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Research Article

Acceptability of a Proposed Marine Protected Area: A Precondition for Marine Biodiversity Conservation Efforts in Ozamiz City, Philippines

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ABSTRACT

A clearer understanding of human or social aspects of environmental issues will enhance conservation. While social acceptance is critical in determining MPA success, it continues to be an inadequately explored area of research. This study examined the acceptability of the proposed Marine Protected Area in Ozamiz City, Philippines. Stressing the significance of social acceptability to an MPA's successful implementation, this investigated the influence of the fishing households' knowledge of the marine environment and coastal resource management and the perceived condition of the coastal environment on the social acceptability of a proposed MPA implementation. The study used a mixed-method, particularly concurrent triangulation design, utilizing a sample of 270 fishing households in the 15 coastal barangays of Ozamiz City. The data were gathered through a survey supplemented with key informant interviews (KII). The study revealed that the knowledge of the marine environment and coastal resource management had shown a highly significant relationship and emerged as a predictor of the social acceptability of the proposed MPA. Therefore, greater knowledge of the marine environment and coastal resource management among the fisher folks and stakeholders, in general, may result in a higher level of acceptability of the proposed MPA, thus resulting in a successful implementation. Strategies must be implemented to enhance and enrich the fisher folks' knowledge of the marine ecosystem and coastal resource management. Information on the features, characteristics, and importance of the corals and coral reefs to the marine ecosystem should be emphasized.

Keywords: *Coastal resource management, Environmental knowledge, Environmental protection, Marine ecosystem, Social acceptability*

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Introduction

It has long been upheld that a clearer understanding of human or social aspects of environmental issues will enhance conservation (Bennett et al., 2017). MPAs fail to succeed in their management goals because of a lack of understanding of the level of legitimacy stakeholders afford to an MPA (Dehens & Fanning, 2018). The social sciences are one necessary means through which researchers and practitioners can achieve that better understanding. However, the social science research on marine protection, and especially research on the concept of social acceptability, is limited compared to the research on their ecological implications (Dehens & Fanning, 2018; Thomassin et al., 2010). There are few studies evaluating the degree of support and attitudes toward existing and future MPAs. Kelly et al. (2017) analyzed 26 papers on marine conservation and MPAs from 1999–2016. It was found out that while social acceptance is critical in determining MPA success, it continues an inadequately explored area of research (Kelly et al., 2017).

The marine species and significant ecosystems in the world face severe and ever-increasing threats of downfall brought about by destructive human activities (Thomas et al., 2014). Recognizing this assumption, the Convention on Biological Diversity (CBD) emphasized the need for enhanced environmental protection. The Strategic Plan of CBD for 2011-2020 consists of a shared vision, a mission, strategic goals, and 20 bold yet attainable targets jointly known as the Aichi Targets. The strategic plan of CBD and its Aichi biodiversity targets sanction governments to enhance their marine conservation processes and structure specific goals to be achieved (Thomas et al., 2014).

The CBD includes targets for sustainable management and harvesting of all fish stocks to avoid overfishing. It also aimed to turn at least 10% of the marine environment into protected areas, concentrating on regions that are important for biodiversity and providing ecosystem services by the year 2020 (Sjölander, 2015). However, countries are far behind the 10 percent target set for 2010, as only one percent of the world's oceans are under protection (IUCN, 2010).

Marine Protected Areas (MPA) are considered by the International Conservation of Nature (IUCN) and the wider conservation community as the foundation of marine conservation and an important tool in response to large-scale loss of marine biodiversity (Voyer et al., 2015). It has become a popular instrument for the conservation of marine biodiversity and the management of extractive activities (Bennett et al., 2017; Thomassin et al., 2010). It is a management tool used worldwide for conserving marine species and habitats (Dehens & Fanning, 2018). MPAs are spatially defined marine units in which different forms of human use restrictions and prohibitions are implemented (Mccay & Jones, 2011).

In response to the loss of valuable marine ecosystems, marine protected areas are being launched in the Coral Triangle, which comprises the following countries: Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands, and Timor-Leste (White et al., 2014). These regions are considered the areas of the world's highest marine biodiversity (Carpenter & Springer, 2005). Since the Philippines is the worldwide center of marine biodiversity, the country's marine conservation efforts are critical to protecting global biodiversity (Lowry et al., 2009).

In the Philippines, marine protected areas (MPAs) are the most extensively implemented fisheries management and conservation tools (Horigue et al., 2012). Based on the MPA database in 2014, there is a total of 1,800 MPAs in the country (Cabral et al., 2014). The most documented MPAs are those in the Islands of Sumilon and Apo. The Marine Park in Sumilon Island, Cebu, was the first sanctuary in the Philippines, established in 1974. The establishment of this marine park resulted in a remarkable improvement in the condition of the coral reef substrate and fish abundance (White et al., 2006).

Most MPAs have been created and managed by local people and local governments in diversified community-based and co-management schemes. However, many of these MPAs can be considered "paper parks" because they are not being implemented. Paper parks, for which protected-area boundaries exist in principle but are not enforced, have little conservation

value (Halpern, 2014). Their lack of support has contributed to the unrelenting decline of the ecological status of the MPAs (Arceo et al., 2008).

MPAs are best seen as practical conservation tools that complement other approaches to marine resource management. However, they can have a wide range of positive and negative economic, social, political, and cultural impacts on local populations (Bennett & Dearden, 2014). They can also interrupt livelihoods, especially if MPAs offer small quantifiable gains to local people (Mccay & Jones, 2011). Pressures on the governments worldwide from the local communities and critical stakeholders' resistance to the declaration of MPAs in the area are likely to have played a significant role in the failure to realize the MPA's objectives (Voyer et al., 2015). Decisions about MPAs are also politically problematic. Proposals to redefine traditional fishing grounds are complicated. MPAs affect communities' already limited resource use through intensified regulatory control, competition from highly capitalized industries, pollution, and fish stock decline (Mccay & Jones, 2011).

While there has been an increase in marine conservation initiatives and protected oceans over recent years, ocean management still lags behind the global sectors in integrating and involving communities in its development (Kelly et al., 2017). Conservation success is often grounded on people's support for conservation, which is strongly influenced by observations of the impacts experienced by local people and opinions of management and governance (Bennett & Dearden, 2014). Therefore, looking into the key factors that influence a community's acceptance of the MPAs is crucial in determining the success of its implementation. In all MPAs, there is a need to supplement biophysical and ecological data with people-oriented information (Charles & Wilson, 2009). As MPAs are situated in a unique social context, their acceptance is, therefore, dependent on a site-specific understanding of the social dimensions of the communities they affect (Hilborn et al., 2004).

It has been extensively documented that an MPA's success depends heavily upon its ability to acquire significant acceptance and support from the stakeholders (Hard et al., 2012; Hoelting et al., 2013). Without a deeper understanding of what forms social acceptability, there is a risk that the planning process on human use restrictions and prohibitions like no fishing zones fails to meet stakeholders' needs. Hence, alienate those groups on whom the success of MPAs is most dependent (Voyer et al., 2012).

Marine resources in the Philippines are facing severe threats with its declining fisheries, battered coral reefs, devastated mangrove forests, and rising levels of water pollution due to over-harvesting, coastal development and destructive fishing, habitat degradation, and invasive alien species, all of which are worsened by high population growth and rural poverty (Schrim & Schwab, 2014; Courtney & White, 2000). The coastal and marine environment in Ozamiz City is not an exemption. The coastal resource assessment conducted by Galindo et al. (2022) revealed the distressing coastal activities and situations in Ozamiz City, which include the declining fish caught, use of illegal fishing methods, fishers traveling a long distance to catch fish, the disappearance of once-abundant fishes and marine resources, and domestic wastes in the coastal areas. There was also a particular marine occurrence in February 2021. The residents of coastal barangays, Carmen Annex, San Roque, Triunfo, and Sta. Cruz, in Ozamiz City, was worried when the sea water turned red. In effect, the Bureau of Fisheries and Aquatic Resources and the local government unit have warned residents not to harvest, eat, and sell all kinds of shellfish during that time.

There are no commercial fisheries in Ozamiz City. The fisherfolks are fishing in the municipal waters with an average production of 429.1 MT (low) to 1,072.8 MT high) (Office of the City Agriculturist, 2017). Some of them go fishing in the neighboring barangays. Still, they cannot extend across the neighboring provinces as ordinances prevented them from harvesting in their area. In contrast, the fisherfolks in the other provinces can freely harvest in the Ozamiz City area.

The Local Government Unit of Ozamiz proposed the establishment of a 20-hectare Marine Protected Area in its pursuit of implementing an "Integrated Ozamiz City Coastal

Rehabilitation and Sustainable Management Plan; a survey on the acceptability of the proposed MPA was requested to enhance planning strategies. However, with the COVID-19 pandemic, the activities were interrupted. Part of the plan is the establishment of an MPA in the region. Before the program implementation, the LGU finds the need for baseline information, particularly on the MPA's acceptability, to serve as a guide in the crafting and drafting of the program design and strategies to be adopted. Many MPAs fail to work with the lack of support from the stakeholders, especially the fisherfolks. This lack of support can be perceived with fishers poaching in the identified no-fishing zones and using fishing methods beyond the MPA guidelines. Therefore, looking into the proposed MPA's social acceptability can be an essential tool in determining its success in the future.

Moreover, this study examines the range of senses of the concept of social acceptability by anchoring on Habermas' Communicative Rationality theory. In communicative action, actors in society seek to reach a shared understanding and coordinate efforts rigorously by rational claim, consensus, and cooperation rather than strategic action to pursue their own goals (Habermas, 1984, p. 86). It is a place-based interconnection for multiple actors to make decisions consensually and communicatively within a hydrological boundaries unit (Saravanan et al., 2009). It is a consensual and communicative approach to humanizing resource management by integrating different interest groups through a participatory approach. It aimed to involve all stakeholders, the government, the community, and the sectoral and public interests (fishermen, fish vendors, consumers), creating an "ideal speech situation" in which no party is excluded from discourse or inhibited by power asymmetries or resources for collective decision.

Applying Habermas' Communicative Rationality to MPA, stakeholders' support and participation are highly needed to become successful, as most of the MPAs are implemented in the framework of the integrated coastal management framework. It stresses the integration within the government, the community, the academe, and sectoral and public interests in preparing and implementing a thorough plan to protect and develop coastal ecosystems and resources. In the context of Habermas' Communicative Rationality, MPA is executed, adopting a strong case for democratic practice in water resource management, prescribing consensus-based participation of stakeholders in resource management. Concerted efforts among the interest groups- the stakeholders are the key to a successful MPA. Hence, a successful MPA is achieved when stakeholders, particularly the fishermen, participate in, support, and accept its implementation.

One important aspect of the social acceptability of an MPA is the environmental knowledge of the stakeholders. The stakeholders' awareness of the marine ecology and the coastal environment can significantly influence their level of acceptance to conservation programs like MPA. Knowledge is usually perceived as an essential prerequisite for a person's behavior (Frick et al., 2004). As environmental awareness is found to be consistently and positively related to ecological attitudes (Sugandini et al., 2019), it also influences conservation behavior and support for protection (Frazey et al., 2006; Frick et al., 2004). Collected knowledge about nature is an integral part of people's capacity to manage and conserve the environment (Cullen et al., 2007). Studies proved that more excellent knowledge about a certain species is positively correlated with support for its conservation (O' Bryhim & Parsons, 2015; Aipanjiguly et al., 2003). Accordingly, greater knowledge of marine ecology, coastal resource use, and coastal environment among stakeholders may also result in a higher level of acceptance of establishing an MPA as a tool for marine biodiversity conservation.

Highlighting the importance of social acceptability to an MPA's success, this study investigated the influence of the fisher folks' knowledge on the habitats of the coastal zone and coastal resource management and the perceived condition of the coastal environment on the social acceptability of a proposed MPA implementation.

A study on the social acceptability of an MPA will provide baseline data and information needed in the crafting of the MPA

design and management systems. This study will also generate useful ideas that will help design steps that will ensure the success of the MPA implementation in the future.

The result of the study, particularly on the level of knowledge and awareness on marine ecology, coastal resource use, and coastal environment, may also be useful in the creation of IEC materials to be produced by the Bureau of Fisheries and Aquatic Resources as part of the activity in the Integrated Coastal Rehabilitation and Sustainable Management. The information drawn from this study may also serve as an input in designing strategies to reinforce stakeholder groups' knowledge and awareness of marine biodiversity.

The local government units with an existing MPA and those still planning to establish one may get input from the result. It may also help in crafting an MPA program that is appropriate and sensitive to the fishing households' characteristics and felt needs.

Methods

Research Design

This study is primarily quantitative with supplementation of the qualitative part. This utilized a mixed-method, particularly concurrent triangulation design, to acquire different but conforming data on a similar topic (Morse, 1991). This method involves the simultaneous but separate collection and analysis of quantitative and qualitative data to best comprehend the research problem (Creswell, 2006). The convergence model of triangulation (Creswell, 2006) design was adapted in this study so that the qualitative and quantitative data on the same phenomenon were collected and analyzed separately. Then, the different results are assembled during the interpretation. The method was used to validate or corroborate quantitative results with qualitative findings.

Research Environment

This study was conducted in the coastal barangays of Ozamiz City. The city has 15 coastal barangays, with a coastal population of 69,842 and 903 fishing families (PSA, 2017). The city has not yet established a protected area for its marine ecosystem. Recently, the city's local government has been executing an Integrated Coastal Rehabilitation and Sustainable Management Plan. Part of the plan is establishing a Marine Protected Area (MPA) with an ideal size of 20 hectares. Biological studies on the city's marine ecosystems are conducted to identify suitable zones for the protected area. Looking into the social acceptability of the proposed MPA is significant, especially since a considerable portion of the fishing area can be affected by establishing a 20-hectare MPA.

Respondents and Sampling Procedure

The unit of analysis comprised the households of the fisherfolks in the coastal barangays of Ozamiz City. The respondents were randomly chosen from the list of registered fisherfolks (FISH-R) at the City Agriculture Office. The study employed a probability sampling design. A cluster sampling procedure was also implemented in the study. Due to a limited number of registered fisherfolk population in some areas (less than 10), the 15 coastal barangays were clustered based on the proximity of their location and the number of registered fisherfolks in the area. The Cochran formula for Sample Size Calculation in Smaller Populations was used to determine the sample size based on the MPA's variable, social acceptability. The same number of households was sampled from each cluster to make sure that all individuals in the population have an equal probability of selection, irrespective of their cluster size. A total of 270 respondents were randomly chosen, proportional to the population size (PPS).

Results and Discussions

Perceived Condition of the Coastal Environment

Table I presents the households' perceptions of the condition of the coastal environment. The overall weighted mean [$\bar{x}$=2.5], implies that the households perceived their coastal environment as good. However, it is noteworthy that they consider certain aspects to be fair (Statements 5, 6, 14, 13, 4, 11 & 1). This result implies that such conditions and activities are occurring in the area. These features include destructive fishing methods, destruction of the coastal habitat, fine-meshed nets,

the disappearance of once-abundant fishes, domestic and industrial wastes, excessive fishing and reclamation, and improper shoreline development. These results support the initial findings of Galindo et al. (2022), which identified the distressing coastal conditions in the area, including declining fish caught, use of illegal fishing methods, fishers traveling a long distance to catch fish, the disappearance of once-abundant fishes and marine resources, and domestic wastes in the coastal areas. The highest mean [$\bar{x}$=3.96] is on the statement, "*Fishers adopt fishing methods that will not destroy the seagrasses and coral reefs*." This result indicates that there are still fishers using fishing methods that are destructive to the marine environment, particularly on the seagrass beds and coral reefs. The fishers may not be aware of the destruction caused by the fishing gear that they are using. Activities that will provide them with awareness of the levels of destruction that a particular fishing gear may incur should be conducted.

However, only a few households have claimed to have used illegal fishing methods in the past months, contrary to this result. The fishermen were not too open to disclosing their engagement in such activities, or those who are involved in such activities happen to not be among the respondents.

Table I. Households' perceptions of the condition of the coastal environment

Condition of the Coastal Environment	Mean for the 270 Households per Item
1. The seagrass beds are fast disappearing due to encroachment in the habitat through reclamation and improper shoreline development.	3.02
2. There are regular clean-up activities conducted on the coastline by various institutions and agencies.	2.05
3. Fishers use destructive fishing gears that scour and scrape seagrass beds and coral reefs.	2.37
4. The seagrass beds are destroyed by the water-borne pollutants from domestic and industrial wastes.	3.10
5. Fishers adopt fishing methods that will not destroy the seagrasses and coral reefs.	3.96
6. There are destructions of the coastal habitat that result in declining fish catch and loss of income and livelihood for many coastal families.	3.53
7. Mangrove planting and rehabilitation is observed in the coastal areas	2.13
8. Fishers use blast fishing that destroys the coral reefs and fish habitat.	2.37
9. Compressor fishing exists, which allows the fisher to collect almost anything and seriously disturb the bottom habitat.	2.49
10. The households observed proper disposal of their domestic wastes.	2.16
11. There is excessive fishing, which results in an ecological imbalance and eventual changes in the fishery.	3.08
12. There is encroachment of tourism-related construction on beaches, which alters wave action and sand movement.	2.64
13. There is a disappearance of once-abundant fishes and marine resources.	3.14
14. Fishers use fine-meshed nets in fishing, which allows the fishers to catch even the very young fish.	2.39
15. Fishers have to travel long distances to catch fish.	3.31
16. There is no harvesting of corals, whale sharks, manta rays, giant clams, and other endangered marine species.	2.27
Weighted Mean	2.75
SD	0.57
Interpretation	Good Condition

The second highest mean [x̄=3.53] is on the statement, "*There are destructions of the coastal habitat that results in declining fish catch and loss of income and livelihood for many coastal families*." This finding is connected to the statement with the highest mean. As some fishers turn to destructive fishing methods, the fish catch declines, which negatively affects the income and livelihood of the fisherfolks.

The majority of the key informants also revealed that the fisheries in the area are not good. Comparing the catch now and then, they claimed that it is getting scarce. These are expressed in the following statements:

> "*What I observed before, there's a lot of fish caught; now, it's very little. I don't know why*" (Consumer 1)
>
> "*The catch here is scarce. It's been like this for a long time since the last few years.*" (Fisherfolk Leader 2)

On the positive side, the statement, "*There are regular clean-up activities conducted on the coastline by various institutions and agencies*" and "*Mangrove planting and rehabilitation is observed in the coastal areas*," have the lowest means [x̄= 2.05 and x̄=2.13], which implies good condition. Before the pandemic, the universities in Ozamiz City, through their National Service Training Programs, were implementing regular clean-up drives and mangrove planting activities for their students in the coastal areas. There were also local agencies that were performing similar activities.

Knowledge of Marine Environment and Coastal Resource Management

Table II presents the households' knowledge of the marine environment. The overall weighted mean [x̄=3.96] indicates that they are knowledgeable of the various aspects of the marine environment. However, it is on the importance of the seagrass beds and mangrove ecosystem as a refuge and spawning area of the marine organisms that they are most knowledgeable with, as specified in statements 7, 8 & 3[x̄= 4.39, x̄=4.38, and x̄=4.37].

Table II. Households' level of knowledge of the marine environment

Knowledge of the Marine Environment	Mean for the 270 Households Per Item
1. The coral reefs, seagrass beds, beach systems, and coastal wetlands are interdependent, with each playing a critical role in the viability and health of the entire coastal zone.	4.18
2. Coastal wetlands are home and spawning grounds for many commercially valuable fish, shorebirds, migratory waterfowl, and other types of wildlife.	4.17
3. The mangrove ecosystem serves as feeding grounds, nursery grounds, and refuges for many fish species, migratory birds, and other marine organisms.	4.37
4. Wetlands are largely not productive; thus, efforts to convert these into development areas are highly justified.	3.97
5. Mangrove leaves are a source of food for fish, shrimps, crabs, and other marine animals.	3.43
6. Coastal wetlands are largely muddy, unproductive areas and are better off converted into reclamation or landfill sites.	4.06
7. Seagrasses have very high productivity that helps support and provides nutrients and physical habitat to a variety of organisms.	4.39
8. Many marine species use seagrass for refuge, spawning, and nursery activities.	4.38
9. Corals are tiny animals called polyps that live in colonies underwater, either in patches or in extensive reefs.	3.56

Knowledge of the Marine Environment	Mean for the 270 Households Per Item
10. Coral reefs provide structures and niches that serve as homes for many different organisms in the sea.	4.16
11. Coral reefs are an essential protein source for fish and other marine food products.	3.88
12. Corals are among the rocks in the sea and are considered good home ornaments.	3.20
13. Coral reefs grow slowly and would take 10 to 50 years to recover from damage such as that caused by dynamite and poison fishing.	3.73
Weighted Mean	3.96
SD	0.38
Interpretation	Knowledgeable

This knowledge can drive these fisher folks to adopt fishing methods that will not destroy the seagrass beds, given their importance to marine life. Seagrasses stabilize and hold bottom sediment even under the force of hurricanes and storms and provide shelter, refuge, and food for adult and young marine animals (Deguit et al., 2004).

On the other hand, they are least knowledgeable in terms of the features of corals (statements 12 and 9), [$\bar{x}$=3.20 and $\bar{x}$=3.56]. They tend to believe that these are just among the rocks in the sea that can be used as ornaments and fail to realize that the corals are tiny animals that live in colonies. Contrary to the common belief that corals are plants or even rocks, corals are tiny animals called polyps that live in colonies underwater, either in patches or extensive reefs (Deguit et al., 2004).

Table III shows the households' level of knowledge of coastal resource management. The overall weighted mean, [$\bar{x}$=3.85] is interpreted as knowledgeable. This result signifies that the households are familiar with the aspects of coastal resource management. CRM is based on the tenets of sustainable development. It is a dynamic operation that seeks to justify the use and development of coastal resources to ensure that present human needs are met. In contrast, the coastal environments and habitats are protected and managed for future and sustainable use (Deguit et al., 2004).

It is the *objective of the CRM to improve the quality of life of the coastal communities* (statement 2) that they are most knowledgeable [$\bar{x}$= 4.28]. On the other hand, it is *the community ownership and involvement in marine resources, issues, and problems* (statement 4) that the households are least knowledgeable about [x=3.53]. Therefore, there is a need for the local communities to be informed on the various aspects of coastal resource management, particularly community ownership and involvement. Building local awareness through stakeholder education is necessary to build community ownership and empowerment (Wagner, 2012). As most MPAs are implemented in the integrated coastal management framework, stakeholder awareness of CRM must be strengthened if a Marine Protected Area is implemented in Ozamiz City.

Table III. Households' level of knowledge on coastal resource management

Knowledge of Coastal Resource Management	Mean for the 270 Households Per Item
1. Coastal resource management (CRM) is about managing people and human activities so that their negative impacts on the coastal environment are minimized.	4.10
2. The ultimate objective of CRM is to improve the quality of life of people in the coastal communities while ensuring the integrity of the coastal environment.	4.28

	Knowledge of Coastal Resource Management	Mean for the 270 Households Per Item
3.	CRM provides the tools for slowing down, if not reversing, the negative impacts of uncontrolled use of marine resources.	3.54
4.	With CRM, the communities have more ownership of the marine resources and are more involved in addressing the issues and problems.	3.53
5.	CRM is participatory, where stakeholders have a say in a resource on which they depend and have a major role, responsibility, and share in the resource management and decision-making process.	3.71
6.	CRM is the process of planning, implementing, and monitoring the sustainable use of coastal resources through participation, collective action, and sound decision-making.	3.91
	Weighted Mean	3.85
	SD	0.30
	Interpretation	Knowledgeable

Environmental conservation efforts require ample knowledge about the things to be well-preserved. Limited information on the features of the marine ecosystems and coastal processes may impede the stakeholders' (particularly the direct users) willingness to accept and participate in any conservation efforts and programs. Enhanced knowledge of the marine environment may develop greater feelings of concern and responsibility among the fishermen.

Level of Acceptance to the Proposed Marine Protected Area

The households' acceptance of the proposed MPA is assessed in terms of the goals and objectives, management strategies, fishing methods normally permitted, and fishing methods not permitted in the designated MPA. Table IV presents their level of acceptance of the goals and objectives of the MPA. The overall weighted mean [$\bar{x}$=4.12], indicates high acceptance. This result is not surprising, as the MPA objectives are geared towards the betterment of the fishers' quality of life. Therefore, the high acceptance of the households to the goals and objectives of the MPA is a good indicator of their willingness to partake in the realization of these goals.

The statement, "*to increase and enhance fisheries production and diversity*," has the highest mean [$\bar{x}$=4.38]. The decline in fish catch among fishers is a global trend. In the Philippines, as in many countries elsewhere, fishers are catching fewer and fewer fish each year and are sinking deeper into poverty (Deguit et al., 2004). As MPA offers to increase fisheries production, there is no doubt that the fishers will highly accept it, as it translates to an improvement in income. Any proposal emphasizing economic gain is greatly attractive, especially to those experiencing a financial crisis.

Table IV. Households' level of acceptance of the goals and objectives of MPA

	Goals and Objectives of MPA	Mean for the 270 Households Per Item
1.	To protect critical fisheries habitat from physical damage.	4.11
2.	To increase and enhance fisheries production and diversity.	4.38
3.	To establish and improve the living coral cover.	4.34
4.	To increase fish catch within the MPA.	4.10
5.	To attract diving tourism to generate income.	3.31
6.	To protect and manage considerable examples of marine and estuarine systems to ensure their long-term viability and to maintain genetic diversity.	4.11

	Goals and Objectives of MPA	Mean for the 270 Households Per Item
7.	To protect exhausted, threatened, rare, or endangered species and populations and, in particular, to preserve habitats considered essential for the survival of such species.	4.26
8.	To provide for the continued well-being of people affected by the establishment of marine protected areas.	4.11
9.	To protect, preserve, and manage cultural and historical sites and natural aesthetic values of marine and estuarine areas for present and future generations.	4.32
	Weighted Mean	4.12
	SD	0.32
	Interpretation	High Acceptance

The statement "*attracting diving tourism to generate income*" has the lowest mean [$\bar{x}$=3.31] which is greatly far from the rest. Therefore, diving tourism may not be among the things these fishers greatly consider concerning MPA establishment. Benett & Dearden's (2014) study, which explored the perceptions of MPA impacts on community livelihood resources, found that the participants perceived National Marine Parks (NMPs) to have negligible benefits for tourist incomes.

Table V presents the households' level of acceptance of MPA's management strategies. The overall weighted mean [$\bar{x}$=3.47] indicates average acceptance. The management policies of MPA include the imposition of limitations on the usual fishing activities of the fisherfolks. Although the households express high acceptance of the goals and objectives of MPA (Table IV), their level of acceptance of the management strategies is just average. They might have realized that these policies could greatly affect their fishing activities and, thus, their livelihood. In Wagner's study (2012), among the reasons identified by the respondents for not supporting the creation of a new MPA is the loss of income/livelihoods. However in the study of Ochieng et al., (2024) higher percentage of respondents strongly believed that local people derive economic gains from the establishment of MPAs.

Table V. Households' level of acceptance of the management strategies of MPA

	Management Strategies of MPA	Mean for the 270 Households Per Item
1.	MPA will set limits on fishing methods.	3.70
2.	MPA will place permanent mooring buoys for the boats to minimize the coral damage due to dropping anchors and chains.	3.53
3.	MPA will designate boat trails or travelways in heavily visited areas to avoid damage by accidental grounding.	3.79
4.	MPA will establish regular embarkation points to control access to sanctuaries to facilitate the collection of entrance fees.	3.53
5.	MPA will institute permits for reef use to limit and control access to resources and set conditions for the use of the resource, such as harvest limits, harvest methods, and harvest seasons.	3.64
6.	MPA will establish area boundaries for specific activities, i.e., zoning, including and will define no-take areas.	3.31
7.	MPA will enforce closure during parts of the year critical to the life histories of certain species or for longer periods.	3.07
8.	MPA will set size limits, maximum permitted catches, and harvest limits on fisheries.	2.99

Management Strategies of MPA	Mean for the 270 Households Per Item
9. MPA will not allow destructive fishing practices.	3.95
10. MPA will limit access to resources by setting a carrying capacity that may not be exceeded.	3.23
Weighted Mean	3.47
SD	0.32
Interpretation	Average Acceptance

The highest mean is on the statement, "*MPA will not allow destructive fishing practices*," [$\bar{x}$=3.95]. As the destruction of the coastal habitats and the decline of fisheries are largely due to the spread of illegal and destructive activities (Deguit et al., 2004), the households' support may be based on their aims to increase their catch. On the other hand, "*MPA will set size limits, maximum permitted catches, and harvest limits on fisheries*" has a considerably low mean [$\bar{x}$=2.99]. The fishers may view this policy as too restricting on their part. With their already meager income from fishing, the fisherfolks can be apprehensive when restrictions like these are to be implemented.

Restrictions on fishing activities are among the main strategies used by MPA to achieve its goals. MPAs, if partly or completely prohibit fishing, have demonstrated efficiency in alliance with conservative fisheries management in restoring injured fish stocks and providing all stocks some steadiness (Kelleher, 1999). However, in most cases, environmental policies can be opposed if they severely restrict the individual's freedom. Compensation measures can help improve acceptability if the system implies permanent negative consequences for the individual (Schuitema & Jakobsson Bergstad, 2012). To enhance the level of acceptance of the fishers on establishing MPA in Ozamiz City, implementers should have to look into this aspect of management strategy and plan for an alternative source of livelihood for the fisherfolks whose fishing activities will be greatly affected.

The households have a high acceptance regarding the fishing methods normally permitted in designated MPA, as shown in the overall weighted mean [$\bar{x}$=4.04], as shown in Table VI. The highest mean is the statement on allowing throw nets and gill nets with specified mesh sizes.

Table VI. Households' level of acceptance of the fishing methods normally permitted in designated MPA

Fishing Methods Normally Permitted in Designated MPA	Mean for the 270 Households Per Item
1. MPA allows the use of hook and line using traditional equipment.	4.35
2. MPA allows throwing nets and gill nets with mesh sizes large enough to allow the escape of small fish species and juveniles of larger fish.	4.36
3. MPA allows traps that are placed and maintained without disturbance to coral.	3.76
4. MPA allows reef gleaning in ways that do not overturn or break corals, stir up sediments, or crush corals while walking.	3.50
5. MPA allows fishing methods that are not destructive.	4.24
Weighted Mean	4.04
SD	0.39
Interpretation	High Acceptance

On the other hand, the households' level of acceptance of the fishing methods not permitted in designated MPA is only average, [x̄=of 3.67] (Table VII). There is always a degree of discomfort and resistance when one is disrupted from their usual activities. This feeling can also be true among these fishing households whose traditional fishing methods can be affected by the prohibitions to be enforced when an MPA is established.

Table VII. Households' level of acceptance to the fishing methods not permitted in designated MPA

Fishing Methods Normally Permitted in Designated MPA	Mean for the 270 Households Per Item
1. MPA does not permit the use of scuba or hookah diving for underwater gathering and spearfishing.	3.70
2. MPA does not permit any active gear where the water to drive fish or motorized pursuit is involved, like compressor fishing.	3.81
3. MPA does not permit beach seine to drag or throw nets that tend to disturb bottom habitat.	3.44
4. MPA does not permit reef gleaning when the potential impact from many reef walkers is excessive.	3.58
5. MPA does not permit any illegal method, such as the use of poison, bottom trawls, and blast fishing.	3.82
Weighted Mean	3.67
SD	0.16
Interpretation	Average Acceptance

The overall level of acceptance of the households in all the aspects of the proposed Marine Protected Area is shown in Table VIII. The aggregated mean [x̄=3.83] signifies average acceptance. At this point, the respondents are caught between acceptance and non-acceptance of the proposed MPA.

Table VIII. Summary of means of the households' level of acceptance of the proposed marine protected area

	Categories	Mean	Interpretation
1.	Respondents' level of acceptance of the goals and objectives of MPA	4.12	High Acceptance
2.	Respondents' level of acceptance of the management strategies of MPA	3.47	Average acceptance
3.	Respondents' level of acceptance to the fishing methods normally permitted in designated MPA	4.04	High Acceptance
4.	Respondents' level of acceptance to the fishing methods not permitted in designated MPA	3.67	Average Acceptance
	Aggregated Mean	3.83	Average Acceptance
	SD		0.31

The goals and objectives of MPA are attractive as they offer many benefits not only to the marine environment but also to increasing and enhancing fisheries production, translating into better income for the fisherfolks in the long run. These advantages may be enough for the fisherfolks to accept the proposal fully. However, the accompanying restrictions and limitations that will surely affect their livelihood may have caused the respondents to be skeptical about it. This aspect is among the crucial things that the implementers should meticulously examine and address to ensure success in its implementation.

Fortnam et al., (2023) emphasized that MPA implementers should enable inclusive, transparent and systematic identification and deliberation of the social acceptability of multi-dimensional bargains, and formulate response options to reduce adverse consequences.

Correlation between the knowledge of the marine environment, perceived condition of the coastal environment, and the social acceptability of the proposed Marine Protected Area

Table IX shows the correlation between the knowledge of the marine environment, the perceived condition of the coastal environment, and the social acceptability of the proposed Marine Protected Area. It further shows a highly significant correlation between the knowledge of the marine environment and social acceptability of MPA with a correlation value of .455 and a significant correlation between the perceived condition of the coastal environment and social acceptability of MPA with a correlation value of -0.102.

The higher the households' level of knowledge of the marine environment, the higher their level of social acceptability of the proposed Marine Protected Area. The more knowledgeable the households are about their marine and coastal environment, the greater the likelihood that they will accept conservation and preservation efforts that will be extended to it. Being familiar with the processes and activities in their marine environment may develop feelings of concern and care for the marine resources. The households are found to be knowledgeable about their marine environment (Table II) and have average acceptance of the proposed Marine Protected Area (Table VII). Increasing their knowledge of marine habitats may influence them to be more open to establishing a Marine Protected Area.

Table IX. Correlation between the knowledge of the marine environment, perceived condition of the coastal environment, and the social acceptability of the proposed Marine Protected Area

Variables	Correlation Value	Computed p - Value	Interpretation	Decision
Knowledge of the Marine Environment	.455	.000	**	Reject H_0
Perceived Condition of the Coastal Environment	-.121	.048	*	Reject H_0

* Correlation is Significant at .05 (-) negatively correlated
** Correlation is Highly Significant at .01 NS – Not Significant

This result supports the findings of Sugandini et al. (2019), which found a significant positive effect of environmental knowledge on environmental attitudes. It also stands upon the findings of O' Bryhim & Parsons (2015), who found that knowledge about marine species was positively correlated with support for their conservation.

Moreover, the result also implies that a negative perception of the coastal environment tends to increase the level of social acceptability of MPA. Having realized that the marine environment is in bad shape, the more these fishing households seek out any strategy and efforts that will potentially protect and preserve the marine ecosystem and that made the more open the establishment of an MPA in the area.

This result is in line with the findings of some studies reviewed. Thomassin et al. (2010) found that those who were supportive of MPA were those who negatively perceived the coral reef ecosystems' health. The findings of Sjölander (2015) also observed that the recognized poor status of many fish stocks is the reason for supporting No-fishing zones.

Predictor of Social Acceptability of the Proposed Marine Protected Area

An ordinary least square regression analysis was conducted to determine whether the respondents' perceptions of the condition of the coastal environment and their level of knowledge of the marine environment and coastal resource management predict the

social acceptability of the proposed Marine Protected Area. For these variables, the resulting regression equation on the social acceptability of the proposed Marine Protected Area was 1.942 (constant) + 0.465 level of knowledge on the marine environment and coastal resource management (Table X).

Table X. Regression level of knowledge on the marine environment, coastal resource management, and perception of the coastal environment's condition with the social acceptability of the proposed Marine Protected Area Misamis Occidental, 2022

Predictor	Coef	SE Coef	t	p
(Constant)	1.942	.296	6.554	.000
Level of Knowledge of Marine Envi and Coastal Mgt	.465	.053	8.721	.000
Perceived Coastal Condition	-.037	.062	-.602	.548
R = .509 R-sq = .259 R-sq (adj) = .248				

The equation indicates that households' knowledge of the marine environment and coastal resource management predicts the social acceptability of the proposed MPA. Having adequate knowledge about the marine ecosystem and its management processes is an important factor in understanding the importance of its conservation. Being familiar with the features of the marine environment and sea resources may develop greater concern over them. The findings of this study showed that the fishing households are knowledgeable about the marine environment and coastal resource management; however, they are not so familiar with certain features. If these fishing households are provided with ample information on the marine ecosystem and resource management, their acceptability of the MPA implementation might increase.

The result supports the findings of Sugandini et al. (2019), which found a significant positive effect of environmental knowledge on environmental attitudes. It also bears upon the findings of Cullen et al. (2007), which found a positive relationship between marine ecological knowledge and support for traditional management practices. Moreover, it also substantiates the results of the studies of O' Bryhim & Parsons (2015), which found a positive correlation between knowledge about marine species was positively correlated and support for their conservation.

On the other hand, in the study of Francolini et al. (2023), interviewees highlighted identifying and enhancing local skills and knowledge that could contribute to enhancing conservation activities as among the potential solutions to address the challenges in MPA management.

Conclusion and Recommendations

The study focused on the social acceptability of the proposed Marine Protected Area in the context of Habermas' Communicative Rationality. It was emphasized that collaborative endeavors among the interest groups, particularly the stakeholders, are the key to a successful MPA implementation. Hence, a successful MPA is achieved when stakeholders, particularly the fishermen, participate in, support, and accept its implementation. The fisherfolks are considered the primary stakeholders in the context of the Marine Protected Area. Therefore, the success of an MPA implementation depended much on the fisherfolks' participation and cooperation. Given the findings, an MPA implementation in the future can be successful with its acceptability to the fisherfolk households and other stakeholders. In general, the data supports the arguments of Habermas' Communicative Rationality.

However, it can also be noted that when the respondents were asked to rate the acceptability of the proposed MPA by presenting its goals and objectives, the management strategies, fishing methods normally permitted in designated MPA, and fishing methods not permitted in designated MPA, the result revealed an average acceptance. Therefore, if we are to ensure that an MPA implementation will be effective, the factors that may influence the social

acceptability of MPA have to be thoroughly identified and addressed accordingly.

As far as the result of this study is concerned, the knowledge of the marine environment and coastal resource management has shown a highly significant relationship and emerged as a predictor of the social acceptability of the proposed MPA. It is on these factors that the implementers should capitalize.

The findings validated the assumptions of this study that an important facet of the social acceptability of an MPA is the environmental knowledge of the stakeholders. Their awareness of the marine ecology and the coastal environment can significantly influence their level of acceptance of MPA. Therefore, greater knowledge of the marine environment and coastal resource management among the fishing households and stakeholders, in general, may result in a higher level of acceptability of the proposed MPA, thus resulting in a successful implementation.

Based on Habermas' Communicative Rationality, an action is said to be considered communicative when actors come to an understanding with one another by steering definitions of a situation, argumentation and cooperative interpretation of events, goals, values, and norms, and by sharing their subjective experiences, desires, and feelings. Therefore, providing the stakeholders with adequate knowledge and information on the significant features of the Marine Protected area and the marine and coastal ecosystem and management processes can be an effective mechanism to encourage their participation in a collective decision, thus allowing them to challenge, accept, or reject notions when it comes to whether accepting the proposed MPA or not.

Given the conclusions of this study, the following are recommended:

1. The MPA implementers should plan for compensation measures like alternative livelihood for those fishing households whose fishing activities and livelihood will be greatly affected by the MPA establishment to enhance its acceptability. They may also visit successfully implemented MPA sites for additional planning insights.
2. Habermas' Communicative Rationality emphasizes the consensual and communicative approach to cultivating resource management by incorporating different interest groups through a participatory approach. Similar training on MPA features can also be conducted among other stakeholders, like the fish vendors, consumers, Bantaydaga (sea guard), barangay officials, and fisherfolk organization leaders, to promote greater participation in the MPA implementation.
3. As knowledge of the marine environment and coastal resource management were predictors of the proposed MPA's social acceptability, strategies that are designed to enhance and enrich the fisherfolks' knowledge of the marine ecosystem and coastal resource management must be implemented. Information on the features, characteristics, and importance of the corals and coral reefs to the marine ecosystem should be emphasized. The LGU may tap the academe to give lectures for more scientific information on the marine environment in the form of environmental classes. Schools and universities in Ozamiz City may adopt this kind of environmental class as part of their community extension programs.
4. This study focused on the acceptability of an MPA before its implementation. A similar study may be conducted in Misamis Occidental, where there is already an existing MPA, to determine other factors that have prevented or enhanced success in its implementation.
5. The present study dealt with Marine Protected Areas anchoring on Habermas' Communicative Rationality; a similar study may be conducted with any proposed initiatives or programs that require participatory natural resource management.

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