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RESEARCH ARTICLE

Fisherman's Perception on the advancement of Eco-Conscious Bagan Tancap Fisheries Tourism in Kotabaru Regency, South Kalimantan

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ABSTRACT

This study endeavours to investigate the perceptual attitudes of Bagan Tancap (lift net) fishermen towards sustainable capture fisheries practices and assess the perspectives held by both Bagan Tancap fishermen and governmental authorities regarding the proposed establishment of an ecologically sustainable Bagan Tancap Fisheries Tourism Initiative in Kotabaru Regency. Field investigations were conducted from May to July 2023, employing survey methodologies. The data collected from the survey comprises ordinal data, utilizing a Likert scale to gauge responses ranging from highly positive to extremely negative. The research findings reveal that Bagan Tancap fishermen exhibit relatively favourable perceptions of environmentally friendly capture fisheries practices, encompassing gear selectivity, biodiversity considerations, ecological diversity, safety concerns for fishermen and consumers, social conditions, and the quality of catches. Furthermore, fishermen's perceptions of environmentally non-destructive practices are highly positive. Regarding the proposed development of an environmentally sustainable Bagan Tancap tourist attraction, fishermen display extremely positive and supportive attitudes, demonstrating a willingness to actively participate in the planning, execution, and conservation efforts associated with the tourism resource.

INTRODUCTION

The waters of Kotabaru Regency in South Kalimantan are situated within two national fisheries management areas (WPP), namely, WPP 712 (Java Sea) and WPP 713 (Makassar Straits), making these waters rich in fishery resources. In 2018, the production of marine capture fisheries products reached 60,874 tons and is projected to increase to 65,553.63 tons in 2022, averaging around 64,178.87 tons per year (source: Maritime and Fishery Service of Kotabaru Regency, 2023). This fishery production results from the efforts of fishermen who employ various fishing methods, ranging from traditional to modern, such as gillnets, trammel nets, lift nets (Bagan tancap), multiple fishing rods, and traps.

One of the prominent fishing methods many Kotabaru fishermen embrace is the use of lift nets. The lift net, or "Bagan Tancap," is constructed using bamboo arranged in a rectangular shape and anchored to the seafloor, allowing it to stand above the water's surface. In the middle of this structure, a net is positioned. Lift

nets are operated passively and rely on light sources during the dark moon phase to attract fish to the net (Sitompul et al., 2022). It's noteworthy that lift nets are considered environmentally friendly fishing gear, as they meet the nine criteria outlined in FAO guidelines for eco-friendly fishing gear (Ilan et al., 2022).

Presently, it's estimated that there are approximately 1,000 lift nets deployed in Kotabaru waters, distributed across the Java Sea and along the western, southern, and northeastern coasts, encompassing the northern and eastern sea islands of Sebuku Island and parts of the Pulau Laut Islands (Marine and Fisheries Service of South Kalimantan Province, 2023). The highest concentration of these nets can be found in the northeastern region of Pulau Laut, specifically in the waters east of Tanjung Pemancingan-Sarangtiung and Gedambaan Beach. However, the existence of a significant number of lift nets is contingent upon several conditions, including the small mesh size, a declining supply of the primary material (local wood), the disproportionate potential catch relative to effort, irregular placement in waters, and a lack of knowledge among fishermen regarding shipping lanes.

Intensive fishing activities have given rise to conflicts in two interrelated dimensions: (a) concerns about resource sustainability, reflecting the tension between economic interests and ecological preservation, and (b) disputes arising from varying interests and viewpoints among local stakeholders and outsiders with access to these resources (Oviedo et al., 2015). Enforcing regulatory measures to address these issues has led to complex socio-cultural responses (Ermolin and Svolkinas, 2016). Therefore, efforts to implement regulations that prohibit or restrict fishing must be accompanied by alternative livelihoods and social assistance programs (Nunoo and Asiedu, 2015). A comprehensive understanding of these conflicts, including their context, actors, causes, and relational dynamics, is essential for effective water resource management (Meyer-McLean and Nursey-Bray, 2017).

On a different note, the Kotabaru Regency government is pursuing the development of the tourism sector, mainly marine tourism, as part of its strategy to achieve sustainable development goals. The marine tourism sector aligns with several sustainable development goals (SDGs), including decent work and economic growth (SDG 8), responsible consumption and production (SDG 12), and ocean ecosystems (SDG 14) (Lee et al., 2020). Therefore, tourism activities must prioritize economic, ecological and social aspects aligned with sustainable development goals.

Establishing an ecologically sustainable Bagan Tancap Fisheries Tourism Initiative in Kotabaru Regency presents challenges like habitat disruption, overfishing, pollution, and regulatory compliance. Additionally, there are socio-economic impacts, infrastructure demands, climate change vulnerabilities, and cultural preservation concerns. To address these, a robust management plan emphasizing sustainability, community involvement, and responsible tourism is crucial, along with continuous monitoring and adaptation for long-term success while safeguarding the environment and local culture (Hosseini et al., 2021; Sanni and Vilakazi, 2022). One potential marine tourism attraction, tailored to the region's fisheries resources and in synergy with existing tourism activities, is Fisheries Tourism, centred around using lift nets, or "Bagan Tancap" (Fisheries Tourism). Fisheries tourism involves leveraging tourist areas to develop fisheries production while catering to the local community's interests in these tourist zones (Amri and Arifin, 2017; Ali et al., 2023). Recreational fishing and commercial fishing can interact in various ways. Managing these two activities separately may lead to conflicts, such as resource competition and competition for space and equipment (Borch, 2004; Pawson et al., 2008; Dehaghi, 2021). However, effective management that combines both activities can have positive outcomes, including tourists renting fishing equipment or utilizing transportation services, thereby creating additional employment opportunities for commercial fishermen (Borch et al., 2011).

The existing literature on Bagan Tancap Fisheries Tourism in Kotabaru Regency needs to include detailed insights into the attitudes and perceptions of local fishermen, particularly regarding sustainable practices and ecotourism initiatives. This research addresses these gaps by conducting a comprehensive study in 2023, focusing on the specific context of Bagan Tancap fishermen's views and their

willingness to engage in sustainable tourism efforts. The absence of recent, localized data in this field underscores the importance of this research, as it provides timely and relevant information critical for informed decision-making and successful project implementation. Creating a plan to develop an environmentally friendly Bagan Tancap Fisheries Tourism requires several essential conditions, including the perceptions of fisheries business actors and the government regarding the development of this tourist attraction. Perception shapes behaviour and social dynamics within the social and biogeophysical environment (Akyuwen et al., 2021; Ahmed et al., 2022). This research aims to investigate the perceptions of Bagan Tancap fishermen concerning environmentally friendly capture fisheries businesses and to examine the perceptions of both fishermen and the government regarding the development plans for the environmentally friendly Bagan Tancap tourist attraction in Kotabaru Regency.

LITRATURE REVIEW

The coastal region of Kotabaru Regency in South Kalimantan, Indonesia, represents a focal point for research into the interplay between fisheries, tourism, and sustainability. This literature review aims to provide a comprehensive survey of the relevant academic literature, focusing on the key themes and research areas related to sustainable fisheries practices, fisheries management challenges, sustainable tourism development, stakeholder perceptions, and their implications for the proposed study.

Sustainable fisheries practices

The concept of sustainable fisheries practices is central to the understanding of the present study. Researchers have consistently underscored the importance of adopting environmentally friendly fishing methods to mitigate the adverse impact of fishing on marine ecosystems (Setiawan et al., 2023). Specifically, the Bagan Tancap (lift net) has been identified as a prime example of a fishing gear characterized by its minimal environmental impact (Boliko, 2019). Empirical studies have demonstrated the positive effects of sustainable fishing practices on biodiversity conservation, ecological diversity, and fishermen's and consumers' safety (Debrot et al., 2002; Kurnia et al., 2021).

Challenges in fisheries management

The region's rich marine resources have provided economic opportunities and been a source of tension and conflict. The study by Fabinyi (2008) elucidates the complexities of fisheries resource management in regions characterized by competing interests, including economic pursuits and ecological preservation. The enforcement of regulatory measures to combat overfishing and unsustainable practices has led to intricate socio-cultural responses (Grafton et al., 2007). Thus, understanding these conflicts' intricacies and contextual determinants is paramount for effective water resource management (Sutton and Rudd, 2014).

Sustainable tourism development

The government of Kotabaru Regency has articulated its commitment to harnessing the potential of marine resources for sustainable tourism development in alignment with global sustainable development goals (SDGs). Tourism development, when executed judiciously, can catalyze economic growth (SDG 8), promote responsible consumption and production (SDG 12), and contribute to the preservation of ocean ecosystems (SDG 14). In this context, research by Lasut et al. (2008) and Hidayah et al. (2016) underscores the potential of fisheries tourism. This concept ingeniously merges tourism and fisheries to create synergistic economic opportunities for local communities. Moreover, studies by Brodie and Waterhouse (2012) delve into the intricate interplay between recreational and commercial fishing activities, accentuating the potential for collaboration and the generation of additional employment opportunities within this nexus.

Perception and stakeholder engagement

The role of perception emerges as a pivotal factor in shaping behaviour and social dynamics within the fisheries and tourism context (Bennett et al., 2001). Existing scholarship underscores the imperative of comprehending the perceptions of diverse stakeholders—ranging from fishermen to governmental authorities—to formulate effective strategies and policies (Novoa et al., 2018). Consequently, examining the attitudes and willingness of Bagan Tancap fishermen to actively participate in eco-conscious tourism development represents a

pertinent research trajectory (in alignment with the present study).

This review encapsulates the multifaceted nature of sustainable fisheries practices, tourism development, stakeholder perceptions, and the resulting socio-environmental implications in the coastal region of Kotabaru. Based on previous research, this study looks at how Bagan Tancap fishermen and government officials see things. The goal is to add to the growing body of knowledge in this area by gaining insights that can help shape policies and strategies for sustainable fisheries and tourism in this unique place. This study covers a range of topics related to sustainable fisheries practices, challenges in fisheries management, sustainable tourism development, and the role of perception and stakeholder engagement, providing a comprehensive basis for the study on eco-conscious Bagan Tancap Fisheries Tourism in Kotabaru Regency, South Kalimantan.

RESEARCH METHOD

Timeframe of the study

The field study was conducted from May to July 2023, employing a survey methodology as the primary research tool. This method was selected to comprehensively gather data on existing facts and symptoms, aiming to uncover pertinent information about the conditions prevailing at the research location.

Target populations

The study's focal point was the community of Bagan tancap fishermen residing near the Bagan fishery centre within Kotabaru Regency. This encompassed the Pulau Laut Sigam Subdistrict and Pulau Laut Timur District, which can be visualized on the research location map in Figure 1. Approximately 700 fishing households, denoted as RTP (Rumah Tangga Perikanan), were estimated to comprise the population under investigation. This figure was derived from the initial survey conducted in 2023.

Sample collection

Samples were collected using a simple random sampling method of 75 respondents, or approximately 10% of the population. The respondents also included representatives from the Regional Government of Kotabaru Regency, specifically from the Kotabaru Regency Tourism, Youth, and Sports Office, associated with developing marine tourism policies.

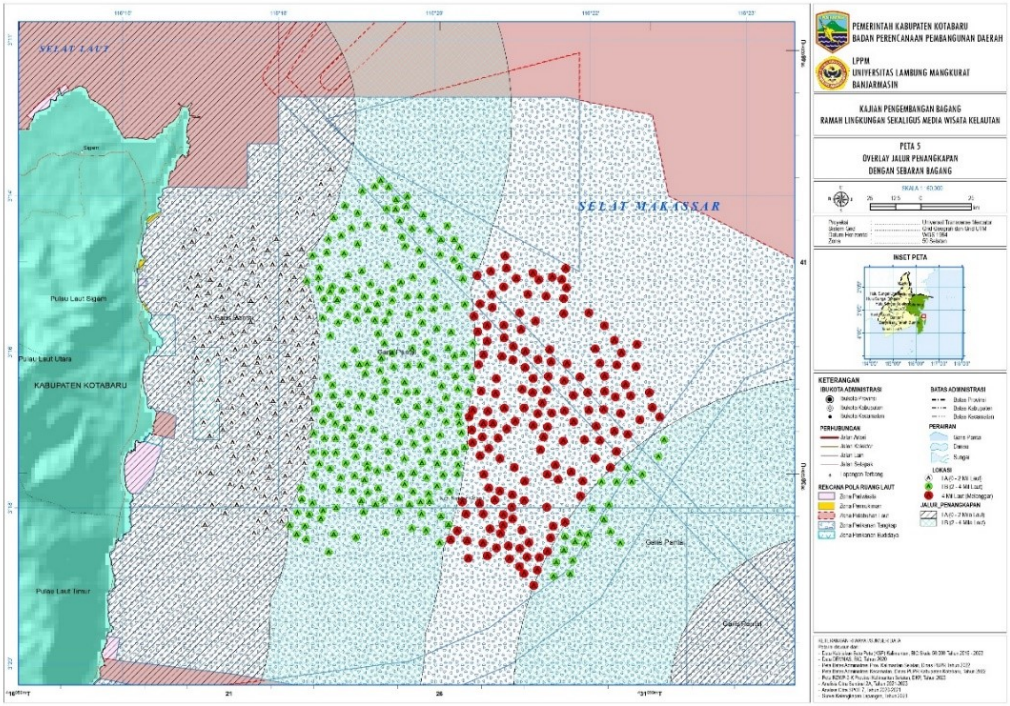

Figure 1: The research location for the Bagan tancap fishery is in Kotabaru Regency

Measuring criteria

The assessment of Bagan Tancap fishermen's viewpoints regarding the advancement of eco-friendly Bagan Tancap fisheries tourism comprises their opinions on two key aspects: first, their comprehension of the criteria governing environmentally sustainable fishing practices; second, their perspectives concerning the progress of marine tourism activities. Seven distinct dimensions have been established to evaluate the perception of Bagan Tancap fishermen towards environmentally friendly fishing. These dimensions encompass multiple questions formulated by the nine criteria for eco-friendly fishing gear delineated in the Code of Conduct for Responsible Fisheries (CCRF) by the FAO in 1995. These seven dimensions encompass selectivity in fishing gear, biodiversity considerations, ecological diversity factors, habitat preservation aspects, safety considerations for fishermen and consumers, social implications, and the quality of the catch.

On the other hand, the components used to gauge fishermen's attitudes toward marine tourism development are established on a multifaceted basis, encompassing social, economic, and conservation aspects. These components contain community endorsement, employment generation, awareness of the tourism sector's potential, involvement in planning, community interactions with tourism management, participation in conservation efforts, and the socialization and training of activities.

Dataset

The primary data-gathering process involved conducting interviews aided by questionnaires. The collected data takes the form of ordinal data, designed to assess levels ranging from highly positive to extremely negative. As defined by Sugiyono (2018), the Likert scale is the chosen measurement scale used to gauge the attitudes, opinions, and perceptions of individuals or groups regarding social phenomena. Subsequently, the analysis of the fishermen's perception data was carried out in a tabular and descriptive manner, as elaborated in Table 1.

Table 1: Criteria for assessing the perceptions of lift net fishermen towards environmentally friendly lift net fisheries tourism

No.	Statement	Score	Criteria (%)
1.	Totally agree/very understanding/very good	5	> 80.00 – 100.00
2.	Agree/understand/good	4	> 60.00 – 80.00
3.	Just agree/understand enough/good enough	3	> 40.00 – 60.00
4.	Disagree / slightly understand / not good	2	> 20.00 – 40.00
5.	Strongly disagree/don't understand/bad	1	0.00 – 20.00

RESULTS

Bagan Tancap fisheries business condition

Fishermen frequently place lift nets, or "Bagan Tancap," in bodies of water that are well-known fish gathering spots or areas where fish migrate. Typically, fishermen construct Bagan Tancap with primary poles crafted from mangrove wood (Rhizophora sp.) and Serdang wood (Saribus rotundifolius (Lam) Blume). According to information gathered from interviews with fishermen, Serdang wood is highly durable and can withstand the force of sea waves, contributing to its longevity. However, due to the decreasing availability of serdang wood in natural habitats, fishermen increasingly turn to mangrove wood for constructing or replacing their main masts. Currently, 54.67% of fishermen opt for mangrove wood, while the remaining 45.33% continue using serdang wood.

Figure 2: Profile and distribution of Bagan Tancap in the waters of Kotabaru Regency

The fishing grounds and the positioning of Bagan Tancap are typically close to fishing villages, typically within a range of 1 to 5 kilometres, accounting for 92% of cases. In contrast, Bagan Tancap is situated at distances exceeding 5 to 10 kilometres in approximately 6.67% of instances, while locations beyond 10 kilometres constitute only about 1.33% of the total (as shown in Table 2). Additionally, the separation between Bagan Tancap markers predominantly falls within the range of 0.2 to 0.3 kilometres (approximately 93.33%), with the remaining cases being further apart, ranging from over 0.5 to 1 kilometre (5.33%) and over 1 to 1.5 kilometres (1.33%) (as indicated in Table 2).

Table 2: Distance from the Bagan Tancap location to the fishing village No. Distance Amount Percent (%)

No.	Distance	Amount	Percent (%)
1	1-5 kms	69	92.00
2	> 5 - 10 km	5	6,67
3	> 10km	1	1.33
	Amount	75	100.00

Source: Results of primary data processing, 2023

Table 3: Distance between fishing locations and fishing rods

No.	Distance	Amount	Percent (%)
1	0.2 - 0.5 km	70	93.33
2	> 0.5 – 1 km	4	5,33
3	> 1 - 1.5 km	1	1.33
	Amount	75	100.00

Source: Results of primary data processing, 2023

The fishing calendar throughout the year can be categorized into three distinct seasons: the peak season, spanning from October to April; the normal season, occurring from May to July; and the lean season, encompassing August to September. During the peak season, each fishing household typically undertakes between 1 and 30 fishing trips, averaging 21 trips per month. These trips yield an average production of 26.49 kg per trip. Conversely, in the normal season, fishing trips range from 1 to 20 per month, with an average of 14 trips per month, and the resulting production averages 11.34 kg per trip (as shown in Table 4).

Table 4: The number of trips and production of Bagan Tancap by season in the waters of Pulau Laut, Kotabaru

No.	Description	Season		
		Peak	Normal	Famine
1	Trips (frequency per month)			
	Average	21	14	6
	Maximum	30	20	15
	Minimum	1	1	3
2	Production (kg/trip)			
	Average	26.49	11.34	5,2
	Maximum	56	33	17
	Minimum	10	3	2

Source: Results of primary data processing, 2023

During the lean season, fishing trips vary from 3 to 15 visits per month, averaging 6 trips per month. The average catch during these trips is merely 5.2 kilograms per trip. When considering the monthly trips and the fishing season, it is estimated that each RTP (presumably a fishing vessel or entity) engages in 5 to 65 trips annually, averaging 41 visits. The estimated annual catch per RTP for Tancap Bagan is approximately 4,429.07 kilograms. Bagan Tancap catches various types of fish, including large anchovy, Commerson's anchovy, Squid, Tembang (fringe scale sardine), crab (flower crab), lobster (common rock lobster), bitnik shrimp (white shrimp), Trakulu (giant trevally), kurisi (redspine threadfin bream), and several other fish species.

Typically, Bagan Tancap fishermen sell the fish they catch in their local communities, frequently in direct exchanges with collectors who travel to the fishermen's locations. Only a small percentage of fishermen (7%) mentioned that their catch is sold gradually based on market demands or through retailers.

Only a tiny portion (15%) of the pricing for the fish that Bagan Tancap fishermen catch comes from agreements between fishermen and collectors. Additionally, the payment system for fish sales is primarily conducted in cash, with only 5% of transactions following a staggered payment arrangement, as per agreements between fishermen and collectors. The price for each type of catch is detailed in Table 5.

Table 5: Prices of commodities caught from Bagan Tancap in the waters of Pulau Laut, Kotabaru according to season

No.	Fish Name	Price per kg (Rp)		
		Peak	Normal	Famine
1	Big anchovies (Stolephurus sp)*	20,000 - 35,000	22,000 - 40,000	40,000 - 45,000
2	Rice anchovies (S. commersonii)*	20,000 - 80,000	20,000 - 80,000	22,500 - 82,500
3	Tembang (Sardinella fimbriata)	1,000 - 10,000	2,000 - 15,000	1,000 - 5,500
4	Squid (Loligo sp)	15,000 - 35,000	10,000 - 35,000	35,000 - 50,000
5	Blue crab (Portunus pelagicus)	20,000 - 35,000	5,000 - 30,000	10,000 - 35,000
6	Lobsters (Panulirus spp.)	10,000 - 100,000	20,000 - 50,000	20,000 - 250,000
7	Spotted shrimp (Litopenaus sp)	5,000 – 7,000	7,000 – 10,000	10,000
8	Trakulu (Caranx ignobilis)	15,000 - 60,000	10,000 - 15,000	7,000 - 10,000
9	Kurisi (Nemipterus nemathophorus)	7,000 - 28,000	8,000 - 20,000	5,000 - 15,000

Source: Results of primary data processing, 2023

The earnings of Bagan Tancap fishermen tend to vary with the changing seasons. Similarly, the local market dynamics heavily influence these fishermen, as they predominantly rely on sales to nearby collectors. When there is a surplus of catches during the harvest season, combined with the perishable nature of the fish, fishermen are compelled to sell their nets promptly. However, the capacity of these collectors is limited, which results in a decrease in fish prices. Conversely, during times of scarcity, when it's not the

fishing season, the demand for fish remains relatively constant, leading to higher prices.

Nevertheless, the fishermen's production is limited during these times. Consequently, whether it's fishing season or not, fishermen are still waiting for a significant increase in their income. Additionally, local collectors face stiff competition from other regions when marketing their catch. For instance, the sale of their catch in Pontianak puts local collectors in direct competition with collectors from Central Kalimantan and East Kalimantan. The abundant production and many competitors contribute to the decline in fish prices.

In a single month, Bagan Tancap fishermen can make anywhere between Rp. 500,000.00 and Rp. 6,000,000.00 from the sale of their catch, with an average income of about Rp. 3,400,000.00. The largest percentage of fishermen, concerning their monthly income, falls within the range of more than Rp. 2,000,000.00 to Rp. 3,000,000.00, accounting for 42.67%. Following closely are those fishermen earning more than Rp. 4 million to Rp. 5 million, constituting 25.33% of the group. Conversely, the smallest percentage of fishermen falls within the income range of more than IDR 5,000,000.00 to IDR 6,000,000.00, comprising only 1.33% (Figure 2).

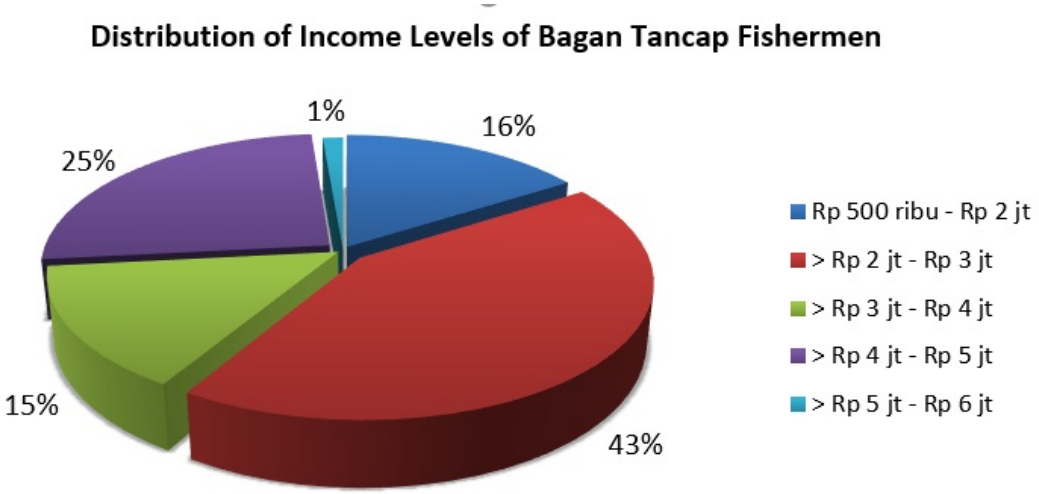

Figure 3: Distribution of Bagan Tancap fishermen according to income in one month

When comparing the income to the poverty line value for Kotabaru Regency in 2022 (Rp. 505,600.00 per month), it's evident that only approximately 1.33% of the fishermen still earn an income below the poverty line. Conversely, when we contrast their income with the 2023 Kotabaru UMK (District Minimum Wage) value (Rp. 3,293,371.38), approximately 60% of Bagan tancap fishermen still have incomes below this UMK threshold. Consequently, it is imperative to implement various strategies to boost the income of the bagan tancap fishing community, ensuring that their earnings meet or surpass the UMK of Kotabaru Regency.

Perceptions of environmentally friendly fisheries among Bagan Tancap fishermen

The perception of Bagan Tancap fishermen concerning environmentally friendly fishing practices, particularly the selectivity of fishing gear, was assessed using six questions. These questions encompassed topics such as knowledge of government-approved fishing gear, familiarity with gear suitable for catching three distinct fish species of varying sizes, awareness of recommended mesh sizes, comprehension of the types and sizes of fish that can be captured, and awareness of equipment suitable for catching target fish. The analysis of fishermen's perceptions regarding environmentally friendly fishing practices, focusing on gear selectivity, revealed that 36.69% of fishermen exhibited a high level of understanding. In comparison, 23.73% showed a very high level of understanding (see Figure 3).

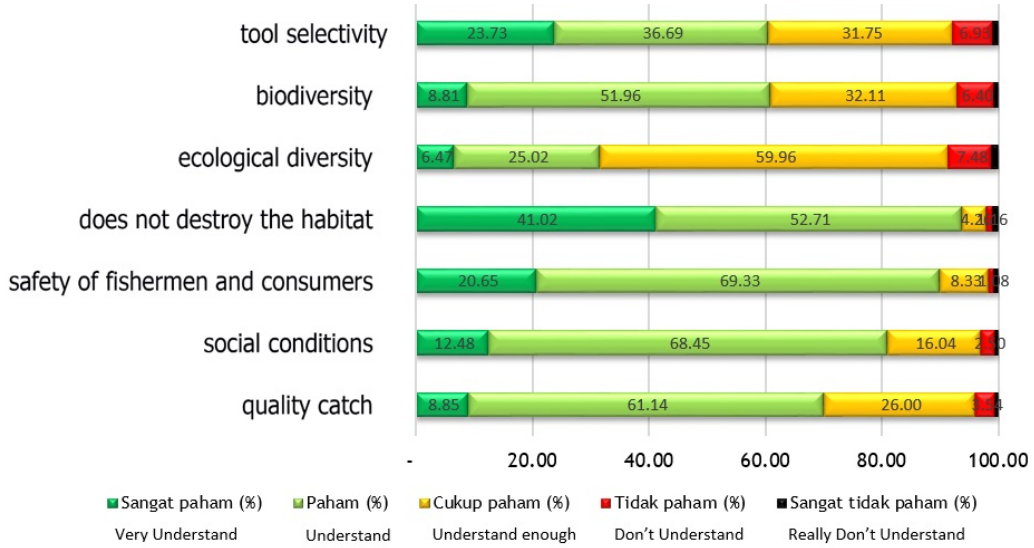

Figure 4: Perceptions of Bagan Tancap fishermen regarding environmentally friendly capture fisheries businesses

Fishermen from Bagan Tancap were surveyed to gauge their perceptions of environmentally sustainable capture fisheries across various dimensions. Six questions were employed to assess their knowledge of conservation areas, fishing restrictions in such places, non-harmful fishing tools, potential threats to protected marine species by fishing gear, safeguarded aquatic species, and the benefits of marine life protection. The findings indicate that 51.96% and 32.11% of fishermen demonstrated a high and moderate level of understanding, respectively, while 8.81% exhibited a very high level of understanding. Only 6.4% and 0.72% displayed minimal to no understanding. Consequently, the overall comprehension of biodiversity and its benefits among Bagan Tancap fishermen is categorized as good or adequate.

Regarding ecological diversity, another set of six questions was posed to Bagan Tancap fishermen to evaluate their perceptions of environmentally friendly capture fisheries. This set included inquiries about knowledge of fishing gear that minimizes by-catch and low-value by-products while maximizing economic value and responsibility. Results showed that 59.96% had a sufficient understanding, while 25.02% had a moderate understanding. A minority of 6.47% exhibited a very high level of understanding, while 1.08% and 7.48% demonstrated minimal to no understanding. Hence, the overall comprehension of ecological diversity and its benefits among these fishermen is rated as good or adequate.

Additionally, Bagan Tancap fishermen's perspectives on environmentally sustainable fishing practices that preserve habitats were assessed using five questions. These questions focused on understanding tools and materials that don't harm the environment, prohibiting damaging tools, and fishermen's roles in environmental sustainability. The analysis revealed that 52.71% and 41.02% had high and very high levels of understanding, respectively. A small proportion (4.26%) exhibited moderate understanding, while 0.84% and 1.16% displayed minimal understanding. Consequently, their overall understanding of using environmentally friendly tools and materials in fishing operations is classified as very good or excellent.

The safety aspects of fishermen and consumers were examined through five questions, addressing knowledge about safe fishing gear and practices that avoid negative impacts on consumers. The results indicated that 69.33% and 20.65% possessed high and moderate levels of understanding, respectively, while 8.22% exhibited a very high level of experience. Only 0.61% and 1.08% demonstrated minimal to no understanding. Thus, the overall understanding of Bagan Tancap fishermen regarding equipment operation and catch handling is considered good or adequate.

Lastly, perceptions of Bagan Tancap fishermen regarding environmentally friendly fishing practices from a social perspective were explored using

six questions. These inquiries covered whether permitted fishing gear aligns with community preferences, ease of use, accessibility, and profitability. The analysis revealed that 68.45% and 12.48% had high and very high levels of understanding, respectively, while 16.04% displayed moderate understanding. A small proportion of 0.53% and 2.5% needed more understanding. Thus, the overall comprehension of social aspects among Bagan Tancap fishermen is rated as good or adequate.

The perception of Bagan Tancap fishermen and the Government towards environmentally friendly Bagan tourism

The public's perceptions of the development of Mina Wisata Bagan, a tourism venture, were examined. An overwhelming 85.37% expressed strong support, 13.01% showed support, and only 1.63% did not support the plan. Respondents also had positive views on the potential for employment generation, with 34.84% to 41.81% believing it could create many local jobs. Only 6.27% and 1.39% believed it would have no significant impact on local employment. Furthermore, 10.96% had an excellent understanding of the potential of Bagan tourism as an industry, 26.32% knew about it, and 46.05% knew enough. A minority (13.16% and 3.61%) did not know about this tourism potential. Overall, the local community strongly supported the project's potential to create jobs and its prospects as a tourism industry.

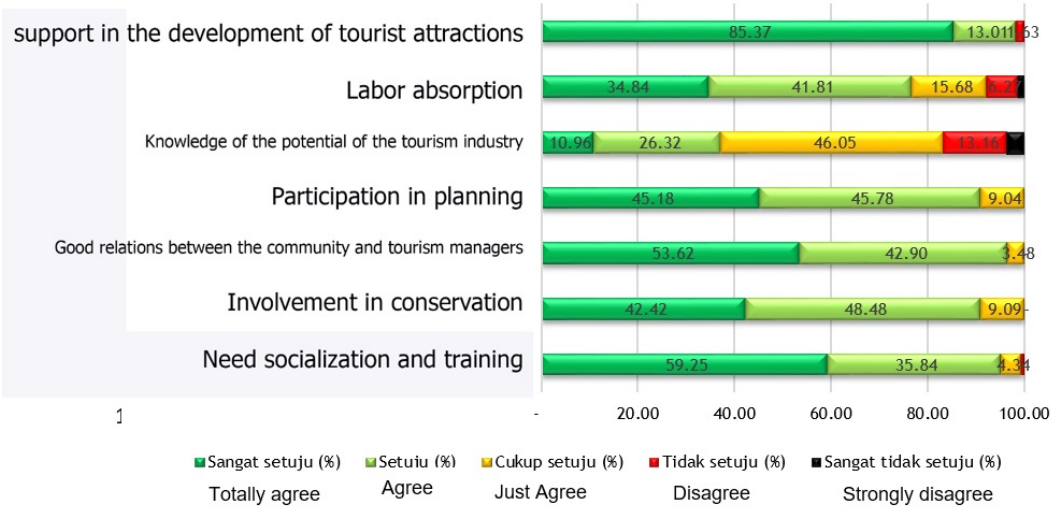

Figure 5: Public Perception towards the development of environmentally friendly Bagan Tancap Fisheries Tourism

Most of the local community and Bagan tancap fishermen in the study area expressed a positive inclination towards community involvement in planning the Bagan tancap tourism site. Approximately 45.78% of the local population agreed, 45.18% strongly agreed, and 9.04% somewhat agreed with this notion (as shown in Figure 4). Consequently, the overall sentiment within the community regarding participation in the development of the Bagan Tancap tourism site can be favourable.

Likewise, a substantial portion of the local residents in the study area responded positively to fostering strong relationships between the community and the management of the tourist site in the future. The response data indicates that 53.62% strongly agreed, 42.90% agreed, and 3.48% somewhat agreed with this idea (Figure 4). Generally, the local community highly supports establishing robust connections between the community and the tourist site's management.

Furthermore, the findings from interviews and discussions with the Regional Government (specifically, the Tourism, Youth, and Sports Office of Kotabaru Regency) regarding the potential and plans for the development of marine tourism attractions combined with fishing enterprises (bagan tancap) reveal strong endorsement and alignment with the vision and mission of the Kotabaru Regency regional government.

DISCUSSION

Marine and coastal tourism is one of the world's fastest-growing industries. The development of Mina Wisata Bagan Tancap offers an alternative approach to utilizing fishery resources, making optimal use of aquatic environmental services to provide recreational opportunities for the community, especially tourists. The positive perception of Bagan Tancap fishermen toward eco-friendly fishing practices plays a crucial role in supporting sustainable fishing endeavours and promoting environmentally friendly lift-net fisheries tourism.

The multifaceted impacts of tourism on coastal regions can be observed from three distinct perspectives: (1) the evolution of coastal tourism, which includes changes in socio-economic and residential patterns; (2) its cultural influence on the local population; and (3) environmental considerations (Gormsen, 1997; Hall, 2001; Turok et al., 2021). The unchecked and rapid expansion of tourism in several coastal areas has exposed fragile coastal ecosystems to heightened risks of environmental degradation (Davenport and Davenport, 2006; Zahedi, 2008; Mejjad et al., 2022). Potential repercussions of Mina Wisata Bagan Tancap may encompass increased fuel waste for electricity to power chart lights, higher water traffic density, garbage accumulation, and the erosion of local culture and wisdom.

The deployment of solar or wind energy sources, abundantly available in coastal areas, offers an efficient and eco-friendly alternative to conventional energy sources. Community-based waste management initiatives must be established in coastal communities to prevent the buildup of waste in the sea. Furthermore, netting net fishermen must adhere to designated zones for net installations, specifically the IA and IB fishing lines (as stipulated in Regulation of the Minister of Maritime Affairs and Fisheries Number 18 of 2021), ensuring smooth water traffic without disturbances.

To attain its anticipated objectives, the development of Mina Wisata Bagan Tancap must also consider the availability of tourist facilities, such as clean water supply, transportation options to the Bagan Tancap location, telecommunications networks, and suitable accommodations for tourists seeking overnight stays in Bagan. Ensuring the safety of tourists is equally paramount.

The community and Bagan Tancap fishermen have high hopes for the Mina Wisata Bagan Tancap development plan, aiming to actively participate in physically and intellectually shaping the tourist attraction. They believe that they possess valuable insights about the potential in their village and how to realize it, emphasizing the importance of involving the community in the development process.

Increasing the involvement of community members, especially fishermen, in formulating fishery resource management plans is essential to ensuring that these plans align with the local community's needs (Alves and Hanazaki, 2015; Said and Chuenpagdee, 2019). Active participation of fishing communities in monitoring efforts can be enhanced through cooperation between fishermen and government authorities (co-management), leveraging local knowledge and social networks within the community (Saha, 2015; Stevens et al., 2015; Gray et al., 2017). Agreements represent a crucial step toward balancing individual and collective interests, ultimately yielding benefits on both fronts.

Theoretical implication

The theoretical implications of this study are multifaceted and can contribute to several areas of knowledge:

Environmental sustainability in fisheries: The study underscores the positive perception of Bagan Tancap fishermen towards environmentally friendly capture fisheries practices. This can contribute to the theoretical understanding of sustainable fishing methods and the willingness of fishermen to adopt practices that promote ecological sustainability.

Fishermen's attitudes and behavior: The study's findings regarding fishermen's attitudes and willingness to actively participate in the development and conservation of eco-friendly tourism resources highlight the importance of understanding the attitudes and behaviours of fishermen in the context of conservation and sustainable resource management.

Eco-Tourism development: The research sheds light on the potential for developing environmentally sustainable tourism initiatives in coastal regions heavily reliant on traditional fishing practices. This could inform theoretical discussions on integrating

conservation efforts and tourism development to achieve sustainable economic growth.

Local governance and sustainable development : The study mentions the Kotabaru Regency government's interest in marine tourism as part of sustainable development goals. The theoretical implications relate to the role of local governance in balancing economic development with environmental conservation and the challenges associated with achieving this balance.

Social dynamics in resource management: The study briefly touches on conflicts arising from varying interests among local stakeholders and outsiders accessing fisheries resources. The theoretical implications could explore the complex social dynamics in resource management and the need for a comprehensive understanding to develop effective management strategies.

Sustainable Development Goals (SDGs): The study aligns with several SDGs, including decent work and economic growth, responsible consumption and production, and ocean ecosystems. The theoretical implications could involve discussions on how sustainable fishing practices and tourism development can contribute to achieving these global goals.

Perception studies: The research emphasizes the role of perception in shaping behaviour and social dynamics. Theoretical implications could have to do with how important perception studies are for understanding and changing the actions of different stakeholders in resource management and sustainable development.

Overall, this study provides valuable insights into the attitudes and perceptions of Bagan Tancap fishermen and government authorities regarding sustainable fisheries practices and eco-conscious tourism development. These insights can contribute to the theoretical foundations of fisheries management, sustainable tourism, and the interplay between economic growth and environmental conservation in coastal regions.

Practical implications of the study

The practical implications of the study are significant. They can inform stakeholders and decision-makers about concrete actions and strategies to promote sustainable fisheries practices and eco-conscious tourism development. Here are some practical implications:

Promotion of environmentally friendly fishing practices : The study highlights that Bagan Tancap fishermen have favourable perceptions of environmentally friendly fishing practices. Practical implications include promoting and incentivizing the adoption of these practices, such as gear selectivity and biodiversity considerations, through training, subsidies, or certification programs.

Community involvement in tourism development : Fishermen's extremely positive and supportive attitudes toward the development of eco-friendly Bagan Tancap Fisheries Tourism suggest a willingness to actively participate. Practical implications include involving the local fishing community in the planning, execution, and management of the tourism resource to ensure their buy-in and an equitable distribution of benefits.

Integration of tourism and fisheries: Integrating tourism activities with traditional fishing practices can create additional employment opportunities. Practical implications involve designing policies and strategies that promote synergy between recreational tourism and commercial fishing, potentially leading to economic benefits for both sectors.

Resource management and conflict resolution: The study hints at conflicts arising from varying interests among local stakeholders and outsiders accessing fishing resources. Practical implications include effective resource management strategies, including transparent regulations, dispute resolution mechanisms, and community engagement to address conflicts and ensure sustainable resource use.

Local governance and sustainable development: Practical implications relate to the role of local governance in balancing economic development with environmental conservation. Policymakers can use these findings to design and implement regulations that support sustainable tourism and fishing practices while considering the interests of local communities.

Tourism Planning and Development: The study underscores the potential of eco-conscious Bagan Tancap Fisheries Tourism for tourism planners and developers. Practical implications include conducting feasibility studies, infrastructure development, and marketing strategies tailored to the unique features of

this tourism resource.

Education and awareness campaigns: Practical implications involve launching educational and awareness campaigns for fishermen and tourists. These campaigns can highlight the ecological significance of Bagan Tancap fisheries and the responsible behaviour expected from tourists to protect the environment.

Monitoring and evaluation: Continuous monitoring and evaluation of the eco-conscious Bagan Tancap Fisheries Tourism Initiative are essential. Practical implications include setting up mechanisms to assess tourism development's environmental impact, economic benefits, and social outcomes and making necessary adjustments based on the findings.

International collaboration and b est practices: Collaboration with international organizations and sharing best practices in sustainable fisheries and eco-tourism can be practical steps. This can help Kotabaru Regency align its efforts with global standards and benefit from international expertise and funding opportunities.

Sustainable Development Goals (SDGs): Stakeholders can align their actions with the SDGs mentioned in the study, such as SDG 8 (decent work and economic growth), SDG 12 (responsible consumption and production), and SDG 14 (ocean ecosystems). Practical implications include setting specific targets and indicators to track progress toward these goals.

Conclusively, the study offers practical insights for various stakeholders, including government authorities, fisheries management agencies, tourism developers, and local communities. By implementing the practical implications outlined above, these stakeholders can work collaboratively to promote sustainable fisheries practices and eco-conscious tourism development in Kotabaru Regency, leading to economic growth and environmental conservation.

Limitations

This study presents several limitations. Firstly, there may be a potential sampling bias, as the survey respondents may only partially represent part of the population of Bagan Tancap fishermen. Additionally, surveys could limit the depth of understanding and capture nuances more effectively. Temporal limitations may affect the generalizability of findings over time. Language and cultural barriers may have influenced the accuracy and interpretation of responses. A low response rate could introduce bias, and the study primarily focuses on the perceptions of fishermen and governmental authorities, potentially overlooking other stakeholders. The quantitative approach may only partially capture qualitative nuances. Resource constraints may have restricted the study's scope, and external factors beyond the researchers' control could impact the results. Social desirability bias may have influenced responses, and data validation relies on respondents' honesty. Finally, cross-cultural factors could have influenced data collection and interpretation, highlighting the need to carefully consider cultural context in research.

Future research directions

Future research in this domain holds considerable potential for advancing our understanding of sustainable fisheries practices and eco-conscious tourism development. Longitudinal studies can track changes in fishermen's perceptions over time and assess the long-term impacts of tourism initiatives on fishing communities. Comparative studies could shed light on how perceptions among Bagan Tancap fishermen differ from those of those using other fishing methods or from different regions, helping identify regional variations and potential factors influencing sustainable practices. Expanding the research to include a broader range of stakeholders, such as environmental NGOs, local communities, and tourism operators, can provide a more comprehensive understanding of conflicts, collaborations, and synergies in the context of eco-conscious fishing tourism. Qualitative research approaches, such as in-depth interviews and focus groups, can delve deeper into the motivations and values of fishermen and stakeholders, offering a nuanced perspective. Moreover, investigating the impacts of eco-conscious tourism on the environment and local communities, conducting economic sustainability assessments, and analyzing the cultural and social dimensions of eco-conscious tourism are vital areas for future exploration. By addressing these research directions, scholars and practitioners can make informed decisions and develop strategies that promote the sustainable coexistence of fisheries and tourism in coastal regions like Kotabaru.

CONCLUSION

The perception of bagan tancap fishermen towards environmentally friendly capture fisheries businesses is generally favourable, with positive evaluations across various dimensions, including gear selectivity, biodiversity, ecological diversity, fisherman and consumer safety, social conditions, and the quality of catches. Mainly, fishermen's perceptions regarding environmental preservation are notably strong.

Most Bagan tancap fishermen and the local community support the proposal to develop Mina Wisata Bagan Tancap. They are well aware of the tourism potential of Bagan as an emerging industry. They recognize its potential to generate employment opportunities for the local workforce and express willingness to actively participate in the planning and implementation of Mina Wisata activities and engage in tourism resource conservation efforts. There is a consensus among Bagan tancap fishermen, and the local community that fostering positive relationships between the community and tourism management and conducting adequate socialization and skills training for tourism development are essential.

Recommendations

Diversifying tourism products (attractions) represents a viable strategy for increasing tourist visitation. This diversification, in turn, holds the promise of fostering new business opportunities, stimulating economic growth, and addressing poverty alleviation. Strong infrastructure development and optimizing consumer services for tourists must go hand in hand with developing tourist attractions. Encouraging community involvement can be achieved through the following measures:

- Strengthening community institutions, particularly those focused on raising tourism awareness.
- Facilitating socialization and skills development programs for Bagan Tancap tourism managers
- Implementing effective waste management strategies Preserving and safeguarding local culture and indigenous knowledge

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