

Local Wisdom and Adaptation of Traditional Fishing Communities in the Era of Modernization in Pacitan Regency

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Abstract

Traditional fishing communities in Pacitan Regency have social, cultural, and economic systems that have been passed down from generation to generation. The local wisdom they possess is not only related to fishing techniques and sustainable utilization of marine resources, but also includes social values, norms, and beliefs that are the basis of the life of the fishing community. However, in the era of modernization, rapid social and economic changes have brought various challenges to the sustainability of their local traditions and practices. Modernization only favors rich fishermen, while poor fishermen remain in poverty because it turns out they do not have access, especially capital, to own fishing technology that was introduced in line with modernization. Most of Indonesia's territory is ocean, however, resource management in Indonesia's coastal and marine areas is at a crossroads. Poverty, social inequality, ignorance and backwardness will continue to be inherited from generation to generation and continue throughout time as long as the development paradigm does not change. The objectives of this study are: (1) to local wisdom of traditional fishermen in Pacitan Regency; (2) to describe fishermen's adaptation strategies in facing modernization; The research method used is qualitative descriptive research, with a phenomenological research approach. Data sources include primary data and secondary data. The research was conducted from April to July 2024. Data collection techniques used: in-depth interviews, participant observation, focus group discussions, documentation studies. The results of the research show that fishermen in Sirnobojo Village still believe in special rituals to ask sea guards for smooth sailing. Rituals and myths are fishermen's efforts to establish a good relationship with nature in the place where they earn their living. In many cases working in the marine environment is fraught with risk because fishermen's job is to hunt fish, the results cannot be determined with certainty, everything is almost speculative. The problem of risk and uncertainty occurs because the sea is an area that is considered free for exploitation. There are various adaptation strategies carried out by traditional fishermen in facing modernization, namely collective development, institutional development, diversification and empowering fishermen's wives. Therefore, the empowerment strategy carried out for fishing communities is more focused on institutional transformation.

Keywords

adaptation; community; fishermen; local wisdom

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INTRODUCTION

Most of Indonesia's territory is ocean, however, resource management in Indonesia's coastal and marine areas is at a crossroads (Burhanuddin, 2018; Making & Lasaiba, 2016). On the one hand, there are many areas that have not been touched at all by development activities, but on the other hand, there are several areas that have been developed intensively. Poverty, social inequality, ignorance and backwardness will continue to be inherited from generation to generation and continue throughout time as long as the development paradigm does not change. As explained by (Frank, 1970; Leimgruber, 2018; Schaeffer, 2020), in his development theory, the underdevelopment and/or poverty of marginal or satellite areas is a result of the indifference of the state and/or central government so that those in rural areas are left with their own problems, even Sometimes the laws and regulations made by the government make it very miserable for rural communities or satellite/peripheral communities in this context, namely fishing communities. In line with this theory, it seems that there will always be difficult choices arising from every introduction and adoption of new technology in fishing equipment. On the one hand, the introduction of motorbikes, motorized boats and more productive fishing equipment is desirable because it can increase overall fish production. However, on the other hand, efforts to help the lowest level fishermen groups usually cannot be guaranteed through such policies. In the process of modernization, the poorest groups are increasingly "scattered" which makes it even more difficult to help them.

Modernization only favors rich fishermen, while poor fishermen remain in poverty because it turns out they do not have access, especially capital, to own fishing technology that was introduced since modernization. (Soemardjan, n.d.) calls this condition structural poverty, meaning persistent poverty due to the implementation of a social structure that provides excessive opportunities for certain social groups but on the contrary, inhibits other social groups from accessing available resources (Fauzi et al., 2023; Wijekoon et al., 2021). Modernization brings changes in fishing technology and practices. This can change fish migration patterns, cause a decline in fish stocks, and affect the marine resources available to traditional fishermen (Satria, 2015; Wati & Primyastanto, 2018). Economic and industrial development on the coast can result in tighter competition for access to natural resources. Traditional fishermen face difficulties

in maintaining their access to productive fishing zones (Elanda & Alie, 2021; Rasyid & Amir, 2022). Modernization threatens the local wisdom of Pacitan's traditional fishermen which has been passed down from generation to generation. Traditional knowledge about fishing seasons, navigation, and natural resource management can be eroded by the use of modern technology that tends to replace it. Changes in economic and social structures, including urbanization and changes in employment patterns, can have a negative impact on the social and economic welfare of traditional fishermen. Modernization can cause environmental degradation, including damage to coral reefs, marine pollution, and loss of mangrove habitat. This can threaten the sustainability of marine resources and the livelihoods of traditional fishermen. Global market integration can make traditional fishermen vulnerable to international price fluctuations and competition with imported products. This can disrupt local economic stability and threaten the sustainability of traditional fishermen. Some threats are that local fish prices are highly dependent on the global market. If international prices fall due to increased global supply, traditional fishermen may be forced to sell their catches at low prices, even below production costs. Increased imports of fishery products from other countries that have more efficient and cheaper production systems (such as mass-farmed fish) can reduce the competitiveness of traditional fishermen. Consumers prefer cheaper imported products, so that demand for local fishermen's catches decreases.

Poverty is often associated with structural and cultural issues, including farmer morality. The structuralists are represented by Samuel Popkin (1979), White (1983), Keyes (1983); while culturalists are represented by Geertz (1976) and Scott (1976). In contrast to the two paradigms (structural and cultural), Hayami and Kikuchi in (Marzali, 2002) take a wise middle path. They do not deny the fact about the principle of mutual aid and the right to life at the subsistence level and on the other hand also deny that peasant who calculate rationally tend to avoid the custom of helping other peasant (small farmers in developing countries) and do not care about poor neighbors. Rational farmer also have a tendency not to always prioritize personal interests over common interests. Rational farmers are farmers who make economic decisions by considering efficiency, profit, and risk based on the resources they have. This concept developed in the study of agricultural economics, especially in

the neoclassical approach, which views farmers as economic agents who seek to maximize profit or welfare.

Viewed from a cultural perspective, poverty is associated with problems of farmer culture and morality. Poor fishermen are described as a relatively closed group (closed corporate community, borrowing the term (Wolf, 1999), communal ownership, anti-market, reciprocity, rejecting change, and so on. They reject all forms of renewal, innovation and other new ideas that are considered will threaten their survival. To represent this group, we will present two examples of James Scott's research work on 'farmers' moral economy' and (Geertz, 1963) on 'agricultural involution'. Scott's book has been widely reviewed and used as a reference in explaining the phenomenon of poverty in the Southeast Asia region, including Indonesia. According to Scott, economic morality is closely related to the protest movement which is caused by farmers losing subsistence security, a sense of security, and losing prosperity during changes (Scott, 1977). This applies strictly to fishing communities. In the system of division of labor that has been in effect from generation to generation, activities at sea are the domain of men while activities on land are the domain of women (Masliawati & Pujiraharjo, 2023; Rinjani et al., 2022). The division of labor according to nature is the division of work between men and women. Men do work for social needs while women have to cover economic needs (Afrizal & Lelah, 2021; Wulandari et al., 2022).

Meanwhile, structuralists see poverty as a result of structural inequality related to limited resources and access to various opportunities. A classic work that is still quite influential which thoroughly discusses fisheries and the socio-economic life of fishermen is the study of economic anthropology by (Firth, 1972). Firth sees the fisheries economic system in fishing communities as structurally similar to the farmer's economic system, including small scale, simple marketing equipment and organization, exploitation is often a cooperative matter, and with a society that includes various levels of economic behavior. Furthermore, the factors causing structural poverty in fishing communities, namely: (a) problems related to ownership of fishing gear, specifically motorbike boats, (b) access to capital, especially credit requirements, (c) requirements for the exchange of catches that are not in favor of fishing workers, (d) fish storage facilities, (e) fishing area exploitation rights and (f) destruction of coastal community organization systems

(Kusumastanto & Budiharsono, 2018)

Cultural poverty refers to the mindset, habits, and values that develop in a community group that indirectly reinforces poverty. Structural poverty, on the other hand, refers to the systemic barriers that cause fishing communities to remain in poverty, even though they have the potential to develop. Gender inequality in access to control over productive capital (assets) such as information, technology and financial capital limits women (fishermen's wives) from participating and taking advantage of opportunities provided by development (Ruslan et al., 2024; Utaminingsih et al., 2020). There are no gender-based data from countries on access to productive resources, but it is widely documented that women generally own less capital than men and have poorer access to credit, other supplies, and extension services. Fishermen's wives also only have a few work networks and social networks that can facilitate access to credit services. In fact, in overcoming household economic problems, fishermen's wives take a very strategic role. As long as it is possible in terms of skills and capital procurement, fishermen's wives have a great opportunity to be involved in the informal trade economy (Hermanto, 2017; LEKATOMPESSY, 2013; Napsiah & Sanityastuti, 2018). The informal trade sector is very adaptive and absorbs a relatively large workforce in fishing communities. Fishermen's wives are not only managers of the household economy, but also the rulers of informal trade in fishing communities. The form and mechanism of this subordination process varies from time to time and from place to place. For example, because of the assumption that women have an "emotional" nature, it is considered inappropriate to appear as party leaders, managers or foremen. This is a process of subordination and discrimination based on gender. For centuries, for reasons of religious doctrine, women were not allowed to lead anything, including worldly matters and were not trusted to give testimony.

Local wisdom and adaptation of traditional fishermen in Pacitan Regency are an important research focus considering the impact of modernization that continues to develop in coastal areas. Pacitan Regency, located on the southern coast of Java, has a rich fishing tradition and communities that depend on marine resources for their livelihoods. However, rapid modernization, including the use of new technologies and changes in socio-economic structures, has affected the way of life and livelihoods of traditional fishermen. These changes have a significant impact on the sustainability of tra-

ditional fishermen and their marine ecology. Various modernization factors such as urbanization, increasing tourism industry, changes in government policies, and globalization of trade have influenced fishing patterns, access to resources, and local wisdom in managing marine resources (Sulaiman & SI, 2022; Supriadi, 2023). Local wisdom is a collection of knowledge and ways of thinking that are rooted in the culture of a group of people, which is the result of observations over a long period of time (Tarrapa, S., & Junaedi, I., 2021). The adaptation referred to in this research is the efforts of fishermen to make changes or adjustments to the materials, shape and function of boats or fishing gear to respond to the needs and changes that occur (Susilo, et., et. al., 2021).

Research on local wisdom and adaptation of traditional fishermen in Pacitan Regency is important to understand how fishing communities face these modernization changes. This research will discuss the adaptation strategies used by traditional fishermen to maintain the sustainability of their livelihoods, as well as how their local wisdom plays a role in the sustainable management of natural resources. By understanding the dynamics between modernization and local wisdom of traditional fishermen, this research is expected to provide valuable insight for developing policies that support economic, social and environmental sustainability in the Pacitan coastal region. Apart from that, it is also hoped that this research can provide input for future efforts to conserve marine resources and protect local culture.

METHOD

This research was conducted in Pacitan District, Pacitan Regency, which was based on the following considerations: the people in this area have relatively many fishermen who in fact are traditional fishermen, geographically the region is a coastal area which since ancestral times has kept many traditions or wisdom local and social capital values that persist and greatly influence the behavior of the community. Researchers understand the local wisdom of traditional fishermen in Pacitan Regency and understand the adaptive strategies and division of work among traditional fishermen based on the perspective of the fishermen themselves. So researchers try to understand the lives of traditional fishermen and also how to empower fishermen's wives according to points of view, definitions, measurements, logic and even the

theory of fishermen themselves, which is popularly called the emic perspective (Al-Ababneh, 2020; Fellows & Liu, 2021). The success of empowering fishermen's wives is not only measured by formal economic indicators such as income or access to capital, but in this study the measure of success is seen from: The meaning given by fishermen and their families to empowerment (for example, whether they feel more independent or valued in the community). Cultural norms and local values that determine the role of women in the fishermen's household economy. The logic of thinking of the fishing community, such as how they divide tasks in the family and how they view the role of women in the fisheries sector.

Furthermore, the problem posed in this research places more emphasis on issues of process and meaning, so the appropriate type of research is descriptive qualitative research (Williams, 2021). Furthermore, to understand the meaning of events and phenomena that arise in the daily life of traditional fishing communities and to understand adaptive strategies in fishing communities so that they survive and interpret their experiences and knowledge so far, the approach used in this research is a phenomenological approach. Phenomenological descriptive approach, which describes the fishermen's experiences as they are without changing their meaning. The stages of analysis include: Rereading interview transcripts and observation notes to understand the overall experience. Identifying key themes that emerge from fishermen's narratives, such as survival strategies, the role of women in the household economy, or how they deal with climate change. Comparing themes between participants to find universal patterns of experience in fishermen's lives.

In this research, the data sources required include primary data and secondary data. The informants in this research were traditional fishermen, fishermen's wives, bosses and community leaders (formal and non-formal), to determine the number of informants is determined when the researcher conducts research in the field. The informants in this study were village officials (2 people), community leaders (1 person), retired fishermen (2 people), active fishermen (9 people). This is necessary to obtain a description and track existing information. Then the researchers stopped searching for informants when they felt the information was sufficient and no further variations in information were found. The research was conducted from April to July 2024.

The data collection techniques used in

this research are in-depth interviews, participant observation, focus group discussions, documentation studies. These techniques are the basic techniques used in qualitative research (Bogdan & Biklen, 1997; Taylor et al., 2015). The sampling technique used in this research is “purposive sampling”, or more accurately referred to as “criterion-based selection” sampling, where this sampling technique is selective using considerations based on the theoretical concepts used, the researcher’s personal curiosity, empirical characteristics and so on. -other. The unit of analysis in this research is the sub-district. Because this research will be conducted in one sub-district, the analysis technique used is single case analysis. In each case the analysis process will be carried out using an interactive analysis model (Miles & Huberman, 1994). In this analysis model, the three components of analysis are data reduction, data presentation and verification.

RESULTS AND DISCUSSION

Kembang Village, Pacitan District, Pacitan Regency is a village whose people are mostly fishermen who are traditional fishermen. Geographically, the area is a coastal area that since the time of our ancestors has stored many traditions or local wisdom as well as social capital values that have survived and greatly influenced the behavior of its people. Fishermen in Kembang Village, Pacitan District, Pacitan Regency, have characteristics that reflect the category of traditional fishermen. The reasons they are included in the category of traditional fishermen: (1) Most fishermen in Kembang Village use simple fishing gear and operate close to the coast; (2) The majority of fishermen have relatively small fishing boats that they own, in accordance with the characteristics of small-scale fishermen; (3) The income of traditional fishermen tends to fluctuate and depends on daily catches, which are influenced by weather and seasonal conditions. The characteristics of the lifestyle of traditional fishermen in Kembang Village are: (1) fishing activities are highly dependent on natural conditions, such as weather and seasons, which affect the availability of fish and safety at sea; (2) low levels of education limit their access to alternative jobs or skills improvement that can increase income; (3) limited access to health facilities, education, and other supporting infrastructure worsens their living conditions.

Local Wisdom of Traditional Fishermen in Pacitan Regency

The local wisdom of traditional fishermen in Pacitan Regency reflects the knowledge, skills and values that have been passed down from generation to generation. In the face of ever-growing modernization, this local wisdom is the key to maintaining sustainable livelihoods and marine ecology. The following is some local wisdom possessed by traditional fishermen in Pacitan Regency in facing modernization. (Table 1)

Some statements from fishermen related to local knowledge about fishing season in Pacitan based on interviews. *“If the wind from the east is too strong, usually fish are hard to catch because they swim deeper. But if the westerly wind starts blowing, that’s a sign that the fishing season is starting to be good.”* Interview with Mr. Sumarlam (Fisherman of Kembang Village). *“During the westerly season, the waves are big and it’s dangerous to go to sea, so we usually wait until the weather is calmer.”* Interview with Mr. Marimin (Fisherman of Kembang Village). By understanding and utilizing the local wisdom possessed by traditional fishermen in Pacitan Regency, sustainable adaptation strategies can be built in the face of modernization. Through an approach based on local knowledge and active community participation, effective and sustainable solutions can be produced for economic, social and environmental sustainability in coastal areas (Subagiyo et al., 2017; Ulum & Anggaini, 2020)

Pacitan fishermen have a deep understanding of the types of fish, sea plants and coral reefs in their area. This knowledge is not only used for fishing activities, but also to maintain the balance of the marine ecosystem. Pacitan fishermen, for example, know the types of fish that are predators and prey, as well as the natural habitat of each species. They also understand the importance of coral reefs as shelter and breeding grounds for various types of fish, so they really care for the preservation of coral reefs in their area. This is in line with (Firmansyah & Arwani, 2013; Hasrawaty et al., 2017; Taufiq, 2018; Wicaksono, et al., 2023) that local knowledge about marine ecosystems is also an important part of fishermen’s wisdom.

Traditional Fishermen’s Adaptation Strategy in Facing Modernization Development of Fisherman Community

Modernization has had a significant impact on various sectors, including the fisheries

Table 1. Local Wisdom of Traditional Fishermen in Pacitan Regency

Dimen- sions of Local Wisdom	Description of Local Wisdom	Contribution in facing modernization
Local knowledge of fishing seasons	Fishermen's knowledge about fishing seasons is based on observations of weather, wind direction and fish behavior.	Fishermen can determine the right time and location to catch fish efficiently Fishermen remain productive in the face of seasonal changes that occur due to modernization and environmental changes.
	Traditional fishermen's understanding of fish migration patterns and differences in breeding periods, southwest winds as an indicator of the rainy season.	Fishermen can detect that when sea water temperatures become warmer, fish tend to migrate to deeper waters or to areas that have lower temperatures, making it easier to find the right fishing location. Fishermen only fish at the edge because they can detect fish migration to shallower waters or near river mouths.
Traditional navigation skills	Traditional fishermen use traditional navigation skills, such as utilizing the stars, ocean currents, and natural shapes to determine position and direction when sailing	In facing modernization changes such as the use of GPS, this local wisdom remains valuable because it can be a backup if modern devices are damaged or fail. Fishermen can identify various stars in the night sky and use their relative positions to determine their direction and location in the sea.
Sustainable traditional fishing techniques	Traditional fishermen use sustainable and environmentally friendly fishing techniques, such as fishing nets	Fishermen can reduce negative impacts on the marine environment and still contribute to resource conservation. Fishermen do not destroy coral reefs
	Fishermen's understanding of the importance of maintaining the balance of marine ecosystems for sustainability	Fishermen realize that the presence of other species in the marine ecosystem, such as plankton, sea plants and other animals, plays an important role in maintaining ecosystem balance
Local knowledge about fish and marine behavior	Traditional fishermen have a rich system of local knowledge about fish behavior, oceanographic patterns, and marine ecology that has been gained from years of experience at sea.	Fishermen can adapt fishing practices to environmental changes. Fishermen can observe natural signs in the sea, such as water movement or weather patterns, to determine locations where fish may congregate. Fishermen can read natural signs such as wind direction, sea waves, and changes in sea water temperature to predict sea conditions and determine the right time to go to sea.
	Fishermen have knowledge of coral reef locations that have not been officially mapped	Fishermen can quickly get to coral reefs where certain fish gather
Local wis- dom-based resource manage- ment	Community-based management of natural resources based on local wisdom and cultural values.	Traditional fishermen have a system of strengthening and recognizing that this management system can help maintain a balanced marine ecosystem and the sustainability of fishermen's livelihoods.
	Fishing communities have traditional rules (related to fishing at certain times)	Play a role in building collective awareness about the importance of maintaining the balance of the marine ecosystem
	Prohibition of Catching in the Breeding Season:	Fishermen allow fish to reach sexual maturity and conserve their breeding habitat to ensure that fish populations remain sustainable
	Prohibition against fishing on certain days	Fishermen are aware of giving the fish population a rest period, allowing them to reproduce without disturbance

Data source: Analysis of primary data through in-depth interviews, 2024

sector. Traditional fishermen who have long relied on traditional fishing methods and gear are now faced with big challenges to adapt to changes in technology and global market dynamics. One strategy that has emerged as an adaptive solution is the development of collectivity among fishermen. This collectivity is not only about working together in fishing activities, but also involves social, economic and cultural aspects that support the resilience and progress of the fishing community as a whole.

In many cases working in the marine environment is fraught with risk because fishermen's job is to hunt fish, the results cannot be determined with certainty, everything is almost speculative. The problem of risk and uncertainty occurs because the sea is an area that is considered free for exploitation. Fishermen try to deal with this by strengthening social capital, especially social awareness or reciprocity and building solidarity.

The social concern of the fishing community in Sirnobojo Village is demonstrated by the presence of skipper fishermen in the fishing group who are ready to help provide capital loans

if working fishermen need it. It doesn't matter if master fishermen also need capital, the important thing is that labor fishermen can continue to survive economically. According to the fisherman boss, this is considered an opportunity to gain long and short term benefits. The long-term benefit is that the boss's fishermen will increase their trust in their subordinates through the relationships they build. Short-term benefits: master fishermen will always get their catch from labor fishermen. So the reciprocity of the working fishermen is to provide their catch regularly to the master fishermen. Based on religious teachings that are believed in, this is felt to be an obligation, when someone provides assistance then he has a debt to repay it on another occasion, even with a better return, namely loyalty to build solidarity and more lasting work relationships.

The solidarity of fishermen in Sirnobojo Village is included in the category of mechanical solidarity and is demonstrated by the existence of work organization when going to sea. Labor fishermen who are members of a work organization with master fishermen. Labor fishermen are

Table 2. Development of Fisherman Community

Indicator	Impact
Strengthening bargaining power	The formation of fishing groups or organizations, traditional fishermen can increase their bargaining power in interacting with other parties, such as fish buyers, the government, or financial institutions. In this way, they can get better prices for their catch and fight for policies that support the sustainability of fish resources.
Improved access to resources and services	Fishermen can improve their access to resources, such as fishing equipment, business capital, or training and education. By collaborating in groups, they can share resources and services more efficiently, and benefit from development programs and assistance provided by the government or other agencies.
Sharing of knowledge and resources:	There is an exchange of knowledge and resources between members. This allows fishermen to learn from each other's experiences, develop new skills, and increase efficiency in fishing practices and resource management.
Formation of solidarity and support	Collectivity allows for the creation of solidarity and support between fellow fishermen in facing shared challenges, such as climate change, declining fish stocks, or market competition. In groups, fishermen can support each other emotionally, financially and practically in overcoming these problems.
Role in decision making	By uniting in groups or organizations, fishermen have the opportunity to participate in decision-making processes related to fishing activities, resource management and coastal development. This allows them to have a voice in determining the direction of policies that affect their livelihoods.
Adapt to change	Collectivity allows fishermen to more easily adapt to environmental, economic and social changes occurring around them. By collaborating in groups, they can create more effective adaptation strategies and gain the support they need to face new challenges.

Data source: Analysis of primary data through in-depth interviews, 2024

often relatives or their own family. The worker fishermen take turns taking control of pulling the net, driving the boat, and looking after the engine. This is because the safety and profitable operation of a fishing vessel/boat depends on the interdependence and cooperation of its crew. Membership of relatives in a team enhances cooperation within the work group and is a common practice in the region.

Empowerment through development of fisherman community leads to the development of networks and partnerships (Ginda, 2020; Kaligis et al., 2020; Rauf & Munaf, 2015), in the fishing community in this village, for example through the development of group-owned business entities, cooperatives or joint business groups. The term used here is collective development, in the sense of opening up opportunities for the community to form the groups they want that are not merely cooperatives or joint business groups. This is a joint activity that leads to the welfare of each member individually. Collective development efforts carried out so far have been based on fishermen groups. Another entity that is important to receive attention is the group of women or women who are fishermen's

wives. Therefore, empowerment of fishermen's wives with an emphasis on their role in productive economic endeavors is very appropriate in the local area.

Institutional Capacity Development

Developing institutional capacity in the fisheries sector is an effective adaptation strategy for fishermen in facing modernization. Strong institutions can provide the various services and resources that fishermen need, such as access to technology, training, financing and marketing. With good institutions, fishermen can increase their productivity, efficiency and welfare in the era of modernization. Institutional development is a very important adaptation strategy for fishermen in facing modernization in the fisheries sector. The following are some of the impacts of why institutional capacity development is crucial as an adaptation strategy for fishermen.

The fishermen's institution in Sirnobo-yo Village has existed since 1983. There are five fishermen's Joint Business Groups (KUB), namely (1) Samodera Jaya which was founded on January 1 1983, has 36 members, and is included in the Intermediate group class; (2) Bahari Abadi

Table 3. Institutional Capacity Development of Fishermen's Communities

Indicator	Impact
Strengthening Joint Strength	Through institutions such as fishermen's cooperatives or associations, fishermen can organize themselves together to increase their bargaining power in various matters, such as the selling price of their catch, access to equipment and resources, as well as negotiations with the government or other stakeholders.
Training and Education	Institutions can provide a platform to organize training and education programs for fishermen. This helps in improving skills, understanding the principles of sustainable fisheries management, and introducing new technologies that can help increase efficiency and productivity.
Infrastructure development	Fishermen can more easily access supporting infrastructure development, such as docks, fish storage areas or marketing facilities. This increases efficiency and safety in fishing, processing and marketing of catches.
Access to Financial Resources	Institutions can assist in providing access to financial resources, such as business loans, savings, or insurance. This helps fishermen in overcoming financial challenges related to investment in new equipment, working capital, or uncertainty of catch.
Protection of Rights and Interests	Fishermen have a stronger voice in demanding their rights and interests from the government, other stakeholders and society in general. This includes protecting access to land and resources, enforcing laws against illegal fishing practices, and participating in decision-making that affects their livelihoods.
Adaptation to Climate and Environmental Change	Institutions can also help fishermen in planning and implementing adaptation strategies to climate and environmental changes. This includes providing information on changing weather and ocean conditions, as well as developing more sustainable and environmentally friendly fishing practices.

Data source: Analysis of primary data through in-depth interviews, 2024

was founded on January 10 1992, has 20 members, and is included in the Beginner group class; (3) Karya Samudera was founded on February 30 2008, has 33 members, and is included in the Beginner group class; (4) Tunas Samudera was founded on June 30 2008, has 25 members, and is included in the Beginner group class; and (5) Setia Samudera which was just founded on February 5 2013, has 22 members and is included in the Beginner group class. The five fishermen groups hold group gatherings once or even twice a month to discuss the problems they are experiencing, savings and loans, exchange the latest information, and convey information about training held by the Maritime and Fisheries Service (DKP) of Pacitan Regency and other districts.

Fishermen in Pacitan actively hold group meetings. Here are excerpts from the interview: Mr. Suryo, Head of the “Samudra Jaya” Fishermen Group: *“We hold regular meetings, usually at the beginning or middle of the month. This is important so that we can discuss the problems we face, such as falling fish prices or problems with damaged fishing gear.”* Mr. Roni, Traditional Fisherman: *“If a member needs a loan to repair their nets or boat engines, we discuss it in a meeting. Usually we help each other first before seeking loans from outside.”*

To overcome capital difficulties, fishing communities are advised to develop a separate mechanism with a shared capital system (capital sharing). This system allows cooperation between fishermen in procuring capital, and also shows that there is an equal distribution of risks because large losses incurred at any time, such as lost boats or damaged fishing gear, will be shared. Equal distribution of risks will also occur through the provision of wages on a profit-sharing basis, this allows working groups of fishermen to enjoy profits or losses together. Individual ownership patterns will only encourage capital accumulation in small groups. On the other hand, fishing communities that develop collective thinking enable greater income generation (Intyas et al., 2022; S. Yunus et al., 2021). However, this pattern of risk sharing will continue to grow and develop in service organizations, especially when fishermen’s economic income is still irregular.

Basically, fishing communities will develop quickly if they join groups of capital owners, so that fishermen will share the risks and uncertainties (Kasim, 2022; Rukin, 2021). Therefore, institutional development is very important for fishing communities to increase the bargaining position of fishermen in establishing partner-

ships. The existing institutions are limited to fishermen’s associations and gatherings in a mere group which do not yet have legal legality as required in building partnerships. Fisherman groups that are members of farmer and fisherman groups need to be transformed into business entities that have legal entities so that these institutions can build partnerships with stakeholders.

Business Diversification

Business diversification is a very important adaptation strategy for fishermen in facing modernization in the fisheries sector (Husni, 2020; Latief, 2024; A. Y. S. A. Y. Satria & Wibawani, 2024; Wijaya & Fauzie, 2020). The following are several reasons why diversification is crucial as an adaptation strategy for traditional fishermen in Pacitan Regency: (1) Risk reduction: diversification allows fishermen to reduce risks associated with fluctuations in catches or market conditions. By having multiple sources of income from various activities such as fishing, shellfish farming, aquaculture, or marine tourism, fishermen can balance potential losses from one source of income with gains from other sources of income; (2) Increased food availability and income: diversification allows fishermen to increase food availability and income for their families. By having access to various types of catches or fishery products, fishermen can meet their own household consumption needs and sell additional products to increase income; (3) Utilization of diverse resources: diversification allows fishermen to utilize the diverse resources around them. Apart from fish, fishermen can harvest or cultivate various types of marine organisms such as shellfish, oysters, shrimp, or seaweed, which have high economic value and can make a significant contribution to their income; (4) Resilience to environmental changes: diversification makes fishermen more resilient to environmental changes that may occur, such as changes in sea water temperature, pollution, or changes in the sustainability of fish resources. By having several different sources of income, fishermen can more easily adapt to changes in environmental conditions that affect one or several sources of income; (5) Reduction of pressure on fish resources: diversification can help reduce pressure on fish resources that are vulnerable to overfishing. By having alternatives to meet their needs for catches, fishermen can reduce pressure on fish populations that may be experiencing stock decline; (6) Increased creativity and innovation: diversification encourages

fishermen to be more creative and innovative in exploring new opportunities in the fisheries sector. They can develop more sustainable fishing techniques, introduce new fishery products, or develop marine tourism businesses that can increase added value to marine resources.

The increasingly uncertain conditions of the fishing season can be overcome by owning different fishing gear. This is believed to be able to help fishermen maintain their lives because in different fishing seasons fishermen can catch fish and not just catch certain fish due to limited fishing gear. At least the fishermen in Sirnobo Village have 2-4 types of fishing gear so they can still get catches even though the fishing season changes. The strategy carried out by fishermen in Sirnobo Village is included in the adaptation strategy by means of technological diversification. Fishermen fall into poverty because they often fail to adapt to seasonal variations in fishing due to limited types of fishing gear.

Regarding diversification, things that can be done by the traditional fishing community in Pacitan are efforts to develop local tourism, processing sea catches into special food, and fish cultivation efforts. To achieve this, fishermen and local community leaders need to build a network of partnerships with stakeholders. These stakeholders include (1) NGOs, which are done by providing assistance and training on technology introduction, (2) local governments making regulations, providing licensing and facilities support as well as capital assistance, (3) companies, providing access to build partnership cooperation, which is mutually beneficial and uplifting. With this concept, it is hoped that famine conditions will not have too big an impact on fishermen because alternative jobs have been created that are equally profitable.

Apart from that, most of the fishermen in Sirnobo Village make do with a double income, namely by fishing and farming. Therefore, the organizations that are followed are not only fishermen groups but also farmer groups. The community already knows each other well between group members and their family members, this is reflected in the amount of known information related to the parties concerned considering that Sirnobo Village is also only divided into four hamlets that are close together.

Empowerment of Fisherwomen

Sirnobo Village fishermen's wives help their husbands by carrying out various productive activities to create household economic resilience because income will increase along with

the high participation of fishermen's wives in various productive activities. This participation is not without reason, but because income outside the fisheries sector is more stable, even though it is small, work experience, age and family workforce support the realization of these productive activities. The experience of fishermen's wives in Sirnobo Village was passed down from generation to generation from their parents or because they often attended training, including training in making various processed bananas. This is in line with (Cahyani et al., 2024; Putri, 2023; F. M. Yunus, 2023) that the opportunity for husbands and wives to work outside the fisheries sector is determined by various things, including income level outside the fisheries sector, level of education, work experience, local economic conditions, age, family workforce, and amount of asset ownership.

Wives and children, in addition to the husband as the head of the household, play an important role in contributing to the income of fishermen's households. Non-fishing income plays a determining role in the allocation of family members' work and its contribution to fishermen's household income (Purwanti, 2010; Wati & Primyastanto, 2018). This household behavior is referred to as a traditional fishing household strategy in utilizing the household economy to face various risks. The participation of traditional fishermen's wives in Pacitan Regency to help support the family's economy is also seen as a solution to overcome the low bargaining position and limited market access by fishermen. Traditional fishermen experience limited access to markets and low bargaining positions. The low bargaining position is clearly visible when selling fish to traders. Traders as buyers actually set prices, not fishermen as sellers. It is understood that fishing is a profession full of risks, vulnerable to natural influences, with a high level of uncertainty. During the fish harvest season, fishermen get a lot of fish but the price is sometimes very cheap. Fishermen's wives who are empowered through the activity of selling their husband's catch will really help strengthen the economy because the wife plays the role of seller and determines prices, so high and low bargaining positions will no longer be a problem. In fact, fishermen's households are increasingly equipped, can enjoy high sales profits, and is one strategy in overcoming structural poverty because the wife becomes a market agent.

According to (Birkmann et al., 2022; Chen et al., 2020; Khan & Sultana, 2021; A. Satria, 2015), structural poverty is poverty caused by economic

structures, social structures and political structures that are not conducive to improving welfare of coastal communities. According to Scott in Siswanto (2008), the market institutional structure is not rigid and closed, thus allowing for the reversal of conditions from poverty to wealth. The market structure is relatively open to accommodate economic interests and integrate poor individuals to become market agents. Although not very flexible, the market allows agents to move up and down the market levels. The dominant class can go down to become a subordinate class and the subordinate has the opportunity to go up to become the dominant class. This happens to traditional fishermen in Pacitan, where during the harvest season for layur and dorang fish, the more fishermen catch, the higher the price they will charge. However, during the harvest season for fish other than these, for example tuna, the more you catch, the lower the price. This results in fishermen earning relatively little income when the catch is actually abundant

CONCLUSION

Traditional fishermen in Pacitan Regency live in cultural and structural poverty. From a cultural perspective, traditional fishermen have a consumptive lifestyle, where when they earn a lot of fish, they do not save their income but instead use it to buy consumptive goods for goods that are not actually urgent. The behavior of this group of people becomes a habit which eventually becomes a lifestyle. Sirnobojo fishermen love to buy things when the fishing season arrives, which is their way of using their income to meet their needs, even though these needs are not always basic needs. They still believe in special rituals to ask sea guards for smooth sailing. Rituals and myths are fishermen's efforts to establish a good relationship with nature in the place where they earn their living. In many cases working in the marine environment is fraught with risk because fishermen's job is to hunt fish, the results cannot be determined with certainty, everything is almost speculative. Meanwhile, from a structural perspective, poverty among traditional fishermen is a result of the ownership of fishing equipment technology which is very unequal to modern fishermen. Weak access to capital results in the ownership of simple fishing technology, so that they live in conditions full of risk and uncertainty. The problem of risk and uncertainty occurs because the sea is an area that is considered free for exploitation. There are various adaptation strategies carried out by

traditional fishermen in facing modernization, namely collective development, institutional development, diversification and empowering fishermen's wives. These various strategies will be effective if there is support from stakeholders. Therefore, the empowerment strategy carried out for fishing communities is more focused on institutional transformation. Traditional fishermen face various challenges, such as extreme weather, changes in marine ecosystems, fluctuations in fish prices, and limited access to markets and technology. To survive, they develop adaptation strategies that are heavily influenced by local wisdom. This local wisdom is not only a cultural heritage, but also plays a role in shaping the way they manage marine resources, maintain family economies, and maintain social balance in communities. Local wisdom plays an important role in traditional fishermen's adaptation strategies to overcome poverty, especially in aspects of natural resource management, social systems, and economic diversification. However, its effectiveness is increasingly being tested by economic pressures, climate change, and modernization. Therefore, integration between traditional values and modern innovations is essential so that fishermen's adaptation strategies remain relevant and sustainable in the future.

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