



UDC 639

## **SMALL-SCALE FISHERIES BUSINESS SYSTEM IN CENTRAL TAPANULI REGENCY, NORTH SUMATRA, INDONESIA**

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### **ABSTRACT**

This research investigates the dynamics of small-scale fisheries systems in Tapanuli Tengah Regency, a region in Indonesia renowned for its substantial fisheries potential. This study probes into various crucial aspects of this sector, encompassing business conditions, socio-economic circumstances, and the availability of technology. The analysis reveals that the small-scale fisheries system in this region involves a variety of business groups, from fish catching to the marketing of processed fish products. However, this system confronts numerous challenges, including traditional business management, limitations in technology adoption, and sustainability issues. To surmount these challenges, this study underscores the necessity of close collaboration between the government, business actors, and the community. The study concludes that a more profound understanding of this system can assist in formulating appropriate policy recommendations to enhance the sustainability of small-scale fisheries in Tapanuli Tengah Regency. Consequently, this sector can contribute more significantly to the local economy and elevate the welfare of the coastal community. By gaining a deeper understanding of this system, we can formulate appropriate policy recommendations to enhance the sustainability of small-scale fisheries in Tapanuli Tengah Regency. As a result, this sector can contribute more significantly to the local economy and elevate the welfare of the coastal community.

### **KEY WORDS**

Multidisciplinary approach, fisheries, socio-economic conditions, technology adoption.

As the world's largest archipelagic country with a long coastline, Indonesia has enormous fisheries potential. One sector that forms the backbone of Indonesia's fisheries industry is small-scale fisheries. According to the International Labour Organization (ILO), small-scale fisheries often consist of informal enterprises run by individuals or households and are not incorporated as legal entities separate from their owners. Despite relatively low levels of capital accumulation and productivity, small-scale fisheries play an important role in Indonesia's economy and food security (Béné et al., 2010; Halim et al., 2019; Pomeroy et al., 2020).

One region in Indonesia with a significant small-scale fisheries sector is Central Tapanuli Regency. Based on data from the Ministry of Maritime Affairs and Fisheries (KKP, 2023), out of a total of 269 fish processing units in Central Tapanuli Regency, 263 units are small-scale businesses. The existence of fish processing units in Central Tapanuli Regency is supported by its location on the west coast of Sumatra, which has great potential in the fisheries sector (Rahmadani & Suburian, 2020). In 2021, the total fisheries production in Central Tapanuli Regency reached 41,453 tonnes (DKP Tapanuli Tengah, 2021).

However, small-scale fisheries in Central Tapanuli Regency still face several challenges, ranging from access to technology, business management, and marketing of



catches. Therefore, this research aims to provide a comprehensive overview of the small-scale fisheries business system in Central Tapanuli Regency. Using a multidisciplinary approach, this research will analyse various aspects related to small-scale fisheries businesses, including business conditions, socio-economic conditions, and technology availability (Adnan & Bashir, 2020; KKP, 2022; MONGABAY, 2022; Situmeang & Koswara, 2021; Wiryati et al., 2019).

Though a better understanding of this system, it is expected that policy recommendations can be generated to improve the sustainability of small-scale fisheries in Central Tapanuli Regency. These recommendations can later be used as a reference in formulating more effective and sustainable small-scale fisheries business development strategies. Thus, this research is expected to make a significant contribution to stakeholders, including local governments, NGOs and business actors, in formulating strategies for a better future for the small-scale fisheries sector in Central Tapanuli Regency.

## **METHODS OF RESEARCH**

The research was conducted in November 2023 in Central Tapanuli Regency, North Sumatra Province. The research was carried out in several strategic locations in Central Tapanuli Regency that have significant small-scale fishing activities, namely Pandan, Sarudik and Tapan Nauli districts. Data was collected using a variety of methods including questionnaires, interviews, observations and document studies to gain an in-depth understanding of the fisheries business system in the area.

A qualitative approach was used to gain an in-depth understanding of the small-scale fisheries business system in Central Tapanuli Regency, allowing the researcher to explore various factors affecting small-scale fisheries businesses in the research site. Participatory methods were used for primary data collection, where in-depth interviews were conducted with small-scale fisheries business owners and other related parties. Direct observations were made at fisheries business sites to understand the process of catching, processing and marketing of processed fish products. Secondary data were obtained from official government documents, previous research reports and relevant literature.

Sampling was done using a purposive sampling method, where respondents were selected based on characteristics relevant to the processed fish products produced in Central Tapanuli Regency, namely boiled fish and dried salted fish. The sample size was determined based on the population of Joint Business Groups (KUB) in Central Tapanuli Regency as many as 149 units, using a 90% confidence interval and 10% margin of error (Putri et al., 2021). Respondents were categorised based on the production process in capture fisheries, namely pre-production (capture), production (processing) and post-production (marketing) (Alami & Raharjo, 2017). The total sample consisted of 60 small-scale fisheries business actors, representing a proportion of the existing population.

The small-scale fisheries business system in Central Tapanuli Regency was analysed descriptively, with the aim of assessing different aspects of the business to understand how the business operates and how its components interact. This analysis includes an assessment of three main factors that need to be considered in small-scale fishing enterprises. These factors are business conditions, which include business management; socio-economic conditions, which include human resources, capital, income models and the range of products produced; and technology availability in the form of technology adoption (Adnan & Bashir, 2020; KKP, 2022; MONGABAY, 2022; Situmeang & Koswara, 2020; Wiryati et al., 2019). This analysis can provide a better understanding of how small-scale fisheries operate in Central Tapanuli Regency, and how its components interact.

## **RESULTS AND DISCUSSION**

Small-scale fisheries in Central Tapanuli Regency not only constitute an important sector of the local economy, but also a complex system with various interrelated aspects. This system involves different groups of businesses ranging from fish catching to production



and marketing of processed fish products (Asiati & Nawawi, 2017). Within this system, fish catching is the main activity as a provider of raw materials for processing and satisfying fish consumption. In addition, this sector also includes production and marketing processes carried out independently by fishing households (Steenbergen et al. 2019; Pascual-Fernández et al. 2019).

In this system, economic actors are categorised into six groups based on the conditions in Central Tapanuli Regency. These groups include fishermen who only act as suppliers of fish raw materials, processors who only process processed fish products, marketers who only market processed products, and several other combination groups. The combined groups include fishers who also act as processors, where their catches are directly processed by themselves. There are also processors who are also marketers, who process processed products and have a marketing outlet, and finally fishermen who process their own catches and have a marketing outlet for the product.

Fish catching is the first stage of the fishing business system in Central Tapanuli Regency. Fish catching methods are very diverse and include ring nets, gill nets, hooks, traps and lift nets (Afriani et al., 2023; Limbong et al., 2021; Muna et al., 2023; Simamora et al., 2020). Fish catching activities are the main source of fish supply for local consumption and as raw materials for fish processing. The types of fish obtained from fish catching activities in Central Tapanuli Regency include large pelagic fish, small pelagic fish and demersal fish. Among these types of fish, fish species such as maning fish, teter fish, mackerel, anchovy, todak and barracuda are often used in the fish processing process. The raw materials for fish processing are generally provided by fishing gear such as fixed net and lift net.

Fixed liftnet and boat liftnet have differences in terms of operation and catch. Fixed liftnet is a series or arrangement of bamboo in a square shape that is embedded so that it stands firmly on the water (Palung et al., 2023) and usually requires only one worker to operate. Fixed liftnet is a one-day fishery, meaning that the fish are caught in one day and do not require a long journey (Papatungan et al., 2023). In 2019, there were 696 units of boat lift net distributed in Central Tapanuli (Rosmasita et al., 2020), this number indicates that the distribution of fixed liftnet in the waters of Central Tapanuli is quite extensive. The catch of fixed liftnet usually consists of small fish such as anchovies, maning fish, ponyfish, and squid (Muna et al., 2023).

On the other hand, boat liftnet is a lift net that can be moved to places where there are many fish (Rumpa et al., 2021). Boat lift net has a simpler and lighter structure, making it easy to move to different locations. Boat lift net takes up to 2 weeks to operate and requires up to 20 workers. Boat lift net mainly catches fish such as anchovy, ponyfish and mackerel (Triyono et al. 2021).

Once the fish raw materials are obtained, the next step is to process the fish into processed products. In Central Tapanuli Regency, the variety of processed fish products tends to be limited or minimally diversified (Situmeang & Koswara, 2021). Large-scale processing enterprises produce tuna loins, frozen fish and fish meal (PPN Sibolga, 2022). Meanwhile, small-scale fish processing enterprises produce salted fish and boiled fish.

Fish processing in Central Tapanuli Regency is based on the size of the fish. Larger fish such as (local names) teter, dencis and talang are usually more suitable for dry salted fish. This salting process involves salting the fish and then drying it under the sun until it is dry (Rakhmawati, 2017). This process requires time and special attention to ensure the quality of the final product. Meanwhile, smaller fish such as anchovies are usually processed into boiled fish. This process involves boiling the fish in salt water until it is cooked (Nurdiani et al., 2022). This process is relatively quicker than salting and drying, but still requires special knowledge and skills to ensure the right taste and texture.

The difference between these two processed products lies not only in the production process, but also in the characteristics of the final product. Dry salted fish is produced through a drying process that results in a strong flavour and dry texture, making it suitable for long-term storage (Sosiawati, 2019). Meanwhile, boiled fish has a softer taste and more chewy texture, making it suitable for consumption immediately after production.



The final stage of the processed products is marketing. These products are marketed through various pre-determined channels, including shipping to other towns, meeting local needs, and direct sales at the salted fish sales centre in the town of Sibolga. This sales centre is the main trading centre for small-scale processed fish products produced by the local community. There are more than 30 kiosks selling salted and cooked fish.

These products are offered both as souvenirs for visitors and for direct purchase by the surrounding community. By selling salted and boiled fish in the same place, access for consumers is easier and more efficient. However, the marketing of these processed fish products is not just about selling the product itself. The promotion and distribution of the products is also an important part of the marketing strategy. Promotion can be done in various ways, such as using social media, placing advertisements or even through word of mouth (Syahputro, 2020). Meanwhile, product distribution must be well managed to ensure that the product reaches the hands of consumers in the best condition. An effective marketing strategy is very important in this business. A good strategy not only ensures that the product reaches the target consumers, but also helps to maximise sales and profits.

Business management is a key factor in ensuring the operational continuity of small-scale fishing enterprises (Phelan et al., 2002). Despite the sector's significant economic contribution, it is often overlooked in local and national development policies (Fahrudin et al., 2019). The consequences are low levels of sustainability of fishing businesses and vulnerability to economic and environmental changes. Therefore, understanding aspects such as business management, technology availability, socio-economic conditions, human resources and capital to income models is very important in efforts to improve the sustainability of small-scale fisheries businesses in this region.

The management of small-scale fisheries in Central Tapanuli Regency is still classified as traditional and sub-optimal, mainly due to the lack of knowledge and skills in business management. This is related to the lack of fisheries knowledge and skills among human resources involved in the sector (Sukmawati et al., 2024). The majority of business actors still rely on inherited experience without a systematic approach to business management, which hinders the potential to improve business performance (Figure 1).

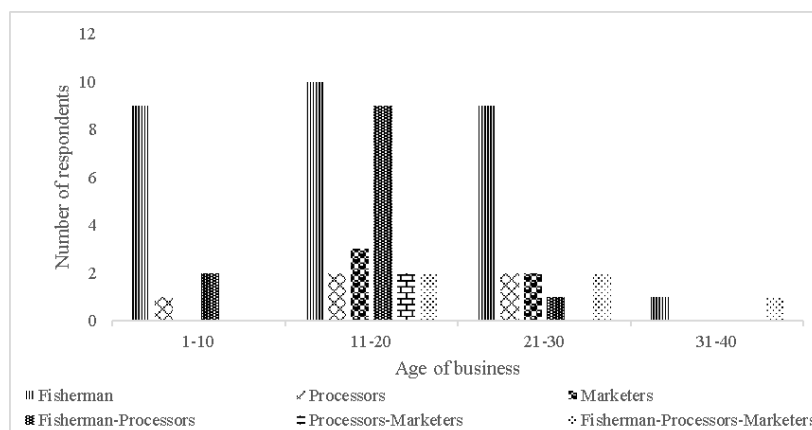


Figure 1 – Age by business type

Another very important factor in improving the productivity and efficiency of small-scale fisheries businesses is the role of technology (Nababan et al., 2017). Currently, small-scale fisheries businesses in Central Tapanuli Regency face barriers in the availability and adoption of technology. Although there are still challenges in accessing and understanding technology, efforts such as training and support in the use of technology and the provision of necessary infrastructure are becoming a top priority for the local Department of Marine and Fisheries. It is expected that these barriers will be overcome and that wider technology adoption will be achieved in the fisheries sector of Central Tapanuli Regency. This increase in technology adoption is expected to open up new opportunities for small-scale fishing



enterprises to develop and innovate, thereby improving the welfare of the surrounding community.

The number of workers is a crucial aspect of running small-scale fisheries in Central Tapanuli Regency. This is because the business depends on the number of workers available. In the boiling and drying business in Central Tapanuli Regency, between 2 and 4 workers per unit are needed to ensure that the process runs efficiently. Meanwhile, in the catching business, fixed net requires one person and lift net requires up to 20 people for a catching trip. The marketing of processed fish at the research site generally requires 4 to 6 workers. The average level of education of workers involved in small-scale fishing enterprises in Central Tapanuli Regency ranges from junior high school to high school, indicating that workers are expected to have sufficient basic skills and knowledge to carry out their tasks effectively. The income from each enterprise also varies widely and is highly dependent on the capital owned and the current fishing season.

Capital for small-scale fishing enterprises in Central Tapanuli Regency is considered to be readily available, either through loans from financial institutions such as banks, or through direct loans from relevant stakeholders such as the Central Tapanuli Regency Marine and Fisheries Office (DKP). Although this easy access is recognised as a factor that greatly helps in maintaining business continuity, challenges arise from sub-optimal financial management. This affects the income model, which is diverse and requires further attention to maximise the benefits of available capital.

Overall, the small-scale fisheries business system in Central Tapanuli Regency is complex and dynamic, encompassing various aspects from catching to processing and marketing. Despite its significant contribution to the local economy, there are still challenges to be overcome, particularly in terms of business management, socio-economic conditions, technology adoption and sustainability. With a better understanding of these issues, it is expected that small-scale fisheries can become more sustainable and able to cope with ongoing economic and environmental changes. The combined efforts of government, business actors and the community are key to maintaining the sustainability and progress of the sector.

## **CONCLUSION**

Small-scale fisheries in Central Tapanuli Regency play a crucial role in the local economic fabric. However, the sector faces several challenges, including sub-optimal business management, limited technology adoption and sustainability issues that need more attention. To overcome these challenges, close cooperation between the government, business actors and the community is needed. With this cooperation, it is expected that the small-scale fisheries sector can develop better in the future. It is therefore hoped that the sector will continue to grow and contribute more to the local economy and improve the welfare of coastal communities.

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