (1) to analyse how Aceh-Muslim spatial culture influences urban resilience, (2) to identify the cultural elements integrated into urban planning and resilience strategies, and (3) to assess the effectiveness of these cultural integrations in strengthening community resilience. By providing a comprehensive understanding of these dynamics, this research aims to guide policymakers, urban planners, and disaster management practitioners in incorporating cultural heritage

into resilience frameworks, ultimately fostering resilient urban communities in Aceh and beyond.

LITERATURE REVIEW

Urban Resilience and Planning

Urban resilience refers to a city's ability to absorb, recover from and adapt to the impacts of disasters while maintaining its core functions (Meerow et al., 2016). It encompasses social, economic, infrastructural, and cultural dimensions that collectively determine a city's ability to respond effectively to disasters (Godschalk, 2003). In disaster-prone regions, the integration of cultural and spatial practices into urban planning has been shown to enhance resilience by fostering community preparedness, social cohesion, and sustainable development (Ahern, 2011). In this regard, the Aceh region, which suffered catastrophic impacts during the 2004 Indian Ocean tsunami, offers a critical case for examining how Acehnese-Muslim spatial culture contributes to resilient urban form and function. Post-disaster analyses of coastal settlements such as Gampong Saney show how relocation housing, changing coastal physiography, and evolving livelihood patterns co-produce new spatial arrangements and adaptation strategies, highlighting the interdependence of environmental change, settlement morphology, and community resilience in Aceh (Elysa et al., 2020).

Urban planning is a technical and strategic process involving the systematic organisation and development of land use, infrastructure, and public spaces to support sustainable and resilient urban development (Levy, 2016). The planning process typically includes several key stages: (1) data collection and analysis, which involves assessing existing conditions, demographic trends, infrastructure needs, and environmental risks; (2) vision and goal setting, wherein long-term development objectives are established in alignment with resilience and sustainability; (3) policy formulation, which involves developing strategies for zoning, land use, transport, and disaster mitigation strategies; (4) plan implementation, through infrastructure development, legal frameworks, and governance structures; and (5) monitoring and evaluation, which ensures continuous assessment and refinement of planning strategies. Urban planning thus plays a pivotal role in fostering resilience by shaping spatial arrangements and policies that account for both physical vulnerabilities and socio-cultural strengths.

Aceh-Muslim Spatial Culture and Resilience

Acehnese-Muslim spatial culture is deeply rooted in Islamic values and local traditions, influencing both the built environment and social structures. Mosques function not only as places of worship but also as communal centres for community gatherings and emergency response (Utaberta & Asif, 2017). Islamic

principles such as *gotong royong* (cooperation) and *waqf* (charitable endowment) strengthen communal resilience by promoting resource-sharing and collective action in times of crisis (Nurdin, 2024). Additionally, Acehese villages (*gampong*) are traditionally organised around mosques and communal open spaces, which facilitate coordinated evacuation and community mobilisation during disasters (Mahmuddin et al., 2016).

Traditional Acehese architecture, particularly the *Rumoh Aceh* – a stilted wooden house – is inherently resilient, designed to withstand floods and earthquakes while promoting natural ventilation (Fakriah & Edytia, 2021). During the 2004 tsunami, settlements that preserved traditional designs and coastal buffer zones experienced less structural damage than those with modern construction (Benazir et al., 2023). By contrast, empirical studies of contemporary reinforced-concrete shophouses in Banda Aceh indicate significant deficiencies in thermal and lighting comfort, resulting in high dependence on mechanical cooling and artificial lighting, which can exacerbate vulnerability when energy and infrastructure systems are disrupted (Sari et al., 2018). This recognition led to post-tsunami reconstruction efforts that embraced indigenous knowledge alongside modern engineering under the Build Back Better framework (UNDRR, 2015). Moving forward, urban planning must incorporate these cultural practices into contemporary resilience strategies. Policies should actively promote the preservation of traditional architectural heritage, mosque-based community disaster management, and participatory planning approaches rooted in local values (Vivita et al., 2023). Such integration ensures that resilience frameworks are both culturally sensitive and practically effective in disaster-prone contexts like Aceh.

Conceptual and Theoretical Framework

This study is grounded in Resilience Theory, which explains how social, ecological, and urban systems adapt and transform in response to disruptions (Holling, 1973). Specifically, it draws on the concept of social-ecological resilience, which emphasises the dynamic interdependence between human settlements and environmental processes (Wilkinson, 2012). Employing a qualitative approach, the study examines the role of cultural practices in shaping urban resilience within the context of Aceh. The conceptual framework integrates three interrelated dimensions: (1) cultural resilience (local traditions and social practices); (2) Islamic spatial planning principles (mosque-centred layouts, waqf-based spaces, and communal facilities); and (3) urban sustainability and disaster governance (policies, plans, and institutions). These dimensions interact to influence urban resilience outcomes, with community participation mediating the link between cultural practices and formal planning instruments (Figure 1).

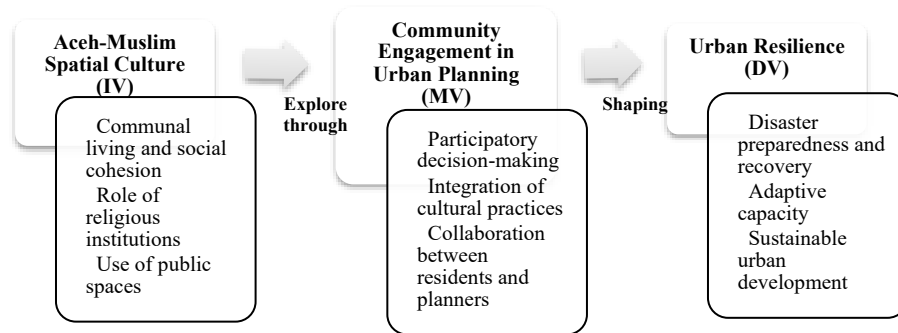


Figure 1: Conceptual framework linking Aceh-Muslim spatial culture, Islamic planning principles, and urban resilience

Source: Authors, adapted from existing literature (2024)

Cultural resilience underscores the significance of local traditions in enhancing disaster preparedness and post-disaster recovery (Berkes & Ross, 2013). Islamic spatial planning principles further reinforce this by emphasising the role of mosques, communal spaces, and traditional architectural forms in fostering resilient urban environments (Utaberta & Asif, 2017). Complementing these perspectives, the dimension of urban sustainability and disaster governance examines how cultural and religious elements can inform and enhance disaster risk reduction policies (Appleby-Arnold et al., 2018). Rather than establishing linear causal relationships, this study adopts an interpretive approach, identifying emergent themes and patterns through interviews and document analysis. Aceh-Muslim spatial culture is conceptualised as a key influence on urban resilience, mediated by community engagement in the planning process, particularly through practices such as communal living, the centrality of religious institutions, and the use of shared public spaces.

METHODOLOGY

The study was conducted in Banda Aceh, the capital of Aceh province, located on the northern coast of Sumatra, Indonesia (Figure 2). As a historically and culturally rich city shaped by centuries of Islamic influence, Banda Aceh presents a unique context for examining the intersection of cultural identity and urban resilience. The city's resilience was profoundly tested during the 2004 Indian Ocean tsunami, after which post-disaster reconstruction efforts sought to integrate cultural heritage into spatial and urban planning (Miller & Bunnell, 2014).

Data Collection

This study employed a combination of semi-structured interviews and document analysis to gather qualitative data. Qualitative methods are particularly effective for exploring complex social phenomena and capturing the perspectives and lived experiences of individuals and communities (Crewell, 2013). A total of ten participants were interviewed, representing four key stakeholder groups: residents (3), urban planners (2), government officials (2), and academics (3) specialising in urban resilience (Table 1). Participants were selected through purposive sampling to ensure diverse demographic and professional representation. Each interview, lasting between 45 and 60 minutes, was conducted at a location convenient to the participant, recorded with consent, and transcribed verbatim to maintain accuracy for thematic analysis (Ruslin et al., 2022). To triangulate findings, key planning and policy documents were also reviewed (Table 2). Documents were selected based on their relevance to Aceh's urban development and disaster management policies.

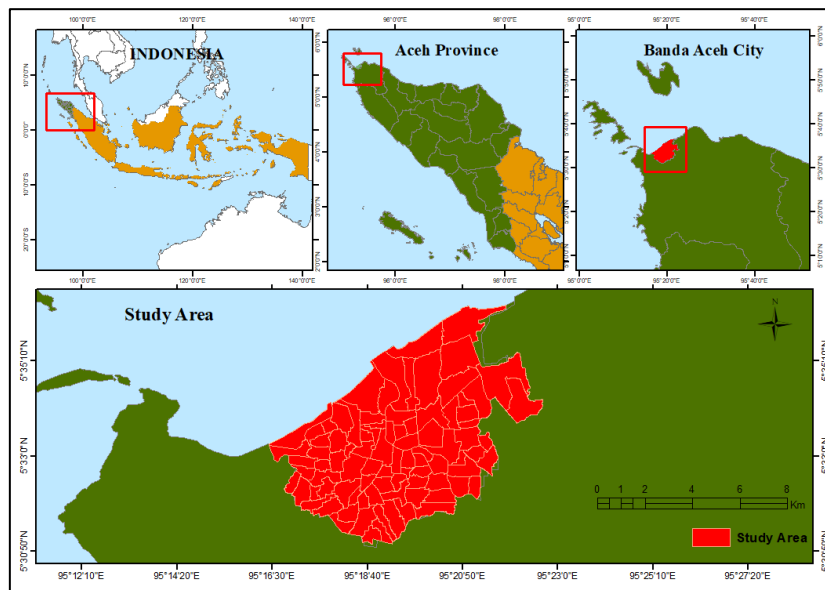


Figure 2: Study area: Banda Aceh City, Aceh Province, Indonesia.
Source: Author (2024)

Table 1: Demographic profile of stakeholders interviewed in Banda Aceh

No.	Inf. Code	Profession	Age Range	Years of Exp.
1	RE1	Residents	40-45	15-20
2	RE2	Residents	40-45	15-20
3	RE3	Residents	35-40	10-15
4	UP1	Urban Planner	40-45	15-20
5	UP2	Urban Planner	35-40	10-15
6	GO1	Government Officials	50-55	25+
7	GO2	Government Officials	45-50	15-20
8	AC1	Academic	35-40	10-15
9	AC2	Academic	45-50	15-25
10	AC3	Academic	40-45	20

Table 2. Key planning and policy documents reviewed

No	Document Title	Original Title	Type	Issuing Institution
1	Banda Aceh Spatial Plan 2009–2029	Rencana Tata Ruang Wilayah (RTRW) Kota Banda Aceh 2009–2029	Government Planning Document	City Government of Banda Aceh (Bappeda)
2	Law No. 11 of 2006 on the Governance of Aceh	Undang-Undang No. 11 Tahun 2006 tentang Pemerintahan Aceh	National Law with Regional Autonomy	Government of Indonesia (DPR-RI & President)
3	Aceh Qanun No. 4 of 2003 on Mukim Governance	Qanun Aceh No. 4 Tahun 2003 tentang Pemerintahan Mukim	Regional Regulation	Aceh People's Legislative Council (DPRA)
4	Law No. 26 of 2007 on Spatial Planning	UU No. 26 Tahun 2007 tentang Penataan Ruang	National Law	Government of Indonesia (DPR-RI & President)

Source: Authors (2024)

Data Analysis and Study Limitations

Data analysis followed an iterative and interpretive process aimed at extracting key insights related to Aceh-Muslim spatial culture and urban resilience. Interview recordings were transcribed verbatim and systematically coded to identify recurring themes. Thematic analysis, as outlined by Braun & Clarke (2006), was employed to categorise patterns and uncover underlying meanings. A constant comparative method Glaser & Strauss (1967) was also applied, enabling continuous cross-examination between interview data and documentary evidence. To ensure consistency and enhance validity, references made by interviewees to specific policies or planning documents were verified through document analysis. Rather than applying a numerical scale, the study adopted qualitative thematic evaluation to assess the degree of integration of Aceh-Muslim spatial culture into urban resilience strategies. As shown in Table 3, integration was classified into three levels (high, moderate, low) based on established qualitative evaluation criteria (Nowell et al., 2017).

Table 3. Evaluation Criteria for Assessing the Degree of Cultural Integration

Level	Description
High	Cultural elements are extensively embedded within policies, shaping zoning regulations, land use planning, and community-based resilience strategies.
Moderate	Cultural considerations are recognised and partially reflected in planning efforts, though their application remains inconsistent across policies.
Low	Cultural factors receive limited recognition, with only minimal reference found in planning documents and academic literature.

Source: Authors (2024)

While this study provides valuable insights for integrating Aceh-Muslim spatial culture into urban resilience planning, several limitations should be acknowledged. First, the study is geographically limited to Banda Aceh, which may affect the transferability of the findings to other regions with different socio-cultural and spatial contexts. Second, the empirical basis rests on a relatively small sample of ten participants selected through purposive sampling. This is appropriate for in-depth qualitative inquiry but constrains the statistical generalisability of the results beyond Banda Aceh and similar Acehnese settings. The findings should therefore be interpreted as analytically rather than statistically generalisable, offering context-rich insights that may be adapted cautiously to other Muslim-majority cities. Second, as it is inherent in qualitative research, findings are interpretative and may be subject to researcher bias, despite efforts to maintain objectivity through triangulation and systematic analysis. Third, as is inherent in qualitative research, interpretations may be influenced by researcher subjectivity despite efforts to maintain reflexivity, triangulation, and systematic analysis. Finally, restricted access to certain government planning documents may have limited the comprehensiveness of the document review.

Ethical Compliance

All procedures in this study adhered to standard ethical principles for qualitative research. Prior to data collection, participants received an explanation of the research objectives and procedures and provided informed consent. Participation was voluntary, and interviewees were assured of confidentiality and anonymity through the use of codes (e.g., RE1, UP1) instead of personal names. The study followed the ethical guidelines of Universitas Syiah Kuala and Universiti Malaya for research involving human participants.

RESULTS

Interview Findings

Interviews with key stakeholders yielded valuable insights into the influence of Aceh-Muslim spatial culture on urban resilience. Participants consistently emphasised the importance of communal living, religious institutions, and public spaces in shaping local disaster preparedness and recovery strategies (Table 4).

Residents highlighted the strength of social cohesion within Acehnese communities, which enables rapid mobilisation of support during times of crisis. As one resident shared, "In times of crisis, neighbours become family. We don't hesitate to help one another because it's part of our culture." (RE1). Urban planners and government officials acknowledged the critical role these communal practices play in fostering resilience but noted a disconnect between grassroots initiatives and formal urban planning policies. One urban planner reflected, "We see that strong social bonds help communities recover faster but translating that into actionable policies remains a challenge." (UP2). A government official echoed this concern, stating, "There's a need to formalise these informal support networks within our disaster response strategies." (GO1). Academic participants reinforced these observations, calling for the institutionalisation of cultural resilience within official planning frameworks. As one academic argued, "Resilience planning often focuses on infrastructure, but we need to recognise and institutionalise the social and cultural systems that already work effectively." (AC1).

Table 4. Summary of interview findings

Research Objective	Themes Extracted	Sample Responses
Influence of Aceh-Muslim Spatial Culture on Urban Resilience	• Communal living • Social cohesion • Collective responsibility • Role of religious institutions	"In times of crisis, neighbours become family. We don't hesitate to help one another because it's part of our culture." (RE1) "We see that strong social bonds help communities recover faster but translating that into actionable policies remains a challenge." (UP2) "Resilience planning often focuses on infrastructure, but we need to recognise and institutionalise the social and cultural systems that already work effectively." (AC1)
Cultural Elements Integrated into Urban Planning and Resilience Strategies	• Integration into spatial plans • Preservation of communal spaces • Participatory planning approaches	"New developments often don't consider how we interact as a community. Traditional spaces for gatherings are disappearing, which weakens our ability to organise quickly during emergencies." (RE2) "We have policies that acknowledge cultural heritage, but their implementation is inconsistent. More effort is needed to ensure communal spaces remain central to planning." (GO1) "Community participation should not be symbolic—it needs to be a fundamental part of resilience planning." (AC3)
Effectiveness of Cultural Integration in Strengthening	• Enhanced disaster preparedness • Increased community participation	"After the tsunami, our mosque became our centre for survival. We found food, shelter, and emotional support there." (RE3)

Research Objective	Themes Extracted	Sample Responses
Community Resilience	Resilience-building through cultural practices	"We see these community-led initiatives working, but they need structured support to be sustainable in the long term." (GO2) "Without structured support, cultural resilience remains underutilised. Policies should strengthen, not replace, these existing social mechanisms." (AC2)

Residents also perceived a growing disconnect between urban development and everyday cultural practices. One resident expressed concern that "New developments often don't consider how we interact as a community. Traditional spaces for gatherings are disappearing, which weakens our ability to organise quickly during emergencies." (RE2). Urban planners and government officials acknowledged these concerns, highlighting the gap between policy and practice. As one government official noted, "We have policies that acknowledge cultural heritage, but their implementation is inconsistent. More effort is needed to ensure communal spaces remain central to planning." (GO1). Academics stressed that effective cultural integration depends on more than recognition; it requires meaningful community involvement. One academic observed, "Community participation should not be symbolic—it needs to be a fundamental part of resilience planning." (AC3).

Residents shared concrete examples of how culturally grounded practices supported them during past disasters. One resident recalled, "After the tsunami, our mosque became our centre for survival. We found food, shelter, and emotional support there." (RE3). Urban planners and government officials agreed that such practices enhance resilience but emphasized the need for institutional support. As one official explained, "We see these community-led initiatives working, but they need structured support to be sustainable in the long term." (GO2). An urban planner added, "Policies should not just acknowledge cultural resilience; they should actively strengthen and incorporate it." (UP1). Academics underscored that, without structured support, cultural resilience remains underutilised. One academic emphasised, "Policies should strengthen, not replace, these existing social mechanisms" (AC2), while another recommended that "documentation and case studies of these successful practices should be included in urban planning curricula and policymaking processes." (AC3).

Document Analysis Results

The document analysis reveals varying degrees of integration of Aceh-Muslim spatial culture into urban planning, highlighting notable differences across legal and planning frameworks (Table 5). For RO1 (influence), cultural values have a moderate influence on planning, particularly in the Banda Aceh Spatial Plan and

Law No. 11 of 2006, though these values have not been fully institutionalised. The most substantial influence is observed in Qanun No. 4 of 2003, which formally empowers *mukim* governance in spatial decision-making.

Table 5. Document assessment results

Document Title	Cultural Integration Level		
	RO1: Influence	RO2: Cultural Elements	RO3: Effectiveness
Banda Aceh Spatial Plan 2009–2029	Moderate – Reflects <i>gampong</i> -based post-tsunami layouts and Islamic land uses, but lacks formal integration into zoning or design regulations.	Moderate – Recognises cultural structures (e.g., mosques, <i>gampong</i>), but these are not consistently incorporated into planning strategies.	Low – Cultural elements are acknowledged but have limited and inconsistent impact on measurable resilience outcomes.
Law No. 11 of 2006 on Aceh Governance	Moderate – Grants authority to integrate Islamic/customary norms, but their application to spatial planning is general and indirect.	Moderate – Cultural principles are acknowledged but lack specific urban planning instruments or guidelines.	Low – Cultural implementation is delegated to regional qanuns; effectiveness varies and is generally limited in practice.
Qanun Aceh No. 4 of 2003 on Governance of Mukim	High – Strongly institutionalises traditional mukim governance structures in land use and disaster resilience planning.	High – Effectively integrates Islamic and customary systems such as <i>imeum mukim</i> , <i>musyawarah</i> , and <i>syura</i> into governance.	High – Demonstrates strong effectiveness in community-level resilience, particularly in tsunami-prone coastal zones.
Implementation of Law No. 26 of 2007 in Aceh's Context	Moderate – Cultural values influence discourse but are not fully aligned with national spatial planning norms.	Moderate – Cultural aspects are identified but insufficiently operationalised within formal planning frameworks.	Moderate – Effectiveness is limited by technical and institutional challenges, despite the acknowledgment of cultural values.

In terms of RO2 (cultural elements), most planning documents recognise cultural elements such as mosques, *gampong* (villages), and customary governance structures. However, only Qanun Mukim integrates these elements meaningfully into planning strategies. Other documents lack detailed guidelines or fail to consistently apply cultural principles in urban planning processes. For RO3 (effectiveness), Qanun No. 4 of 2003 demonstrates high effectiveness in supporting community resilience, especially in coastal areas. In contrast, the remaining documents are less effective, with cultural elements being either broadly defined or inadequately implemented in practice. Overall, while cultural integration is acknowledged in Aceh's spatial governance, Qanun Mukim

remains the most effective legal instrument in ensuring practical integration of cultural elements for resilience-building.

The overall findings reveal that Aceh-Muslim spatial culture is moderately to highly reflected in planning documents, particularly through the institutionalisation of traditional governance structures such as *mukim* and the role of *imeum mukim*, as detailed in Qanun Aceh No. 4/2003 (Table 6). Cultural elements, such as mosque-centred layouts and *gampong*-based settlement patterns, are acknowledged across several documents. However, their translation into formal planning instruments, such as zoning regulations or design standards, remains limited and inconsistently applied. The effectiveness of these cultural integrations is most evident at the local level, where traditional governance remains active. Their impact diminishes at the city and provincial levels due to gaps in regulatory frameworks, institutional support, and implementation.

Constant Comparative Analysis

The constant comparative analysis indicates that Aceh-Muslim spatial culture plays a significant role in enhancing urban resilience, particularly through communal living, religious institutions, and social cohesion (Table 7). Interview data emphasises the strength of informal community networks in disaster response, though these networks are not fully institutionalised in planning policies. Document analysis concurs, showing moderate recognition of cultural values in most planning instruments, with Qanun No. 4/2003 standing out for formalising *mukim* governance in resilience planning.

Table 6. Synthesis of document findings by research objectives

Research Objective	Integration Level	Summary Insight
RO1: Influence	Moderate–High	Most documents acknowledge cultural influence, with Qanun Mukim showing the highest impact due to its institutionalisation of localised governance structures.
RO2: Cultural Elements	Moderate	Cultural features, especially in traditional governance systems (<i>mukim</i> , <i>gampong</i>), are recognised; however, their full integration across policies remains limited.
RO3: Effectiveness	Low–Moderate	The effectiveness of cultural integration is most pronounced at the local level, where cultural governance is firmly embedded, but it diminishes in broader city-wide or national regulatory frameworks.

Table 7. Comparative analysis of interview and document analysis findings

Research Objective	Interview Findings	Document Analysis	Synthesis	Comparative Reflections
RO1: Influence	Culture promotes social cohesion, mutual aid, and	Culture moderately reflected; Qanun 4/2003 shows	Cultural values aid resilience but lack formal	Shared recognition, but weak institutionalisation

Research Objective	Interview Findings	Document Analysis	Synthesis	Comparative Reflections
	informal resilience.	strongest integration.	planning adoption.	beyond local governance.
RO2: Integration into Planning	Loss of communal spaces; participation often symbolic.	Cultural elements acknowledged but rarely operationalised; Qanun 4/2003 is an exception.	Integration is fragmented and lacks consistency.	Both sources call for more structured, participatory cultural integration.
RO3: Effectiveness	Cultural spaces (e.g., mosques) proved vital in disasters; initiatives need support.	Qanun 4/2003 effective locally; others less so due to vague implementation.	Cultural practices enhance resilience if supported institutionally.	Effectiveness high locally but limited at broader planning levels without policy backing.

Both data sources acknowledge the influence of cultural values but point to their limited integration into broader planning frameworks. Interviews highlight the erosion of traditional communal spaces and the lack of meaningful community participation. Documents similarly mention cultural elements symbolically but rarely operationalise them, again with the notable exception of Qanun Mukim. Both lines of evidence affirm the effectiveness of cultural integration in strengthening resilience at the local level. However, without structured support and clearer regulatory mechanism, these cultural practices remain underutilised at city and provincial scales. Overall, cultural values are recognised both practice and policy, yet their full potential in urban resilience planning is constrained by inconsistent institutionalisation and limited implementation.

DISCUSSION

The findings of this study highlight a critical paradox: while Aceh possesses a rich tradition of spatial culture rooted in Islamic values and local wisdom, the integration of this cultural capital into formal urban planning and resilience strategies remains largely superficial. Acehnese spatial practices, deeply embedded in Islamic principles and indigenous knowledge, have historically demonstrated resilience capacities. Traditional spatial arrangements such as the *rumoh* (house compound), *meunasah* (community prayer house), and the *gampong* (village) layout embody values of communal solidarity (*ukhuwah*), mutual aid, and social proximity. These features resonate with Norris et al. (2008) conceptualisation of community resilience, which emphasized social capital, information sharing, and collective efficacy as core components of resilience. Thus, these spatial expressions not only represent cultural identity but also constitute practical mechanisms of disaster preparedness and recovery.

However, the empirical analysis of spatial plans reveals that these culturally embedded resilience mechanisms are not systematically incorporated into formal planning processes. The neglect of traditional spatial logics in contemporary urban governance reflects what Escobar (2007) describes as the “colonisation of planning” by technocratic rationality, where indigenous and religious epistemologies are marginalised in favour of standardised, modernist models. As a result, the potential of Aceh-Muslim spatial culture as a resilience asset remains underutilised within institutional frameworks.

The degree of cultural integration in planning and resilience strategies in Aceh primarily involves the recognition and treatment of cultural elements in formal documents. While planning instruments, such as the Qanun Aceh No. 19/2013, refer Islamic and Acehnese cultural identity, these references remain largely normative and lack operational detail. This situation aligns with Yiftachel (2009) notion of “grey spaces” in planning, zones of ambiguous legitimacy where cultural inclusion is acknowledged rhetorically but not substantively implemented. The limited integration of local spatial values also mirrors critiques within cultural planning theory, particularly Evans' (2001) argument that local culture is often instrumentalised as a token of identity politics rather than as an active driver of spatial logic or urban design. In Aceh's case, this is evident in the absence of concrete planning mechanism that embed traditional spaces, such as the *meunasah* into disaster risk reduction strategies or land-use zoning policies. In contrast, several NGO-led post-disaster initiatives have demonstrated more culturally responsive planning approaches, engaging local communities in participatory design processes that respect customary layouts and collective values. These initiatives suggest that more flexible and inclusive governance mechanisms are required to mediate between formal spatial planning and lived cultural practices.

Assessing the effectiveness of cultural integration in enhancing resilience reveals that formal planning systems in Aceh have yet to translate cultural recognition into effective disaster risk governance. Institutional limitations, the absence of culturally informed technical guidelines, and a predominantly top-down bureaucratic culture collectively constrain the transformative potential of planning. This situation corresponds with Coaffee, J., & Lee's (2016) argument that resilience planning often fails when it lacks contextual sensitivity and relies excessively on universalised frameworks detached from local realities. In contrast, programs that explicitly incorporate cultural practices, particularly those guided by NGOs, have resulted in greater community engagement, legitimacy, and adaptive capacity. These outcomes reaffirm the findings of Aldrich (2012) emphasis on the role of social infrastructure and cultural cohesion in enhancing community resilience post-disaster. Traditional institutions such as the *meunasah*, when recognised as both

spiritual and spatial hubs, can function as critical nodes for information dissemination, decision-making, and collective action during emergencies. For urban planners and policymakers, the key challenge is therefore not simply to “include culture” in a symbolic sense, but to design planning instruments and governance arrangements that actively mobilise Aceh-Muslim spatial culture as a core component of urban resilience.

CONCLUSION

This study has examined how Aceh-Muslim spatial culture can inform urban planning for disaster resilience in Banda Aceh. The findings show that Acehnese spatial traditions, including the role of the *meunasah* (community prayer house), mosque-centred settlement structures, waqf-based communal spaces, and strong communal values, hold significant potential to enhance community-based resilience. Nevertheless, their integration into formal planning systems remains limited and often confined to symbolic recognition rather than substantive, operational measures. To strengthen the role of Islamic spatial values in planning, this study recommends: (1) the development of regulatory frameworks that formally incorporate local cultural principles into zoning, land-use allocation, and design standards; (2) the enhancement of institutional capacity for culturally responsive planning through technical guidelines and cross-sectoral coordination; and (3) the promotion of meaningful community participation, particularly involving religious and customary leaders, in all phases of resilience planning. These steps are crucial for bridging the gap between policy and practice and for moving from rhetorical recognition to concrete implementation. Although this research is geographically focused on Banda Aceh and based on a small purposively selected sample, its insights have broader implications for other Muslim-majority urban contexts that face recurrent disasters. The study demonstrates that Islamic spatial practices and institutions can function as important social and spatial infrastructures for resilience when they are systematically integrated into planning frameworks. Future research should therefore undertake comparative studies across different Muslim-majority cities, as well as in-depth fieldwork at the neighbourhood level, to assess how culturally grounded planning approaches can support resilient, and context-sensitive urban futures.

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