



THE BUSINESS POTENTIAL OF ANCHOVY PRODUCTION FROM THE PERSPECTIVE OF ISLAMIC ECONOMICS IN SEDANAU, BUNGURAN BARAT DISTRICT, NATUNA REGENCY

Mamek Romadon^{1a*}, Kartubi^{2b}, Nurdian Setiawan^{3c}

^{1,2,3} Sekolah Tinggi Agama Islam Natuna, Komplek Masjid Agung Natuna, Ranai, Kabupaten Natuna, Kepulauan Riau, Indonesia

^aE-mail: cikgukeren@gmail.com

^bE-mail: kartubi1973@gmail.com

^cE-mail: nurdiansetiawan333@gmail.com

(*) Corresponding Author

cikgukeren@gmail.com

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ABSTRACT

The anchovy (ikan bilis) production industry in Sedanau, Bunguran Barat District, Natuna Regency, a remote coastal enclave in Indonesia's outermost island territory that has received virtually no prior scholarly attention, represents a significant livelihood source for the local community, yet its production practices have never been evaluated against the normative standards of Islamic economics. This study aims to examine the anchovy production process in its full operational detail and to assess that process from the perspective of Islamic economics, particularly regarding the principles of halal, tayyib, business honesty, food safety, and social responsibility. Employing a qualitative approach with a case study design, data were collected through observation, in-depth interviews, and documentation, and analyzed using the interactive model of Miles, Huberman & Saldaña. The study finds that the production process operates through four stages, harvesting, boiling, drying, and marketing, with considerable economic efficiency. However, three critical normative deviations are identified: the use of deteriorating raw material in violation of the tayyib and shiddiq principles, the repeated reuse of boiling water that compromises food safety, and the disruptive placement of drying mats in public spaces that inflicts harm on the surrounding community. These findings carry direct implications for SDG 2, SDG 3, SDG 8, and SDG 10, and call for concrete policy responses from the Natuna local government, including the formulation of Islamic economic literacy programs, production standard guidelines tailored to informal coastal food enterprises, and regulatory oversight mechanisms for small-scale fishery processing in frontier regions.

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INTRODUCTION

The coastal region of Sedanau, located in Bunguran Barat District, Natuna Regency, is home to a thriving anchovy (ikan bilis) production industry that has organically grown into a cornerstone of the local economy. The geographic positioning of the area, surrounded by rich marine waters, provides a natural abundance of anchovy that serves as the primary raw material for this cottage industry. Local business operators have developed an integrated production cycle that spans four sequential stages: the harvesting of fish from sea, the boiling or cooking process, the draining and drying phase, and the final distribution and sale of the finished product. This cycle has been carried out continuously across generations, creating a well-established operational rhythm that sustains the livelihoods of numerous coastal households in the area.

The production process observed in Sedanau demonstrates a high degree of operational functionality. In the harvesting stage, fishermen employ traditional methods to capture anchovy from local waters, and the catch is swiftly transferred to processing units to maintain freshness. The boiling process is conducted using large cooking vessels and communal firewood or gas-fueled systems, after which the fish are laid out to drain and dry, either on open mats or elevated racks placed in well-ventilated outdoor spaces. The entire process, from raw catch to finished dried anchovy, is completed within a relatively short production cycle, allowing business operators to maintain high output volumes that meet both local market demand and inter-regional distribution networks. The efficiency and scale of this production activity have made Sedanau's anchovy industry a recognized commodity in the regional fisheries market.

By community and economic indicators, the anchovy production enterprise in Sedanau is flourishing. The industry currently involves more than 40 active production units operated by local households, collectively processing an estimated 2–5 tons of fresh anchovy per week during peak seasons, with annual output reaching tens of tons of dried product distributed across Natuna Regency and beyond. Business operators consistently generate income that supports family welfare, employment is provided to local workers across the production chain, and the product commands stable demand from buyers in surrounding regions and beyond. The industry operates year-round with seasonal peaks that align with anchovy abundance, and distribution networks have expanded to cover broader market areas. From a purely economic standpoint, the anchovy production business in Sedanau appears to be performing at its maximum potential, functioning as a productive engine of local economic empowerment with tangible contributions to household income and regional food supply.

The very scale and economic significance of this industry, however, is precisely what makes a rigorous normative evaluation not merely academic but genuinely urgent. When a single informal industry sustains dozens of households, employs a substantial segment of the local workforce, and supplies food products to a wide consumer base, any unaddressed deviation from ethical production standards carries consequences that extend far beyond the individual producer. Ideally, any productive economic activity, particularly in a Muslim-majority community, must not only be evaluated by its economic output but assessed comprehensively against the normative standards of Islamic economics, which govern both the process and the ethics of production. According to the Islamic economics framework, production is not a value-neutral activity; it is governed by principles of halal and tayyib that apply equally to the sourcing of raw materials, the methods of processing, the conditions of the working environment, and the integrity of the product offered to consumers (Maflahah et al., 2025; Noordin et al., 2014).

From the perspective of Islamic business ethics, producers bear a fundamental obligation of honesty (shiddiq) and trustworthiness (amanah) in every dimension of the production process, and any departure from these values, regardless of how commercially successful the operation appears, constitutes a violation of Sharia-compliant business conduct (Samsidar et al., 2024; Setiyanto & Abdullah, 2020). The principle of tayyib, which demands that food be not only lawful but genuinely wholesome, pure, and safe, imposes specific standards on processing methods, raw material quality, hygiene, and the environmental impact of production activities on surrounding communities (Idris et al., 2024; Batu & Regenstein, 2014). Scholars in Islamic economics further assert that the use of raw materials that are deteriorated or near-spoiled, the reuse of processing liquids beyond permissible limits, and the conduct of drying activities in ways that obstruct public access or create environmental nuisance all constitute failures to meet the halal-tayyib threshold that Islamic production ethics demands (Andespa et al., 2024; Elasrag, 2016). Moreover, from the perspective of maqasid al-shariah, productive enterprises must actively protect the interests of consumers, workers,

and surrounding communities, ensuring that the pursuit of profit does not come at the expense of health, communal welfare, or environmental integrity (Pratiwi, 2024; Hasan, 2020). Collectively, these normative standards set a demanding benchmark: successful production is not defined by volume and income alone, but by the degree to which every stage of the production process conforms to the ethical, hygienic, and social responsibilities prescribed by Islamic economic principles.

The contrast between what is observed in Sedanau's anchovy production practice and what Islamic economics normatively demands reveals a significant and consequential gap. While the industry is productive and economically successful at the surface level, a closer examination of its production practices exposes deviations from Islamic ethical standards that cannot be overlooked. The use of fish that has begun to deteriorate as raw material, the repeated use of boiling water beyond acceptable limits, and the arbitrary placement of drying mats in public spaces that disrupt pedestrian flow and produce unpleasant odors for local residents are concrete instances where the *das sein* of production practice diverges sharply from the *das sollen* of Islamic production ethics. These are not minor procedural lapses; they touch directly on the principles of honesty in raw material handling, food safety and *tayyib* compliance, and the producer's social responsibility to the community, all of which are central obligations in the Islamic economic framework. The apparent commercial success of the enterprise thus masks an underlying normative deficit that demands scholarly examination.

This gap gives rise to two fundamental research questions. The first concerns the empirical dimension: what does the actual production process of the anchovy industry in Sedanau look like in its full operational detail, including the stages of harvesting, processing, drying, and marketing? The second concerns the normative evaluation: to what extent does this production process conform to or deviate from the principles of Islamic economics, particularly regarding the values of *halal*, *tayyib*, honesty, food safety, and communal responsibility? These two questions together constitute the central scholarly problem of this study, and answering them is both necessary and urgent for communities whose economic activities are embedded in an Islamic ethical framework.

A growing body of scholarship has examined the intersection of Islamic economics and food production enterprises, though this literature reveals important gaps that the present study is positioned to address. Research on *halal* food production among Indonesian MSMEs has primarily focused on the formal certification process and regulatory compliance, exploring the challenges small enterprises face in obtaining and maintaining *halal* certification (Prawiro & Fathudin, 2023; Widigdo & Triyanto, 2024; Andespa et al., 2024). Studies on *halal* supply chain management in the fisheries sector have examined performance factors and traceability mechanisms in medium-scale fish processing enterprises, finding that HSCM implementation remains limited and inconsistent among small and micro producers (Maflahah et al., 2025; Pratiwi, 2024; Ab Talib et al., 2015). The broader discourse on Islamic business ethics in MSME production contexts has similarly been explored, with researchers documenting how the values of honesty, trustworthiness, and *tayyib* compliance are implemented, and frequently compromised, in small food enterprises operating within Muslim communities (Samsidar et al., 2024; Umamy et al., 2025). Comparative studies on fish processing MSMEs and Islamic economics empowerment strategies have identified limited facilities, inadequate training, and weak sharia-compliance mechanisms as persistent structural barriers for coastal and fishery-based enterprises (JIEP, 2025; Azwar & Sarip, 2024; Kurniawan & Widiastuti, 2021). Research employing the *halal-tayyib* framework in food production analysis has examined its implications for sustainable development, consistently finding that many small producers operate below the *tayyib* threshold even when raw materials are technically *halal* (Idris et al., 2024; Izaty & Nafi'a, 2024; Tieman & Ghazali, 2014). Several scholars have further examined the relationship between Islamic production principles and SDGs compliance in food MSME contexts, demonstrating that sharia-aligned production practices carry measurable positive implications for poverty alleviation, food safety, and community welfare (Pratiwi, 2024; Supriyadi et al., 2024; Wan Omar & Hussin, 2017).

Despite this breadth of scholarship, the existing literature reveals a clear and specific gap. Studies examining *halal* and Islamic economic compliance in food production have predominantly focused on formal institutional settings, registered MSMEs, certified factories, or institutionally organized supply chains, while the informal, community-level production of traditional fishery commodities such as dried anchovy in remote coastal areas has received virtually no scholarly attention. Moreover, no prior study has conducted a focused qualitative examination

of anchovy (ikan bilis) production through the lens of Islamic economics in the Indonesian context, nor has any research specifically analyzed how the four-stage anchovy production process, harvesting, boiling, drying, and marketing, aligns or conflicts with Islamic production ethics in a grassroots community setting. This study therefore fills a genuine and necessary gap in the literature, offering an original contribution that is geographically specific, commodity-specific, and normatively grounded in Islamic economic principles.

The novelty of this study lies in its focused application of the Islamic economics production framework to the specific and previously unstudied case of anchovy (ikan bilis) production in Sedanau, Natuna Regency, a remote coastal community where informal food processing enterprises operate entirely outside formal halal certification structures. Unlike existing studies that examine Islamic production ethics in certified or institutionally organized enterprises, this research centers on the grassroots, traditional production cycle of a locally significant commodity and evaluates each stage of that cycle, from raw material harvesting to market distribution, against the normative standards of halal, tayyib, Islamic business honesty, food safety, and community welfare. In doing so, it generates a practically applicable normative assessment framework for informal food production enterprises in coastal Muslim communities, with direct relevance to SDG 1 on poverty eradication, SDG 2 on zero hunger and food safety, and SDG 8 on decent work and economic growth, by ensuring that community-level food production aligns with both religious obligations and the global imperative for inclusive, ethical, and sustainable economic activity.

This study is urgently needed because the anchovy production industry in Sedanau represents the primary livelihood of a significant portion of the local Muslim population, yet it operates in a normative vacuum where neither formal regulatory oversight nor Islamic economic guidance has been systematically applied to its practices. The documented deviations, including the use of deteriorating raw materials, hygienically compromised processing methods, and disruptive drying practices, pose direct risks to consumer health, community welfare, and the religious integrity of the producers themselves, who may unknowingly violate Islamic production ethics while pursuing legitimate economic survival. Without scholarly intervention that diagnoses these gaps and articulates the applicable Islamic economic standards, the community lacks the doctrinal and practical guidance needed to align its productive activities with both Sharia obligations and sustainable development imperatives. By providing this analysis, the study makes a timely contribution to SDG 2 on safe and nutritious food, SDG 3 on health and well-being, and SDG 10 on reduced inequalities, ensuring that economically vulnerable coastal communities engaged in traditional food production are supported, not left behind, in the pursuit of a just and sharia-compliant economic life.

This study is guided by two central research questions. The first asks how the anchovy production process in Sedanau, Bunguran Barat District, Natuna Regency, is carried out in practice, encompassing all four stages of production from raw material harvesting through boiling, drying, and market distribution. The second asks how this production process is to be evaluated from the perspective of Islamic economics, specifically in terms of its conformity with or deviation from the principles of halal, tayyib, business honesty, food safety, and social responsibility as prescribed by the Islamic economic framework.

RESEARCH METHODS

This study employs a qualitative approach with a case study design (Creswell, 2014; Yin, 2018), treating the anchovy production enterprise in Sedanau, Bunguran Barat District, Natuna Regency, as a bounded case examined in its full operational and normative complexity. Data were collected through observation, in-depth interviews, and documentation. Informants were selected purposively and comprised nine participants: five production unit owners, two workers involved in the boiling and drying stages, and two local community figures, whose testimonies provided an external perspective on the social and environmental impact of production activities on the surrounding community.

The data were analyzed using the interactive model of Miles, Huberman & Saldaña (2014) through three concurrent stages: data condensation, data display, and conclusion drawing and verification. In the condensation stage, for instance, repeated field observations and interview accounts describing the reuse of boiling water across multiple batches were condensed into a single analytically significant node identified as a potential violation of the tayyib principle. Condensed findings were then organized into a descriptive framework aligned with the study's research

questions, and conclusions were verified through cross-referencing across data sources. Triangulation techniques (Creswell, 2014) were further applied to strengthen the credibility and dependability of the analysis.

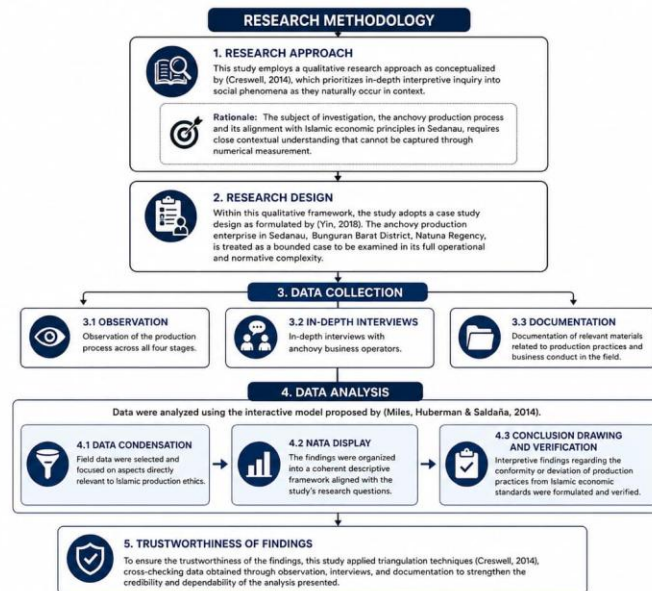


Figure 1. Research Methodology Framework

RESULT AND DISCUSSION

RESULT

The Anchovy Production Process in Sedanau, Bunguran Barat District, Natuna Regency

The anchovy (*ikan bilis*) production process in Sedanau runs through four sequential stages that collectively form the operational backbone of this cottage industry. The first stage is the harvesting of fish from the sea. Fishermen in Sedanau go out to sea using small traditional boats, typically in the early morning hours when anchovy are most abundant near the surface. The catch is made using fine-mesh nets that are cast and retrieved manually, and the harvested fish are stored in open containers on the boat before being transported back to shore. Upon arrival, the raw anchovy are immediately transferred to the processing area, which in most cases is located adjacent to or within the home of the business operator. The speed of this transfer is an important factor, as anchovy are highly perishable and deteriorate rapidly when left unprocessed in warm temperatures. In practice, however, the time between harvesting and processing varies considerably depending on the volume of the catch and the operational capacity of each producer, meaning that some batches of fish are processed promptly while others sit waiting for an extended period before reaching the boiling stage.

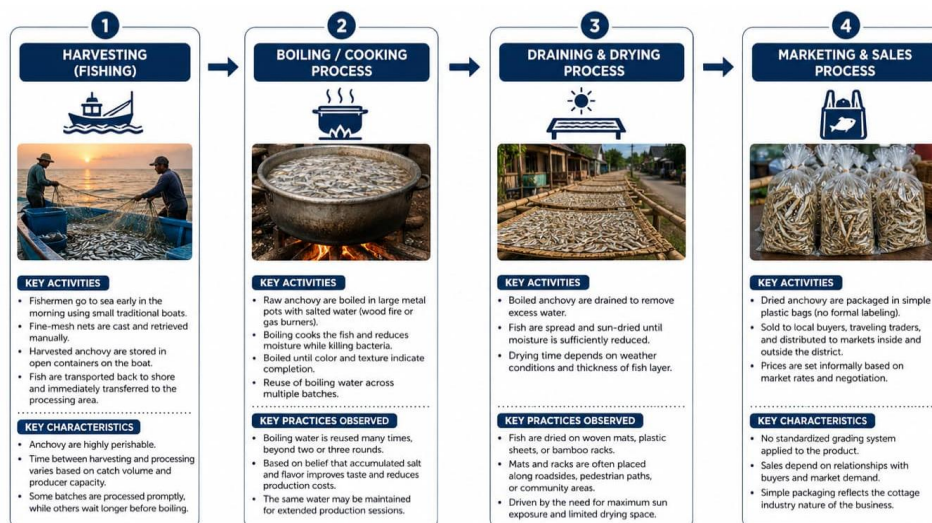


Figure 2. *The Anchovy Production Process*

The second stage is the boiling or cooking process, which is the most technically demanding phase of anchovy production. In this stage, the raw anchovy are placed into large metal pots filled with salted water and boiled over wood fires or gas burners. The purpose of boiling is twofold: it cooks the fish thoroughly and initiates the preservation process by reducing moisture content and killing bacteria. Producers generally boil the fish for a set period until they observe that the anchovy have changed color and texture, indicating that the cooking process is complete. A notable practice observed in Sedanau is the reuse of the boiling water across multiple cooking batches. Rather than replacing the water after each batch, many producers continue using the same water for successive rounds of boiling, on the grounds that the accumulated salt and flavor in the water enhances the taste of subsequent batches and reduces production costs. This reuse is often carried out well beyond two or three rounds, with some operators maintaining the same water for extended production sessions.

The third stage is the draining and drying process, which follows immediately after boiling. Once the anchovy are removed from the cooking pot, they are spread out to drain excess water before being laid flat to dry under direct sunlight. In Sedanau, drying is typically done by spreading the boiled fish on woven mats, plastic sheets, or purpose-built bamboo racks placed in open outdoor areas. The sun-drying process requires several hours to complete, depending on weather conditions and the thickness of the fish layer. A significant characteristic of the drying practice in Sedanau is that these mats and racks are often placed along roadsides, pedestrian paths, or community areas that are shared with local residents. This placement is driven by the practical need to maximize sun exposure and available space, as most production units do not have dedicated drying yards large enough to accommodate full output volumes. The final stage is the marketing and sales process, in which the dried anchovy are packaged, often in simple plastic bags without formal labelling, and sold to local buyers, traveling traders, or distributed to markets in neighboring districts and beyond. Pricing is determined informally based on current market rates and negotiation between producers and buyers, with no standardized grading system applied to the finished product.

The Anchovy Production Process in Sedanau from the Perspective of Islamic Economics

When the anchovy production process in Sedanau is examined through the lens of Islamic economics, the findings reveal a picture that is simultaneously affirming in certain respects and deeply problematic in others. Islamic economics does not evaluate productive activity solely on the basis of its economic output; it applies a comprehensive normative framework that assesses every stage of production against principles of *halal*, *tayyib*, honesty (*shiddiq*), trustworthiness (*amanah*), social responsibility, and the avoidance of harm (*mafsadah*) to consumers and the broader

community. Against this framework, the anchovy production enterprise in Sedanau presents both areas of conformity and areas of clear deviation that carry significant religious and practical implications.

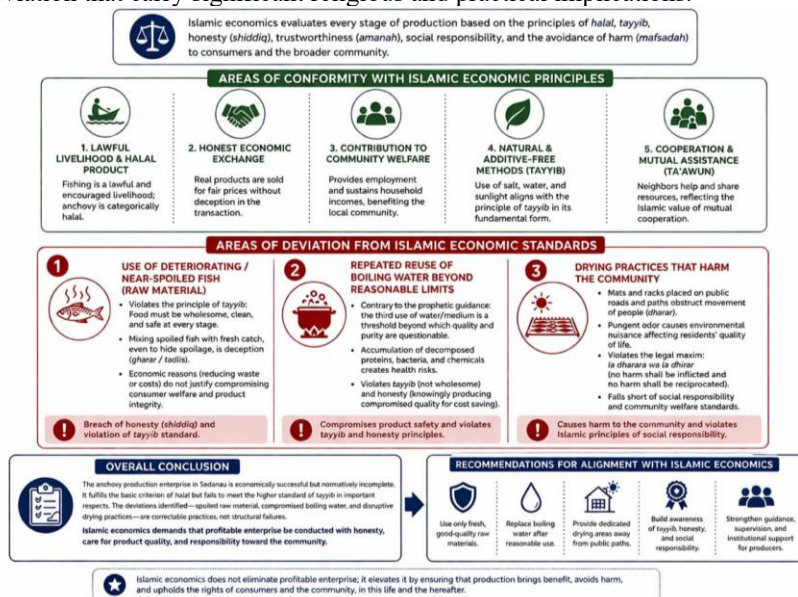


Figure 3. The Anchovy Production Process in Sedanau from the Perspective of Islamic Economics

In terms of conformity, the general structure of the anchovy production enterprise in Sedanau is consistent with the foundational principles of Islamic economics in several meaningful ways. The activity of fishing itself is a lawful and encouraged livelihood in Islam, and the anchovy as a product is categorically *halal*. The business operators in Sedanau engage in honest economic exchange, they sell real products for fair prices without deception in the transaction itself, and the enterprise genuinely contributes to the welfare of the community by providing employment and sustaining household incomes. The use of natural, additive-free production methods, relying primarily on salt, water, and sunlight, is broadly consistent with the Islamic principle of *tayyib* in its most fundamental expression. The communal and cooperative dimensions of the production activity, in which neighbors assist one another and share resources, also reflect the Islamic economic value of *ta'awun* (mutual cooperation), which is considered a virtue in economic life.

However, the findings also reveal three critical areas where the production process in Sedanau deviates substantially from Islamic economic standards, and these deviations are not minor or incidental, they strike at the core of what Islamic economics demands from producers. The first and most serious deviation concerns the use of deteriorating or near-spoiled fish as raw material. In the Islamic economic framework, the concept of *tayyib* demands that food products be genuinely wholesome, clean, and safe for human consumption at every stage of production, not merely at the point of final sale. The intentional use of fish that has begun to decay, even when mixed with fresh catch to reduce visible signs of spoilage, constitutes a fundamental violation of the *tayyib* standard and, more critically, a breach of the honesty principle that Islam places at the center of all productive and commercial activity. A producer who knowingly incorporates spoiled raw material into a food product that will be consumed by others has engaged in a form of deception (*gharar* or *tadlis*) that Islam categorically prohibits. The economic rationalization, that using deteriorating fish reduces waste and lowers raw material costs, does not constitute a legitimate justification in Islamic economic thought, where the welfare of the consumer and the integrity of the product are non-negotiable obligations.

The second deviation concerns the repeated reuse of boiling water beyond reasonable limits. In the Islamic jurisprudential tradition, there is a well-known principle derived from prophetic guidance that the third use of water or any processing medium marks a threshold beyond which its quality and purity become questionable, a principle

that has been applied by classical scholars to food preparation contexts. In Sedanau, the documented practice of reusing boiling water far beyond this threshold has direct health implications: water that has been used repeatedly accumulates decomposed protein residues, bacterial matter, and chemical compounds released from the fish, making it a potential source of contamination for subsequent batches. From an Islamic economics perspective, this practice violates the *tayyib* standard on two levels: it produces a product that is not genuinely wholesome, and it does so knowingly, which implicates the honesty principle. A producer who is aware that their processing method compromises product quality but continues the practice for the sake of cost reduction has allowed economic self-interest to override the religious obligation to deliver a *tayyib* product.

The third deviation concerns the drying practice and its impact on the surrounding community. The placement of fish-drying mats and racks along public roads and pedestrian paths in Sedanau creates two distinct problems. First, it physically obstructs the movement of community members who need to use these shared spaces, constituting a form of harm (*dharar*) to others, an outcome that Islam explicitly prohibits under the foundational legal maxim *la dharara wa la dhirar* (no harm shall be inflicted and no harm shall be reciprocated). Second, the pungent odor produced by fish drying in open public spaces creates an environmental nuisance that affects the quality of life of neighboring residents. Islamic economics, rooted in the *maqasid al-shariah* framework that prioritizes the protection of life, health, and community welfare, holds that no productive activity is fully permissible if it systematically imposes environmental or social costs on the surrounding community without their consent or compensation. The drying practice in Sedanau, understood in this normative light, falls short of the social responsibility standard that Islamic economics demands from producers operating within a shared communal environment.

Taken together, the findings of this study reveal that the anchovy production enterprise in Sedanau is economically successful but normatively incomplete. It fulfills the basic criterion of halal in terms of the lawfulness of the commodity and the general legitimacy of the commercial exchange, but it fails in important respects to meet the higher standard of *tayyib* that Islamic economics applies to both the process and the product of production. The deviations identified — spoiled raw material, compromised boiling water, and disruptive drying practices — are not structural failures of the enterprise as a whole; they are correctable practices that, if addressed, would bring the production process into genuine conformity with Islamic economic principles. Islamic economics does not demand the elimination of profitable enterprise; it demands that profitable enterprise be conducted with honesty, care for product quality, and responsibility toward the community, standards that the anchovy producers of Sedanau are fully capable of meeting with the right guidance and institutional support.

DISCUSSION

The Anchovy Production Process in Sedanau, Bunguran Barat District, Natuna Regency

The findings regarding the anchovy production process in Sedanau, encompassing the four sequential stages of harvesting, boiling, drying, and marketing, both confirm and extend the theoretical framework established in prior scholarship on fishery-based MSME production in Islamic economic contexts. The finding that the production cycle operates with a high degree of functional efficiency, generating consistent economic output and sustaining community livelihoods, is broadly consistent with the argument advanced by JIEP (2025), who demonstrated that fish processing MSMEs in coastal communities possess substantial productive capacity that constitutes a meaningful pillar of local economic empowerment.

However, this study moves beyond that framework by revealing that operational efficiency at the economic level does not automatically translate into process integrity at the normative level, a distinction that prior studies focused on production capacity have insufficiently addressed. The finding that harvesting, boiling, drying, and marketing are carried out in a continuous and community-embedded cycle without formal procedural standards or documented quality controls reinforces and deepens the concern raised by Maflahah et al. (2025), who found that halal supply chain management implementation remains limited and inconsistent among small and micro-scale fish processing enterprises in Indonesia. What this study contributes beyond that finding is the specific identification of how this implementation gap manifests at each stage of a traditional anchovy production cycle in a remote coastal

setting, a level of stage-specific operational detail that the broader HSCM literature has not previously provided for this commodity type.

The Anchovy Production Process in Sedanau from the Perspective of Islamic Economics

The normative evaluation of Sedanau's anchovy production process against Islamic economic standards yields findings that simultaneously confirm established theoretical positions, deepen their empirical grounding, and introduce a new analytical proposition regarding the nature of partial *halal* compliance in informal food enterprises. The finding that the production enterprise broadly satisfies the criterion of *halal* in terms of commodity lawfulness and commercial legitimacy, but fails to meet the higher *tayyib* standard across multiple production stages, directly confirms and strengthens the theoretical distinction articulated by Idris et al. (2024), who argued that food may be categorically *halal* while simultaneously falling short of *tayyib* requirements due to compromised processing conditions, and that this distinction carries significant implications for both consumer welfare and producer religious obligation.

This study's findings provide concrete empirical evidence of exactly this theoretical scenario operating at the community level in a specific production context, lending new empirical substance to what had previously been articulated primarily as a conceptual proposition. The most critically significant finding, the use of deteriorating raw material in the anchovy production process, powerfully reinforces the position of Samsidar et al. (2024), who established that the Islamic business ethics principles of *shiddiq* and *amanah* impose non-negotiable obligations of honesty in raw material handling, and that any knowing incorporation of compromised inputs into food products intended for consumer consumption constitutes a violation of these principles regardless of the economic rationale offered.

CONCLUSION

This study concludes that the anchovy production process in Sedanau operates through four sequential stages with considerable economic efficiency, yet reveals three critical deviations from Islamic economic standards: the use of deteriorating raw material violating the *shiddiq* and *tayyib* principles, the repeated reuse of boiling water compromising food safety, and the arbitrary placement of drying mats in public spaces violating the prohibition against *dharar*. These deviations carry direct implications for SDG 2, SDG 3, SDG 8, and SDG 10, representing concrete risks to consumer health, environmental quality, and community welfare that disproportionately affect economically vulnerable coastal populations.

Three operationally specific recommendations are therefore advanced. The Natuna local government should establish dedicated collective drying facilities adjacent to existing production clusters to directly resolve the public space violation. Regional agencies, in coordination with Islamic scholars and fisheries extension officers, should deliver community-based *halal-tayyib* production training covering raw material freshness standards and permissible limits of boiling water reuse. Local governance mechanisms should further incorporate periodic monitoring of anchovy processing practices into the broader coastal food safety framework. Together, these measures ensure that the economic success of this community is built on foundations that are ethically sound, socially responsible, and religiously legitimate.

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