

Study on the Implementation of Good Manufacturing Practices and Sanitation Standard Operating Procedures in Frozen Tuna Products at a Fish Processing Unit

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ABSTRACT

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Tuna is one of the most important fishery commodities for export. Commodities that can be exported must first have certificates of feasibility for class A and class B fish processing. Class A fish processing feasibility certificates are used for export at the international level while those in class B are used for exports at the Asian level. The initial certifications that need to be met are Good Manufacturing Practices (GMP) and Sanitation Standard Operation Procedure (SSOP). The aims of this study was to determine the profile of the Fish Processing Unit (UPI) with processing feasibility certification with A and B qualifications for tuna commodities through the application of Good Manufacturing Practices (GMP) and Sanitation Standard Operation Procedure (SSOP) and deviations that occur in Fish Processing Units (UPI). The method used in this study is a quantitative descriptive observational design. The results show that many of the results of supervision of feasibility certificates for processing medium-large scale fish processing units in East Java still have a B qualification. From the results that tuna is still widely exported at the Asian level.

INTRODUCTION

Tuna is one of the important fisheries commodities, classified as a pelagic fish. A 165 g serving of tuna contains 191 kcal, 42 g of protein, 1.4 g of fat, 2.52 mg of iron, 0.577 mg of vitamin B6, and 4.93 mg of vitamin B12 (Patricia et al., 2022). The production of tilapia reached 358,626.16 tons in 2021, marking a 19.22% increase compared to the previous year, which was 300,803.5 tons (Central Bureau of Statistics, 2022).

Due to the significant production value of tuna, it is widely processed into various fishery products. The units responsible for processing fishery products are referred to as Fish Processing Units (FPU). The processing activities may include salting, smoking, freezing, cooling, steaming, canning, fermentation, and minced meat processing (Ministry of Marine Affairs and Fisheries Regulation, 2016). As of 2018, there were 122 medium to large-scale fish processing units in East Java,

decreasing to 113 in 2019. Meanwhile, the number of micro-scale processing units reached 7,263 in 2018 and 10,624 in 2019 (Central Bureau of Statistics, 2021).

In 2021, tuna exports amounted to 174,764,040 kg, a decline compared to 2020, when exports reached 195,759,299 kg. In 2019, tuna exports totaled 184,130,234 kg (Central Bureau of Statistics, 2022). This fluctuating export data may be attributed to the quality of the exported commodities. The quality is based on Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP), as well as additional provisions from Codex. The application of these basic requirements focuses on proper production practices (GMP) and sanitation standards (SSOP). Both GMP and SSOP should be implemented in all types of fishery businesses, whether modern or traditional. An effective quality management system in all areas of food processing ensures product quality and safety. Sanitation practices include general maintenance of buildings or facilities, cleaning materials, pest control, surface sanitation, equipment handling and storage, and waste disposal (Winarno and Surono, 2014). Therefore, audits can be conducted to assess the eligibility of FPU for export in compliance with Codex regulations, provided they meet GMP and SSOP standards.

One major issue is the low quality of fishery commodities. Prior to 2015, the number of export rejection cases exceeded 10, with the highest number of rejections occurring in China in 2009 (12 cases), Italy in 2012 (9 cases), and Russia in 2010 (7 cases). In 2015, the highest number of export rejection cases was 2, each in Canada, Russia, France, and the United Kingdom. The reasons for rejection vary by country. For example, the US FDA identifies four categories of causes for rejecting imported commodities into the United States: the presence of pathogenic bacteria or toxins, the use of banned chemicals or those exceeding maximum limits, the presence of foreign materials that should not be in the product (filth), and misbranding. The majority of rejections of Indonesian fishery imports (80%) are due to pathogenic bacteria (Rinto, 2017). Furthermore, in 2020, 259 FPU received an A rating, 312 received a B, and 16 received a C. In 2021, 167 FPU received an A, 368 received a B, and 26 received a C. In 2022, 188 FPU were rated A, 334 were rated B, and 33 were rated C.

Thus, the aim of this study is to examine the profiles of Fish Processing Units (FPU) with processing certification ratings of A and B for tuna commodities through the implementation of Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP), as well as identifying deviations occurring within these units.

METHOD

Materials and Equipment

The tools used in this research include questionnaires, pens, and a camera for documentation purposes.

Research Methodology

This study employed a descriptive quantitative observational design. The data sources used in this research include certification completeness data and certification questionnaires for medium-to-large-scale fish processing units (FPU) in East Java. The quantitative data were derived from raw questionnaire data, which were first analyzed using the Kolmogorov-Smirnov test to determine whether the data followed a normal distribution. Subsequently, a One-Way ANOVA test was performed, and if significant differences were found, the analysis was followed by the Mann-Whitney test.

Table 1. Eligibility Value Criteria *

Value	Criteria Value			
	Minor	Major	Cerius	Critical
<i>Grade A (Very good)</i>	0–6	0–5	0	0
<i>Grade B (Good)</i>	≥7	6–10	1–2	0
<i>Grade C (Enough)</i>	NA	≥11	3–4	0
<i>Grade D (Not qualified)</i>	NA	NA	≥5	≥1

*DITJEN P2KP KKP, 2017

Explanation:

1. Minor deviation: A deviation that, if not corrected, affects food quality.
2. Major deviation: A deviation that, if not corrected, has the potential to affect food safety.
3. Serious deviation: A deviation that, if not corrected, will affect food safety.
4. Critical deviation: A deviation that, if not corrected, will immediately affect food safety.

RESULT AND DISCUSSION

Profile of Fish Processing Units (FPU)

The profile of Fish Processing Units (FPU) includes several units spread across East Java. The supervision data for processing certification of medium-to-large-scale FPUs consists of data from 2020 and 2022.

Table 2. Processing Feasibility Certificate Supervision Result Data Medium-Large Scale Fish Processing Unit in 2020

Nama Perusahaan	Ketidaksesuaian				Jumlah	Ket
	Kritis	Serius	Mayor	Minor		
PT. MMUJ	0	0	4	0	4	A
PT. BBN	0	0	4	1	5	A
CV. GSM	0	0	3	3	6	A

Nama Perusahaan	Ketidaksesuaian				Jumlah	Ket
	Kritis	Serius	Mayor	Minor		
PT. BFI	0	0	5	2	7	A
PT. S	0	0	5	4	9	A
PT. GIR	0	0	5	5	10	A
PT. LSS	0	0	4	7	11	A
CV. ST	0	2	3	2	5	B
UD. PAM	0	2	2	4	6	B
PT. SBLTI	0	1	6	2	8	B
CV. SATC	0	2	7	3	10	B
CV. HM	0	0	6	4	10	B
PT. BL	0	2	8	2	10	B

Based on the data above, it is shown that there are 5 companies with serious deviations, with their processing certification rated as B. Meanwhile, major and minor deviations were found in all companies. This indicates the importance of determining the certification value of Fish Processing Units (FPU). Serious deviations need to be given special attention and corrective actions should be taken to improve the certification rating of the FPU.

Table 3. Processing Feasibility Certificate Supervision Result Data Medium-Large Scale Fish Processing Unit in 2022

Nama Perusahaan	Ketidaksesuaian				Jumlah	Ket
	Kritis	Serius	Mayor	Minor		
PT. MMUJ	0	0	4	0	4	A
PT. BBN	0	0	3	1	4	A
CV. GSM	0	0	3	3	6	A
PT. BFI	0	0	1	5	6	A
PT. S	0	0	5	4	9	A
PT. GIR	0	0	5	5	10	A
PT. LSS	0	0	4	7	11	A
CV. ST	0	2	3	2	7	B
UD. PAM	0	0	6	2	8	B
PT. SBLTI	0	3	4	2	9	B
CV. SATC	0	0	6	4	10	B

Nama Perusahaan	Ketidaksesuaian				Jumlah	Ket
	Kritis	Serius	Mayor	Minor		
CV. HM	0	2	6	2	10	B
PT. BL	0	2	5	4	11	B

Based on Table 3, it shows that there were 4 companies with serious deviations in 2022. In the 2020 assessment, there were 5 companies with serious deviations. This indicates that there has been progress or improvement in 1 company that no longer experiences serious deviations, namely UD. PAM.

Minor Deviations Observed in Fish Processing Units (UPI)

Minor deviations commonly observed in UPIs are related to inadequate ventilation in the companies. Many UPIs exhibit poor ventilation, which is insufficient. Additionally, most UPIs lack proper facilities for cleaning equipment. According to Regulation KEP.01/MEN/2007, Chapter V, B.3,6, equipment must be made from materials that are easy to clean and have separate cleaning areas. In many UPIs, the cleaning areas for raw materials and equipment are not adequately separated, leading to potential contamination between raw materials and equipment.

In order to address these issues, UPIs need to improve their ventilation systems to better manage air circulation and ensure effective cleaning facilities. Separating cleaning areas from raw material storage is crucial to prevent contamination.

Major Deviations Observed in Fish Processing Units (UPI)

One major deviation in various UPIs is inadequate vector control in raw material areas. The presence of vectors in these areas can cause cross-contamination and compromise sanitation. This also poses a risk of disease transmission to employees, in violation of Regulation KEP.01/MEN/2007, Chapter V, B.10.

To resolve this, effective vector control measures should be implemented, such as installing mosquito nets, insect traps, or using safe, regulated pesticides. Regular monitoring and good hygiene practices are also necessary to reduce vector breeding grounds like stagnant water or leftover food waste.

Serious Deviations Observed in Fish Processing Units (UPI)

Serious deviations in various UPIs relate to the location and environment of

the facilities, including potential contamination risks from the surrounding areas. This is in violation of Regulation KEP.01/MEN/2007, Chapter V, B.9, points 2.1; 2.2; and 2.3, which require clean locations and environments. Evidence of serious deviations includes unseparated production and raw material storage areas, and improper floor slopes in cleaning areas. Additionally, the condition of the processing floors and the inadequacy of toilets are serious issues that do not meet the standards outlined in Regulation KEP.01/MEN/2007, Chapter V, B.3 and C.5.b.3.

To address these serious deviations, UPIs must separate production areas from raw material storage, correct floor slopes to ensure cleanliness, and handle water pooling in cleaning areas. Toilets should be equipped with soap and disinfectants, and their number should be increased.

Evaluation of Good Manufacturing Practices (GMP)

Good Manufacturing Practice (GMP) guidelines are essential for ensuring that food products meet consumer quality expectations (Thaheer, 2005). The implementation of GMP is a basic requirement for Fish Processing Units (UPI) seeking production permits (SKP). The evaluation revealed that UPI X does not meet GMP standards set by the Directorate General of Processing and Marketing of Fishery Products (P2HP) in 2013 due to building layout issues that facilitate cross-contamination and allow animals into production areas.

Research by Amin et al. (2018) indicates that failure to meet GMP standards negatively affects production levels. Thus, improvements are necessary in building layout, production processes, and building conditions to comply with GMP standards.

Key improvements include better separation between production and storage areas, preventing animal access, and maintaining building conditions with regular upkeep. Adhering to GMP standards will enhance product quality, consumer trust, and employee safety, and improve overall productivity and economic benefits.

CONCLUSION

The results indicate that the supervision of the processing suitability certification for medium-large scale fish processing units in East Java shows that many units still receive a B qualification. This suggests that tuna commodities are still largely exported within the Asian market. The main reason for this is the presence of serious deviations and deficiencies in the implementation of Good

Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP).

These serious deviations in fish processing need immediate rectification to meet product quality and safety standards. Proper implementation of GMP and SSOP is crucial to ensuring that fish processing units meet the required sanitation standards, including production environment cleanliness, worker hygiene practices, and appropriate layout and equipment usage.

Moreover, gaps in the application of GMP and SSOP can impact the competitiveness of fish products in the international market. By improving and fully implementing these standards, medium-large scale fish processing units in East Java can enhance product quality and safety, allowing them to compete with similar products from other countries.

Improving GMP and SSOP practices will also provide long-term benefits, such as increasing consumer trust in fish products from East Java, boosting the competitiveness of the regional and global fisheries industry, and creating a safer and healthier work environment for employees. Therefore, collaborative efforts are needed between the government, producers, and relevant institutions to improve GMP and SSOP implementation in medium-large scale fish processing units in East Java, thereby driving higher product quality and safety standards.

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