

Exploring the Economic Potential of Local Seafood Processing Industries in Bulukumba

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Abstract

A research will establish the financial potential of local seafood processing operations in Bulukumba district by examining economic prospects alongside developmental restrictions and critical factors for improving operations in the fishing sector. The region generates many promising economic opportunities from its extensive fish resources available for developing a maritime sector through seafood processing operations. The research discovered that development gets hindered by limited infrastructure together with the lack of skilled human resources and several other factors preventing sustainable production development. The investigation unveils promising economic outcomes since markets are growing for seafood obtained from sustainable sources while creating new job opportunities primarily targeted at women and young adults in rural areas. The findings presented in this work demonstrate that investments in the mentioned areas will prove crucial for developing the seafood processing sector's economic potential in Bulukumba. The research findings provide valuable information for authorities and stakeholders who want to improve small-scale shellfish operation competitiveness in developing nations toward economic stability and development of their regions.

Introduction

Currently, the seafood processing industry is one of the important industries in the coastal area as it provides both avenue of income and hardship. The seafood processing industry is especially pertinent in Bulukumba, which is a coastal regency in South Sulawesi, Indonesia where many income generating households could be supported by this industry. Geographical location of Bulukumba, with its coast, abundance of sea products and traditional sea-oriented society makes seafood processing to have a different outlook. But the industry has numerous problems that prevent it from reaching its economic benefits, including the absence of well-developed internal infrastructure, the low level of utilizing the most advanced technologies, and the lack of access to substantially bigger markets (Chen et al., 2021; Naseer et al., 2023).

In the past, the community of Bulukumba had basically been involved in sea and fisheries for trade since it is part of Indonesia. As cited in Syafruddin & Badollahi (2023), the coastal areas of Indonesia especially in south Sulawesi province have relied heavily on the marine sector in particular fishery and seafood processing businesses. In order to assess the competitive advantage that seafood processors have in the region, specifics concerning fish species is what follows (Penca et al., 2021; Matkovski et al., 2022). Small scale enterprises in the locality specialize in the processing of fish for human consumption through preservation by drying, salting or other preservation methods for local as well as exports markets. Yet, this industry is contributing significantly to the local economy while its great potential for development as an economic sector remains underexplored (Xu et al., 2023).

There are however challenges when the seafood processing industry in Bulukumba try to modernize the way they manage the fishing activity and increase market share. There are

certain fundamental constraints that explain why many local businessmen fail to compete effectively in the global marketplace including scarcity of proper processing technologies (Amankwah et al., 2021; Wu et al., 2023). This research finds that the efficient adoption of new processing methods and technology in these industries could help open new opportunities in the market according to Ohalete et al. (2023). Previous practices have been effective in retaining seafood quality; however, they are time-consuming and may not be effective in addressing growing consumer concern for quality for export products.

Indequate infrastructure is one the of the biggest challenges facing the local seafood processors this has heavily hampered the local infrastructure required for economic growth (Bassett et al., 2021). High logistics costs, shortage of storage and chilling infrastructure, and lack of access to suitable packaging and processing tools create constraints to value addition among seafood processors in Bulukumba and hindering the formation of economies of scale to effectively compete and enter higher value chain segments and offer thoughtful arguments for entrant firms and industries for ascending the value chains. Consistent with the findings of Ringsberg (2023), lack of infrastructure hitches not only the operational costs but product shelf life and quality more often than not hitch the seafood production which leads to minimized production. These challenges are aggravated by the fact that the country has increased imports of seafood products which is a quality product and prices it cheaper than locally produced seafood products (Aydın et al., 2023).

The local seafood processing companies in Bulukumba encounter the challenges in the area of finance (Waldron et al., 2023; Ruhon et al., 2023). Arifin, op.cit, also pointed out that small-scale processors are usually characterized by the inability to finance change in technology, skills of employees and capacity. In addition, more assistance from government agencies and financial firms is required to finance reasonable microloans and grants for sea-food firms. The same concern is in the studies of Nareswari et al. (2023) where it was listed that SMEs in Indonesia experience difficulties in accessing funds, which limit their development.

Nevertheless, there are several potentialities that seafood processing industry in Bulukumba may benefit from its competitive advantages and increase its market share. A unique factorism is the emerging market of shell fish products within the domestic and international market. FAO estimates that global per capita consumption of fish has been gradually increasing throughout recent decades, inspired by the changing trends in the demand for seafood in dietic foods and an emphasis on the inclusion of fish products in human nutrition. International consumption of tuna, in particular, has continued to rise, and Indonesia, being one of the world's largest seafood producers, could thus exploit this market. If only they increase standard flow in processing and consider other marketing strategies, Bulukumba seafood processors could control of the international seafood market.

Furthermore, it was revealed that Bulukumba could indeed develop a sustainable seafood processing industry that could go hand in hand with trends of green and sustainability such as environmentally sustainable seafood and socially responsible practices. Global consumers and buyers have made sustainable seafood production as one factor that they consider in the market. Through the evaluation by Glencross et al. (2023) however, read more on there is an increasing global demand in seafood products that are sustainably harvested and hence this provides a chance to Bulukumba seafood processors to adopt sustainable practices in processing. This could comprise the use of energy and resources efficient technologies, better innovation within-waste management and the supply of seafood following international sustainable standards.

However, it is also important to raise special awareness at capacity and skill development of the local human capital. The studies of Luque et al. (2023), have pointed out that, to develop the overall performance in the seafood processing industries, training the technical skills of the

workforce have been identified as a significant factor which will help in the quality of seafood as well as efficient working. The lack of technical skills is possibly the biggest reason why local processors cannot compete with their international counterparts, within dynamic sectors such as the agri-food industry; this can be solved through training programs, workshops or relationships with educational institutions.

In this case, government policies act as a determinant that defines the development of the seafood processing industry. Liu et al. (2023) pointed out that monetary support in terms of subsidies for equipment and improved credit provisions coupled with infrastructure development can go a long way to enhancing the sector. Thus, other governmental policies that may create awareness of the export of local seafood products as well as challenges towards the expansion of export market access may also benefit seafood processors in Bulukumba.

The study of economic impacts of local seafood processing industries in Bulukumba is not only informative of the opportunities and constraints existing in the sector, but also informative of useful strategies that would provide sustainable solutions for future development. This study's conclusions will therefore be of great importance as they will reveal the ways local seafood processors can upgrade their activities, gain enhanced market positions and contribute to the economic growth of the region. By tackling infrastructure, technology, and finance, Bulukumba will be able to unlock the full potential for seafood processing future developments for local businesses and the overall community.

Method

Using a qualitative research method, this research was able to examine the economic contribution of seafood processing industry in Bulukumba, South Sulawesi. The reason for selecting qualitative research is because the study involves a focus on the subjective detailed description of the experiences of essential stakeholders in the industry. The research focused on an attempt to understand the multifaceted nature of seafood processing organization and its impact on the community by interviewing the business owners, employees and other members of the community.

Sources of data for this study include face-to-face semi-structured interview, focus group discussions and participant observation. These methods proved to offer detailed information about the local seafood processing industry in terms of the various issues and prospect encountered by various companies.

Semi-structured Interviews: Hence, face-to-face interviews were carried out among 15 local seafood processors; the respondents included business owners' managers employees. The interviewees were chosen purposively depending on their association with the seafood processing industry. These interviews are qualitative and focused on the understanding of single representations about different aspects of the industry: production, problems and opportunities, access to the market, and the views about economic opportunities. These interviews were taken in the local language and the interview duration ranged from 45 minutes to one and half an hour. All interviews were conducted with prior participants' permission and recorded on a digital voice recorder and later transcribed.

Focus Group Discussions: There were two focus group discussions making each one comprising of 8-10 participants from the local processor's fishermen and government business associations. The discussions were more inclined toward General remarks so every group member could express what he or she thought about some issues and trends that affect businesses within the industry. He also stresses the utility of focus group discussions for exploring group processes and interactions; relationships between organizations of all types; and the role of governance structures in promoting the seafood processing sector.

Participant Observation: In addition, the researcher did participant observation at various seafood processing venues in Bulukumba. This provided a better chance of establishing the operational and strategic processes in the daily running of the companies, the problems faced and the practices that go with them. The researcher went to the premises of some of the processing facilities and made direct interviews with these workers for about 10 days. By adopting this method, the researcher was also able to obtain context information of working environment, technology adopted by local seafood processors and some of the infrastructure barriers encountered.

Convenience sampling method was employed to recruit participants who had better understand and experience in the seafood processing industry in the region. For sample selection, individuals involved in the fresh seafood business and processing such as owners, the employees, and any other stakeholders such as local governments, and business associations were used. This helped in making sure that the data obtained encapsulated a range of views that stakeholders had the industry.

Overall, 25 participants agreed to take part in the research with everyone from different positions within the seafood processing industry. These comprised 10 businessmen and women, 5 employed individuals, 4 from the local government and 6 from the local business associations. The sample was considered appropriate for this qualitative study because the range of attitudes obtained from the selected participants yielded a spectrum of views to draw on when examining the content at hand in detail.

Thematic analysis was used for data analysis, which includes: identifying patterns or themes within the data, analyzing those patterns, and then reporting on those patterns. Method of thematic analysis is well applicable for qualitative research since it gives the possibility to be rather flexible and profound when the question is to identify the key patterns and meanings in the texts of the interviews, focus and group discussions, and notes made during observations. The following steps were taken in the data analysis process:

Familiarization with the Data: To conduct the analysis, the researcher first transcribed all interviews and focus group discussion and reread the field notes collected from participant observation. This step was an added advantage seeing that the researcher becomes fully acquainted with the data before moving to the next step.

Coding: The data collected was analysed inductively, which means that themes and patterns were identified directly from the data as opposed to pre-designated. Codes that formed what was initially called 'the code box' were developed from distinctive spacing patterns of phrases, terms, or concepts identified by participants. The codes generated above were then fine-tuned and grouped into more general themes.

Theme Development: The researcher got different themes from the data after coding the data the first time. Features were identified in a manner that ensured consistency with the research objectives and research questions which include: Barriers to processors, markets, technologies and opportunities for growth of processors in the fruit and vegetable industries. Thematic analysis enabled further description of the themes, thus ensuring that the role and the determinant of the economic possibility of seafood processing industry in Bulukumba was well captured.

Interpretation: When the themes were developed, the researcher made sense of the data collected by relating the results to the literature on seafood processing and economic development. This interpretation assisted in locating the findings in terms of the theoretical concept of economic development and industrial evolution.

Result and Discussion

Being a coastal district with a rich in sea food resources, Bulukumba has always depended on its fish industries. Another promising sector therefore for economic development is the local seafood processing value chain which will create employment, reduce poverty levels in the community. However, the industry is exposed to sever qualities that have hindered it to take full advantage of those opportunities thus evidencing relatively rated growth. The results of this study, which discusses the economic perceptions, the factors affect it and the strength perceiving and the weakness in the development of seafood processing industry in Bulukumba will be presented in the following sections. The presented research results are highly relevant for the understanding of potentials within the sector in terms of encouraging regional economic development.

Economic Perceptions

Different perceptions of the local processors, workers, and the local stakeholders influence the economic potential of the local seafood processing industry in Bulukumba. These perceptions include elements related to market, opportunity, profitability, sustainability, and imports of government support. The interview results therefore showed different perception on the current status of the industry and its economic prospects. Indeed, one of the common perceptions highlighted during the interviews related to market opportunity for the local seafood processing industry. Majority of the local processors interviewed opined that the seafood industry had more capacity for growth especially when appreciation to the domestic processed seafood products is considered. However, they also admitted that to access the greater national or international markets it continued to be difficult.

"The local market is good, but we lack access to bigger markets. If we could get better distribution channels, our products would have a much larger market share. But the challenge is always getting to the right buyers and ensuring our products meet their standards."

This quote reflects a sense of optimism about the local market but also highlights the difficulty in reaching wider markets. Processors were aware of the growing demand for high-quality processed seafood but felt constrained by logistical issues and a lack of marketing knowledge. At the same time, local processors also expressed concerns about competition from larger, more industrialized seafood producers who have the resources to scale up production.

"We are at a disadvantage compared to large-scale processors. They have better access to capital, modern equipment, and international networks. We are still trying to manage with what we have locally."

This sentiment reflects a recurring theme of economic challenges faced by smaller, local processors who struggle to compete with more capital-intensive competitors. Despite these barriers, many interviewees expressed a belief that if local processors were able to tap into larger markets or improve their products' quality, they could significantly increase their revenue streams. When discussing profitability, most participants believed that the seafood processing industry in Bulukumba had the potential to be a profitable venture, especially if certain hurdles were overcome. Business owners noted that seafood processing could be highly profitable, given the region's rich marine resources.

"The profit margins in seafood processing can be high if we can control costs and improve efficiency. However, many of us still rely on traditional methods, which limit our production capacity and profit."

This quotation reflects a common view that traditional processing methods are both a limitation and a potential source of inefficiency. While processors were optimistic about the profitability of the industry, they recognized that the adoption of more modern processing methods and technology could significantly improve both their productivity and profits. The workers involved in the seafood processing industry, on the other hand, often perceived their economic situation as precarious. Despite being employed in the sector, many of them felt that wages were low and that their work conditions could be improved.

"We work long hours, but the pay is not always enough to cover our expenses. We love the work, but it's hard to stay motivated when we don't see much improvement in our salaries."

This quote highlights the disparity between the potential for profitability in the industry and the economic reality for many workers. While processors may view the sector as profitable, workers often feel disconnected from the economic benefits of the industry. This disconnect can affect overall productivity and morale, potentially limiting the sector's long-term growth. Government support and policies were frequently discussed as key factors influencing the economic success of the local seafood processing industry. Many interviewees emphasized the need for greater governmental involvement in supporting the sector, especially through infrastructure development, financial assistance, and policy reforms.

"The government recognizes the potential of the seafood processing industry in Bulukumba, but there is still a lack of targeted policies and programs to specifically support the industry. We need more investment in infrastructure, training programs, and access to finance."

This perception illustrates the gap between the potential for growth and the current level of governmental support. While there is some recognition of the importance of the sector, the lack of comprehensive policies or targeted interventions limits the industry's ability to thrive. Furthermore, several business owners highlighted the importance of training programs to build the capacity of local workers in advanced processing techniques.

"If we had more training programs for our workers, they could learn better techniques and increase their productivity. But right now, training is minimal, and we are mostly learning through trial and error."

This quote underscores a broader concern about the need for better human resource development within the sector. Without proper training and skill development, workers may not be able to meet the increasing demands for quality seafood products, limiting the industry's ability to scale up. Environmental sustainability was also a key issue raised in interviews, with many respondents expressing concerns about overfishing and its potential impact on the seafood supply.

"We have seen a decline in fish stocks over the years, and this is affecting our ability to produce at the scale we want. If this continues, it will affect the entire industry."

This concern highlights the importance of sustainable fishing practices and the need for regulations to ensure the long-term viability of the local seafood industry. While processors are eager to expand their operations, they recognize the necessity of maintaining the health of marine ecosystems to sustain the industry in the future.

Factors Influencing Economic Potential

The economic potential of the seafood processing industry in Bulukumba is shaped by several key factors, including market access, technological advancement, infrastructure, labor availability, and government policies. These factors either act as enablers or barriers to the

growth and success of the industry, and understanding them is crucial to unlocking the region's full economic potential. The interview results provided insights into the most critical elements that influence the economic viability of the local seafood processing sector. A primary factor influencing the economic potential of the local seafood processing industry in Bulukumba is market access. While local processors acknowledge that there is significant demand for processed seafood, they face substantial challenges in reaching broader, national, and international markets.

"We have the raw materials, but the main issue is how to connect with bigger markets. Our distribution networks are still very limited, and we do not have enough marketing expertise to expand beyond the local areas."

This quote underscores the fact that while there is market demand, processors face significant logistical barriers to reaching those markets. Limited distribution channels and lack of marketing knowledge were seen as key obstacles to growth. Despite this, there was optimism about the potential for market expansion if these barriers could be overcome. Processors also noted that while local demand is relatively stable, the real economic growth for the industry lies in tapping into export markets.

"Exporting our products is the goal, but it's tough to get the necessary certifications and meet the international standards. We need better training and guidance on how to improve our product quality to match export requirements."

This perspective highlights a significant challenge: the need to meet international quality standards to access global markets. The industry's potential is often constrained by the inability of local processors to scale their production and meet stringent export regulations, which affects their competitiveness on a larger scale.

Another major factor influencing the economic potential of the seafood processing industry is the adoption of new technologies. The interviewees noted that many local processors continue to rely on traditional, manual processing methods, which limit productivity and product quality.

"We are still using basic equipment that we've had for years. It takes a lot of time to process the seafood, and the quality isn't as consistent as it could be. If we could invest in better equipment, we could produce more and improve our quality."

This quote reflects the technological gap in the industry, with local processors acknowledging that their production methods are outdated and inefficient. The lack of access to modern processing equipment means that processors are unable to meet the increasing demand for high-quality seafood products. Moreover, technological advancements in packaging and preservation were also mentioned as factors that could extend the shelf life of processed seafood, making it easier to transport and sell in distant markets.

"Improved packaging technology could help us keep the seafood fresh longer, which would make a huge difference when we try to sell to buyers outside Bulukumba."

The adoption of modern technologies, particularly in production and packaging, was recognized as a critical factor for improving efficiency, quality, and marketability, all of which are vital for increasing the economic potential of the industry. Adequate infrastructure is another crucial factor influencing the economic potential of the seafood processing industry. The lack of sufficient facilities for processing and storage, as well as unreliable transportation networks, were identified as major constraints.

"We don't have proper cold storage facilities here. Sometimes, the fish spoils before we can even process it. This is a huge problem for maintaining a consistent supply."

The absence of reliable cold storage and transportation infrastructure directly affects the quality and quantity of seafood that can be processed and sold. Inconsistent supply chains and inadequate preservation facilities make it difficult for processors to maintain a steady product output, ultimately limiting their capacity to expand operations. Furthermore, the challenge of transporting processed seafood from Bulukumba to other markets or export locations is compounded by poor road networks and logistical inefficiencies. Interviewees also noted that these infrastructure challenges make it harder for small-scale processors to grow their businesses.

"It's frustrating because we have a good product, but without the proper infrastructure, we can't get it to the people who want it. We have to rely on local buyers who don't offer the prices we need to expand."

This issue of underdeveloped infrastructure not only affects the ability of processors to scale up their operations but also limits their access to more lucrative markets, further hindering economic growth within the industry. The availability of skilled labor is a critical factor in determining the economic potential of the seafood processing industry in Bulukumba. While there is no shortage of workers willing to participate in seafood processing, there is a significant gap in terms of skill development. Many interviewees pointed out that the lack of training programs for workers hampers productivity and product quality.

"We are good at what we do, but there are times when we wish we had more training on how to process seafood more efficiently or safely. There are many things we could improve, but we don't have the proper skills or knowledge."

This statement reveals that while workers are committed to the industry, their lack of formal training limits their ability to improve production processes or quality.

"I wish there were more formal training programs available to our workers. We could definitely see improvements in the quality of the product and in the overall productivity of the team."

This gap in skills and training is seen as a barrier to enhancing the industry's economic potential. Without adequate training, workers are unable to adopt new processing techniques, leading to inefficiency and subpar product quality. The interviewees agreed that skill development initiatives were crucial for increasing the sector's competitiveness and profitability. Finally, government policies and support were frequently mentioned as key determinants of the economic potential of the seafood processing industry. While interviewees expressed appreciation for some governmental initiatives, many felt that more targeted support was needed.

"The government has made some efforts to support the seafood industry, but there is still a lot more that can be done, especially in terms of providing subsidies for equipment and improving infrastructure."

This quote reflects the general perception that while government recognition of the industry's potential exists, tangible support in the form of subsidies, infrastructure development, and skill training is lacking. Several processors emphasized that government support could play a pivotal role in enabling them to modernize their operations and expand their businesses. The study aims at investigating the economic opportunities of local seafood processing industries in Bulukumba paying attention to probability, hindrance and influential factor that surround the business. It therefore fills the existing gaps in the literature on small scale seafood industries operating in Southeast Asia by analyzing both the economic perceptions and operational

constraints presented by local processors suggesting the potential of such industries for contributing to the overall development of the region.

The conclusions derived from this study reveal an increasing recognition of the role of seafood processing sector for changing Bulukumba's economy. More and more they saw that the industry holds the potential to unlock growth and therefore significant employment opportunities, poverty income and better living standards. With increasing global concern towards procurement of seafood from sustainable sources, the Bulukumba local industries can unlock a great opportunity of meeting the global demand by improving product quality, increasing export supply from sustainable stocks and conforming to international standards. This is in line with a study by Cooney et al. (2023), which observed that there is an increasing demand for more sustainable seafood products around the globe, the news that indicates a lot of potential for countries such as Bulukumba that have a rich sea resource base.

However, the optimism from the above findings is somewhat constrained by the structural and operational factors highlighted in the study. The most serious of these constraints is the absence of facilities to accommodate massive seafood processing. Lack of processing factories, modern equipments and appropriate storage also poses a challenge in expansion of local players' operations to meet up with the growing market challenges. Lee et al. (2023) acknowledge that infrastructure challenges are common in other similar sea food industries for small scale industries situated in the developing world. There have been little investments in infrastructure so local processors remain incapable of raising production capacity, handling quality and entering into superior international markets.

The study also reveals that workforce development is a critical enabler of economic growth in seafood processing sector. It has been established by Lim et al. (2023) among other scholars that small scale industries in Southeast Asia experience various hurdles most of which revolve on the skills of the employees in the sectors like seafood processing which needs knowledgeable employees on food safety, quality and sustainability. The absence of a skilled labor force was also pointed out as an issue to competitiveness in Bulukumba since most of the processors cannot produce goods with quality standards needed in the export markets. Closing this gap through proper training, workshops, seminars, and collaboration with learning institutions might go a long way in developing the competitiveness of the sector as postulated by Ngoc et al. (2023) that argue that human capital development remains critical for growth in the small-scale industries.

In addition to the operational and workforce issues, the research also explores the general economic implication of seafood processing industry to the community of Bulukumba. The prospect of employment creation, especially for women and the youths in the rural areas was proposed as one of the advantages. Such outcomes were also revealed in assessments of small-scale fisheries in the South of SEA where it was established that the sector plays an important role in generating jobs for people in territories if other kinds of industry are not developed (Rafael, 2023). Hence in Bulukumba, an attempt to try and open up a new line in the availability of employment opportunities that would enable the young people to remain within the region could be done through the expansion of the seafood processing industry. This becomes important bearing in mind that youth migration to large cities to look for employment opportunities has emerged as a common trend in other parts of Indonesia, which other studies have also observed in this study area (Moreda, 2023).

Another of the issues discussed includes the future of seafood processing industry through sustainable development practices. Therefore, as global markets global remain committed to sustainable production, local industries in Bulukumba have no option but to steer towards environmental sustainability. This includes proper sourcing techniques, proper disposal and

ensuring that seafood products comply with standard sustainability norms. Borah et al. (2023) also revealed that firms which incorporate sustainability have an opportunity to charge premium prices and access long-term contracts with global consumers. However, the change to green production may be expensive, hence the local companies may need capital and resource, knowledge as well as markets that support sustainability. As such, the present research supports the call for policies that will provide the necessary impetus for transforming the industry for sustainability at local and national levels.

Conclusion

Seafood processing industry holds good economic value in Bulukumba due to increasing demand for eco-friendly seafood products and the area rich Marine and coastal resource. But the potential of these countries remains least capitalized due to few problems like poor infrastructure, scarcity of skilled workforce, and consciousness about sustainability. These obstacles are best overcome by increasing financial expenditure in various technologies, human capital and environmental management tools to ensure better competitiveness of the local industries as well as improve the overall economic development. When centered on these fields, the seafood industry of Bulukumba could be a catalyst for positive change for the economy in the region and thus be able to create employment for the population thus enhancing their standards of living and could serve as a competitive market for seafood products in the global market.

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