Community Decision-Making Pathways and Collective Mechanisms Shaping Economic Resilience in the Spermonde Islands

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ABSTRACT

The Spermonde Islands, a biodiversity-rich coastal area, face escalating ecological and socioeconomic pressures, such as overfishing, pollution, coral bleaching, and shifting fish patterns, which heighten the economic vulnerability of fisher households lacking alternative livelihoods and resilience to climate and economic shocks. This research aims to uncover the community decision-making pathways that shape local economic resilience in post-crisis areas by examining the processes, patterns, and factors that influence community collective decisions in response to ecological pressures and structural change. Using an exploratory qualitative approach based on a case study in the Spermonde Islands, data were collected through in-depth interviews. The results show that local economic resilience is shaped by three main decision paths, namely diversification of livelihoods to reduce vulnerability, strengthening social networks and local institutions as a collective mechanism to face uncertainty, and adjusting coastal resource utilization strategies to ecological change. This study emphasizes that the capacity of communities to make adaptive decisions is an important determinant in maintaining the economic sustainability of the post-crisis region and contributes to the development of community-based economic resilience theories and the formulation of coastal development policies that are responsive to climate change.

Keywords*: Community Decision Pathways, Diversification Strategies, Local Economic Resilience, Post-Crisis Regions.*

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INTRODUCTION

Coastal areas and small islands, such as Indonesia's Spermonde Islands, provide an important source of livelihood for millions of coastal communities who depend on small-scale fisheries as their main livelihood (Roberts, 2021). However, coastal regions globally are now facing increasing ecological pressures due to climate change, degradation of marine ecosystems, and intensive exploitation of resources (Wu & Wan, 2024). This pressure not only threatens the preservation of biodiversity but also disrupts the economic stability of households that depend on increasingly vulnerable natural resources. Declining catches, weather uncertainty, and coastal habitat destruction have been proven to increase the economic vulnerability of fishing communities in various regions (Koomson, 2021). Studies by Huynh et al. (2021) and Selvaraj et al. (2023) have confirmed that small-scale fishing communities are in the position most affected by these environmental changes, especially in areas that are highly dependent on marine resources.

These ecological and socioeconomic pressures demonstrate the urgency of understanding how coastal communities respond to change adaptively. Although many studies have addressed the impact of climate change on the fisheries sector, most studies have focused on the impact aspect, rather than on the dynamics of the community's response itself (Maltby et al., 2023; Ullah et al., 2024). This condition indicates that the social dimensions of adaptation, such as community structures, social networks, and local institutions, are often not the main focus of the analysis. In fact, the community's response

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to ecological pressures depends not only on individual capacity but also on the way in which communities build collective decisions through structured social mechanisms. Therefore, the aspect of community decision pathways is an important theme that is still not explored in coastal development studies.

The emptiness of this study becomes clearer when reviewing previous studies in Indonesia. Study by Okeke-Ogbuafor et al. (2022) shows that fishers feel the impacts of climate change in the form of weather uncertainty and shifts in fishing locations, but the study has not revealed how communities organize adaptive strategies collectively. This shortcoming shows that there is a research gap on how communities formulate shared decision-making paths in the face of ecological and socioeconomic shocks. In addition, Wongbusarakum (2021) highlights the importance of understanding the role of local institutions in the adaptation process, but local contexts such as Spermonde remain relatively infrequently the focus of in-depth analysis. Thus, there is an urgent need to explore collective decision-making mechanisms as determinants of the economic resilience of coastal communities (Tajuddin & Mulang, 2024).

In the global context, there is the urgency of adapting coastal communities to the increasingly real impacts of climate change, as highlighted by Talubo et al. (2022) and Ebay et al. (2024) on the resilience of communities on small islands. The condition of islands such as Spermonde provides a concrete example of how local communities cope with ecological change while maintaining economic sustainability. By raising the Indonesian context, this study not only enriches the international literature but also offers a community-based adaptation model that can be replicated in other regions with similar characteristics. This shows that local dynamics have global relevance and can be a reference in strengthening the resilience of coastal communities. Thus, this research has strategic value in bridging global understanding and local policy needs.

This study aims to uncover the community decision-making pathways that shape local economic resilience in post-crisis areas, examining the processes, actors, and social-institutional structures that influence responses to ecological shocks and structural changes. By focusing on internal community dynamics, it emphasizes that resilience depends not only on external factors but also on the social capacity to make effective, coordinated decisions. This research highlights how adaptation arises from complex social interactions, with collective decisions mediating between ecological pressures and community responses, deepening understanding of social networks, key actors, and institutions in shaping adaptive capacity. The findings guide local governments and marine stakeholders in designing coastal policies that reflect community realities, including strengthening collective mechanisms, supporting livelihood diversification, and enhancing local institutions, contributing to more sustainable and context-sensitive fisheries and coastal development.

LITERATURE REVIEW

Vulnerability of Coastal Communities to Climate Change and Ecological Crises

Smallholder fishing communities are highly vulnerable to climate change and marine ecosystem degradation due to their dependence on coastal habitats and stable catches. Global studies indicate that rising ocean temperatures, altered weather patterns, and more frequent coastal disasters have reduced fisheries productivity and increased uncertainty in the fishing season (Cheung et al., 2021; Sarlawa, 2025). These ecological pressures translate directly into socioeconomic constraints, limiting fisher households' access to alternative resources, social networks, and infrastructure support. The challenges are particularly acute in small island regions, where limited adaptation capacity and reliance on shallow water resources intensify vulnerability. Understanding the interplay between ecological and socioeconomic factors is therefore essential for analyzing resilience and adaptive strategies in coastal communities. Sensitivity to climate variability is shaped by reliance on fisheries and agriculture, limited financial capital for alternative livelihoods, inadequate institutional support, and insufficient human capital to engage in diversification (Saha et al., 2024). Additionally, lack of access to basic facilities, low-

income diversification, and limited education further weaken adaptive capacity across local populations (Salik et al., 2015).

Factors influencing fishers' vulnerability extend beyond material resources. Vessel size, diversity of fishing portfolios, and environmental worldview, particularly the belief in climate change, have been identified as significant predictors of perceived vulnerability (Nelson et al., 2023). These findings highlight that both structural and perceptual dimensions shape how communities experience and respond to ecological and economic shocks. Addressing vulnerability, therefore, requires integrated approaches that strengthen livelihoods, expand access to capital and infrastructure, and consider local perceptions of environmental risk. By situating adaptation within both ecological and social contexts, policymakers and practitioners can better support the resilience of coastal fishing households facing ongoing climate and ecosystem pressures.

Adaptation and Diversification Strategies as an Effort to Reduce Economic Risks

In response to ecological pressures and declining catches, many coastal communities have developed adaptation and diversification strategies to maintain economic stability. Fishers often combine fishing with side businesses, adjust the timing and location of their catch, and strengthen community-based cooperation to mitigate the impacts of declining marine productivity (Wiranti et al., 2025). Diversification of economic activities, whether through additional employment or alternative resource management, has been shown to reduce the vulnerability of fishing households (Selvaraj et al., 2022; Ubed et al., 2025). According to Boiko (2017), economic diversification not only minimizes risks to financial security but also enhances the functional capacity of business systems, improves social orientation, and increases access to essential products. Similarly, Mihrete and Mihretu (2025) demonstrate in the context of agriculture and food security that adopting diverse strategies can improve productivity and sustainability. These findings suggest that diversification serves as a key mechanism for communities to buffer economic shocks while maintaining resource stability.

Beyond economic benefits, diversification also enables coastal communities to adapt more flexibly to rapidly changing environmental conditions, providing critical space for decision-making under uncertainty. By combining adaptive strategies with community cohesion and local knowledge, households are better equipped to navigate ecological and climatic variability (Selvaraj et al., 2022; Wiranti et al., 2025). Consequently, adaptation and diversification strategies represent essential pillars for enhancing the resilience of coastal livelihoods, allowing communities not only to survive but to sustain economic and social well-being amidst climate and ecological crises.

Collective Mechanisms, Local Institutions, and Community Decision-Making

The adaptation success of coastal communities is not only determined by individual strategies, but is highly dependent on the strength of social networks, the effectiveness of local institutions, and the collective mechanisms built within the community (Gisevius, 2024). Communities that have organizational structures such as cooperatives, fisher groups, or co-management mechanisms tend to have higher adaptability because they can collectively mobilize resources and share risks (Kim, 2023; Noorani et al., 2025). Local institutions also play a role in providing critical information on ocean conditions, regulating the distribution of benefits, and facilitating the formation of community-based adaptation rules and innovations. Social relations, norms, and local values also influence how collective decisions are formulated and implemented in response to environmental changes. This shows that community decision pathways are a core component that forms economic resilience in coastal areas.

While many studies have addressed the impacts of climate change and coastal communities' adaptation strategies, few have traced the process by which collective decisions are formed and how these decision paths contribute to building local economic resilience. Studies by Selvaraj et al. (2022) focus more on adaptation outputs, such as changes in catch types or income diversification, but have not revealed internal

community mechanisms that include key actors, power dynamics, and decision-making norms. Research in Indonesia also shows a similar vacuum, especially in the context of small islands that have very different social and ecological characteristics from inland coastal areas (Adrianto et al., 2021). Contexts such as the Spermonde Islands have not received much attention in the international literature, so the understanding of community decision-making mechanisms is still limited. This condition reinforces the urgency of conducting research that directly examines the community's decision-making pathway as the foundation of post-crisis economic resilience.

RESEARCH METHODS

This research uses an exploratory qualitative approach with a case study design, which was chosen to deeply understand social processes, community structures, and collective decision-making pathways in the context of post-crisis coastal communities (Makri & Neely, 2021). The case study was chosen because it allows researchers to examine the phenomenon of coastal communities of the Spermonde Islands in a contextual and holistic manner, especially related to community-based economic adaptation and resilience mechanisms. The research population includes fishing communities in the Spermonde Islands that are affected by ecological and socio-economic shocks, especially those who have a role in the community decision-making process, such as fishermen's group leaders, traditional leaders, managers of local institutions, women coastal economic actors, and experienced fishermen. The sampling technique uses purposive sampling, which is the deliberate selection of informants based on their ability to provide relevant information about the collective decision-making process, as recommended in qualitative social research (Nyimbili & Nyimbili, 2024). A total of 8 key informants were determined by composition: two leaders of fishermen's groups, one indigenous leader, one manager of local institutions, two women coastal economic actors, and two experienced fishermen. The allocation was chosen because each category has a strategic position in the community and understands the mechanisms of environmental adaptation and internal social dynamics that affect local economic resilience.

Data were collected through in-depth interviews, small-scale Focus Group Discussions (FGDs), and participatory observation in the fishing community (Shrestha et al., 2024). Interviews explored personal experiences, stakeholder relationships, and institutional roles in adaptation, while FGDs examined collective dynamics, power distribution, and interaction patterns in decision-making. Semi-structured guides were developed based on community resilience, socio-ecological adaptation, and collective decision-making theory (Jozaei et al., 2022). Participatory observation validated actual community behaviors and adaptive practices. Data validity was ensured through source and method triangulation, and reliability through trail audits and systematic field recording (Arslan, 2025).

The research began with a literature review and initial field observations to map ecological challenges and community structures. Key actors were identified, and ethical engagement was secured through community approaches and research permits. Data collection occurred over several weeks, with all interviews and FGDs recorded, transcribed, and compiled into field notes, transcripts, and analytical memos. Finally, triangulation and member checking verified the interpretations prior to thematic analysis.

Data were analyzed using thematic analysis to identify patterns of meaning, categories, and inter-thematic relationships that describe community decision-making pathways (Lochmiller, 2021). The analysis is carried out through the stages of data familiarization, initial coding, theme preparation, theme review, theme definition, and final report preparation. To help with data management, the researchers used NVivo 12 Plus software, which allows for a more systematic and transparent coding process (Mortelmans, 2025). The analysis is geared towards uncovering how social interactions, the role of key actors, community networks, and power dynamics shape collective decisions that contribute to local economic resilience.

RESULTS

Livelihood Diversification as a Vulnerability Reduction Strategy

This theme suggests that livelihood diversification is the earliest and most frequently emerging decision path in community responses to ecological and economic instability. Through in-depth interviews and participatory observations, it was found that the decision to diversify work was not only driven by a decline in catch due to changing ocean conditions, but also by the need to maintain the sustainability of household income after the crisis. Informants from fishermen's groups and coastal economic actors explained that diversification emerged as a result of internal family discussions, group deliberations, and recommendations from traditional leaders who prioritized social stability.

One of the leaders of the fishermen's group (Q1) explained that the dynamic reflected a collective response to the uncertainty of the sea, noting that they could no longer simply wait for the fish because the season was hard to predict, and that many members of his group were beginning small businesses as well. This point was reinforced by another group leader (K2), who highlighted that diversification was part of a shared strategy to reduce long-term risks, stating that they always encouraged group members to take on part-time jobs, whether by selling processed products or helping out on the land. As stated by Boiko (2017), adaptive strategies and economic diversification are essential for the community's resilience in the face of environmental and market uncertainties.

Women coastal economic actors also play an important role as a driving force for diversification through home-based businesses and trade in marine products. One informant (P1) explained that when fishermen returned home without results, they still needed to sell, so she processed dried fish or made crackers to ensure there was still income. A similar sentiment was expressed by another female informant (P2), who viewed diversification as a way to maintain family sustainability, noting that she had added a small business making cakes to have a reserve in case the seafood supply was low. This indicates that women's entrepreneurial activities are crucial for buffering households against the uncertainties of coastal livelihoods. These findings suggest that diversification is not only an economic strategy, but also a social-collective decision born from the community's internal discussions, the researchers' observed daily practices, as well as the influence of key actors in local structures. Thus, this decision path becomes an important foundation in building post-crisis local economic resilience (Yesuf & Fields, 2025).

Strengthening Social Networks and Local Institutions to Face Uncertainty

Thematic analysis shows that social networks and local institutions, such as fishermen's groups, indigenous institutions, and cooperatives, play a role as social anchors in strengthening communities' ability to cope with ecological uncertainty. Through FGDs and interviews, it was revealed that this network provides an arena for deliberation, exchange of information on sea conditions, and emergency assistance for group members. Strengthening social networks is an important decision path because it allows communities to share the burden of risk and create a collective relief mechanism (Gisevius, 2024).

A traditional leader (A1) explained that solidarity is not merely a tradition but serves as an instrument of social adaptation, noting that people cannot act alone and that whenever there is a problem, everyone must be aware and help, as this has been the rule in the past. This perspective was supported by the manager of the local institution (L1), who emphasized that the institutional structure helps reduce inequality in access to information and capital, explaining that the institution collects information about assistance or market opportunities and then conveys it to the group so that everyone can participate. It means that both cultural norms and formal institutions play complementary roles in fostering collective resilience and equitable participation (Adebayo, 2025).

Experienced fishermen also described how informal networks function as a mitigation system. One informant (N1) explained that news about strong winds or rough waters spreads very quickly through friends in the village. A second fisherman (N2) highlighted

the strong horizontal coordination among actors on the ground, noting that they look out for each other and work together to find solutions when members' boats are damaged or they are unable to go out to sea. This demonstrates that informal social networks are essential for rapid information sharing and collective problem-solving in the fishing community (Pereira et al., 2022). These findings show that social networks and local institutions are not only a forum for coordination but also a decision-making mechanism that influences the adaptive strategies of communities. These decisions are generated through a process of discussion, negotiation, and mutual assistance observed in daily interactions. Thus, this pathway strengthens economic resilience through collective strength and community-based governance.

Adaptation of Coastal Resources Utilization Strategy to Ecological Change

The third theme shows how fishing communities formulate adaptive strategies in response to ecological changes, such as shifting fishing seasons, coral bleaching, and rising sea temperatures. Participatory observations showed that fishermen adjusted their fishing patterns, chose more environmentally friendly fishing gear, and modified operating hours based on ecological information shared in groups. This adjustment process is a decision path that involves collective ecological learning and intergenerational inherited experiences (Gokhale, 2024).

One experienced fisherman (N1) explained that they changed fishing locations in response to the decline in coral reef quality, noting that areas that used to have abundant fish now had many "whites," prompting them to move farther away. This was reinforced by other fishermen (N2), who described adaptations in fishing gear to avoid further damaging the reef, as continued damage would make it more difficult to catch fish. The leader of the fishermen's group (F1) added that adaptation strategies were decided through group deliberations based on observations of sea conditions, discussing water and current conditions first to avoid wasting time and fuel. Women coastal economic actors (P1) also noted that ecological changes affect downstream livelihoods, explaining that when fish are scarce, they have to modify processing methods and find alternative ingredients to keep their businesses running. This illustrates that both fishers and coastal entrepreneurs actively adapt their practices in response to ecological changes, ensuring the sustainability of livelihoods across the community. These findings show that the strategy for the utilization of coastal resources is the result of a combination of empirical experiences of fishermen, collective information disseminated through social networks, and ecological observations carried out together. This adaptation process shows a strong link between ecological pressures and community decision-making that underpins local economic resilience (Wu & Wan, 2024).

DISCUSSION

Livelihood diversification is the most prominent community decision path in strengthening local economic resilience in post-crisis coastal areas. Diversification was chosen not only as a spontaneous response of households to declining catches, but as a collective decision driven by community deliberation and the direction of local figures. These findings are consistent with the global literature that confirms that income diversification is a key adaptive strategy for small-scale fisheries communities in the face of ecological uncertainty (Gokhale, 2024). In the context of Spermonde, diversification not only maintains short-term economic sustainability but also serves as a mechanism to reduce structural dependence on the ocean that is increasingly vulnerable to abrasion, coral bleaching, and changes in fish distribution. Thus, this decision path illustrates the ability of communities to develop alternative economic options that are aligned with local capacity and environmental resource dynamics.

Social networks and local institutions play a fundamental role in building the economic resilience of fishing communities. Social solidarity, the presence of fisher groups, indigenous institutions, and local organizational structures, allows for knowledge exchange, response coordination, and risk sharing during times of crisis. This condition

is in line with various studies that confirm that the adaptive capacity of a community increases when social networks are strong and local institutions function effectively as coordination nodes (Pereira et al., 2022; Torres-Lima et al., 2022). In the context of Spermonde, social networks run not only as a support mechanism but also as an arena for collective decision-making that influences the direction of the community's adaptation to ecological and economic pressures. The strength of this network proves that resilience is not only built through economic assets but also through social cohesion, collective norms, and institutional legitimacy that underpin adaptive coordination.

The third decision path is related to the adjustment of the strategy for the use of coastal resources, which is carried out consciously by the fishing community. Changes in sea patterns, the selection of new fishing locations, the use of more adaptive fishing gear, and shifts in operational times are forms of community response to ecological degradation and climate change that affect the fishing season. These findings are in line with recent coastal research that shows the growing importance of environmentally friendly fishing practices and local knowledge-based adaptation (Berhitu et al., 2025). The adaptation not only mitigates but also reflects collective learning that integrates hereditary experiences and contemporary environmental dynamics. Thus, this decision path demonstrates the community's ability to make ecological adjustments in a sustainable manner, which ultimately underpins local economic stability.

The three decision paths, namely, economic diversification, strengthening social and institutional networks, and ecological adjustments, show that economic resilience in Spermonde is multidimensional and is formed through dynamic interactions between economic, social, and ecological factors. The adaptive capacity framework in the socio-ecological resilience literature confirms that a combination of economic assets, local knowledge, community cohesion, and ecological conditions is a prerequisite for effective adaptive decision-making (Järvelä, 2023; Adebayo, 2025). The findings of this study illustrate how fishing communities combine these dimensions in formulating a collective response to crises, resulting in more stable economic resilience than individual adaptation strategies. This reinforces the argument that community-based resilience cannot be understood partially, but should be seen as a collective decision-making process influenced by social, ecological, and economic structures.

The study identified several factors limiting the effectiveness of adaptive decision pathways. Diversification is constrained by limited capital, skills, and market access (Basiru et al., 2023), while social networks can weaken under migration, conflict, or economic stress, reducing community solidarity. Ecological adjustments may also fail if environmental degradation exceeds recovery thresholds, making external support, through policies, education, capital, and consistent resource governance, crucial. Unlike urban coastal areas, where diversification often drives out-migration and weakens cohesion (Mozumder et al., 2023; Nyathi et al., 2024). In the Spermonde Islands, it occurs within the community, supported by strong kinship ties and small, well-coordinated structures. These findings highlight the importance of local context in shaping adaptive pathways.

CONCLUSION

This study confirms that the resilience of local economies in post-crisis coastal areas, as seen in fishing communities in the Spermonde Islands, is determined by the community's ability to build adaptive, structured, and collective-based decision-making pathways. The three key pathways identified, namely diversification of livelihoods, strengthening social networks and local institutions, and adjusting coastal resource utilization strategies, show that economic resilience does not depend solely on individual responses, but on the capacity of communities to mobilize socio-ecological resources in an integrated manner. These results underscore that successful adaptation in coastal areas

requires a combination of community economic creativity, strong social cohesion, and ecological understanding based on local experiences to navigate long-term uncertainty.

This study provides empirical evidence that collective decision-making strengthens community adaptive capacity in responding to ecological and socioeconomic pressures. The findings highlight that effective adaptation requires a balanced integration of economic, social, and ecological dimensions, supported by responsive and context-sensitive policies. Therefore, policy interventions in post-crisis areas should prioritize strengthening local institutions, expanding access to diversified livelihoods beyond fisheries, and promoting sustainable resource management practices to ensure long-term economic resilience and community stability.

This research also has limitations that need to be considered. The qualitative design with eight key informants allows for an in-depth exploration of the decision-making process, but does not allow generalizations to the entire fishing community in the Spermonde Islands. The variety of experiences of young fishermen, seafood traders, or seasonal migrants may not have been fully captured. In addition, the data relies on the informant's memory and interpretation, so it has the potential to be influenced by perception bias. In the future, follow-up research can use a mixed-method approach with a wider sample coverage to measure the prevalence of adaptation strategies and quantitatively test the relationship between variables.

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