

MARKETING | RESEARCH ARTICLE

Breaking into the Global Market: Strategies and Challenges of Export Risk Management for Canned Blue Swimming Crab (*Portunus pelagicus*) at PT. MAP Central Java, Indonesia

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ABSTRACT

This study aims to analyze the strategies and challenges of risk management in the export marketing of canned blue swimming crab (*Portunus pelagicus*) at PT MAP in Central Java. The research employs a descriptive qualitative approach through surveys, direct observation, and interviews with relevant stakeholders in the company. The results identify four main risks in canned crab exports: (1) export delays due to non-compliance with FDA or SNI standards, (2) fluctuating raw material availability, (3) pure risks such as temperature instability in containers and natural disasters, and (4) payment risks including defaults and currency fluctuations. To mitigate these risks, PT MAP implements strategies such as strict quality standards (HACCP, ISO 22000), supplier diversification, real-time monitoring technology (IoT), and financial instruments like Letters of Credit (L/C) and export credit insurance. The findings underscore the importance of proactive and adaptive risk management in response to global market dynamics and provide recommendations for the fisheries industry to enhance competitiveness through international certifications and multidisciplinary collaboration.

Keywords: Risk Management, Export Marketing, Canned Crab, Risk Mitigation.

JEL Code: F14, Q22, G32, M31, L66.

I. Introduction

Blue crabs (*Portunus pelagicus*) are one of Indonesia's top export commodities, and the country is one of the major producers of fisheries goods worldwide. Performance report KKP (2025) Pointing out that, along with shrimp, tuna, skipjack, mackerel, squid, octopus, seaweed, and other products, blue crabs—including crabs—have emerged as the main attraction of fisheries exports. 2023 the total export volume was 29.37 thousand tons, or USD 447.65 million. The blue crab export volume rose to 39.61 thousand tons in 2024, valued at USD 511.66 million.

Indonesian canned crab goods, particularly those from the Central Java region, have entered international markets, including the United States and the European Union. Companies like PT MAP, however, have several difficulties during the export process, including shifts in consumer demand, worldwide food safety regulations, and fierce competition (Agustina et al., 2014). Export activities have a positive impact on the country's economy. The report The State of World Fisheries and Aquaculture 2020 (FAO, 2020) noted that



in 2018, 67 million tons of fish (live weight equivalent) were exported internationally, with a total export value reaching USD 164 billion. This shows how exporting fishery products has become a major driver of economic growth, especially in developing countries like Indonesia. Research by Goestjahjanti et al. (2023) shows that an increase in export activity significantly drives the growth of Indonesia's GDP, especially during economic crises, as it adds to the country's foreign exchange reserves and strengthens economic stability. In addition, long-term exports have strengthened foreign exchange reserves, which are the foundation of national economic stability (Priyanto & Laksono, 2023). Furthermore, according to Zamzami et al. (2020), high export demand can create opportunities for the domestic workforce, thereby reducing unemployment. Export trade carries greater risks than local trade, claim Pradana & Rikumahu (2014). The uncertainty of future occurrences and results is referred to as risk. Anything that could make it more difficult for the company to accomplish its objectives is considered a risk. Imami (2019) emphasized that because national borders separate the buyer and seller, there is a greater chance that one side may conduct fraud during the transaction, making export commerce riskier. Exchange rate risk is also possible in export transactions involving several currencies.

According to Hakim & Sholeh (2023) Risk management is a series of procedures and methodologies used to identify, measure, monitor, and control risks arising from business activities. As Hillson & Murray-Webster (2017) explained that risk management also becomes very relevant. Namely, the company must have mechanisms to identify and mitigate the impact of risks before they occur. Enhancing organizational performance is the primary objective of risk management. Research indicates that applying risk management, particularly via the Enterprise Risk Management framework, greatly enhances human resource management and operational performance. (Tenrisau et al., 2025). Furthermore, optimum resource management and business profitability are influenced by risk management. (Hasanah & Arsyadona, 2024). Risk management is necessary, along with the increasing complexity of the external environment and other changes that can affect the company's activities. (Anggraini & Hidayat, 2025). Risks such as product rejection due to non-compliance with food safety standards, changes in trade regulations, and supply chain disruptions can significantly impact the export performance of companies. Therefore, a deep understanding of strategies and challenges in export marketing risk management is essential, especially for companies operating in the fisheries sector. (Prompatanapak & Lopetcharat, 2020). Given the complexity and unpredictability of this sector, risk management in the supply chain of fisheries products has drawn the attention of numerous researchers, highlighting crucial elements that affect compliance risks and recommending improving risk management systems to boost export competitiveness. Tran (2018) Highlights the significance of adhering to food quality and safety regulations in Vietnam's seafood supply chain. In Indonesia, (Indrotristanto et al., 2022) Developed mitigation strategies to reduce the risk of export rejection of fishery products due to food safety hazards. They highlight the importance of quantitative risk analysis and applying a food safety goal framework to determine the effectiveness of preventive measures.

Furthermore, a study by (Wattanukul et al., 2018) Shows that smart containers can enhance risk management by providing real-time tracking data in the seafood logistics chain. This enables faster risk detection and more effective decision-making at all operational levels. In the context of crab marketing in Indonesia, Agustina et al. (2014) Analyzed the distribution of crab marketing in Betahwalang Village, Demak Regency. They found that export-quality crabs were marketed to international markets, while lower-quality ones were sold in local markets. This study highlights the importance of efficiency in marketing distribution to improve margins and product competitiveness. According to a study by Skripnuk et al. (2021) Credibility attributes—aspects that cannot be examined before or after purchase—impact consumers' perceptions of food quality. These characteristics include details regarding the environmental impact, the production process, and other moral considerations. Consumer confidence in exported fisheries goods can be increased by providing precise and transparent information about these characteristics.

These studies provide a strong basis for understanding the complexity of risk management in the export marketing of fishery products. However, there is still a need for descriptive studies that describe real practices in the field, as will be conducted in this study, to provide practical insights for industry players. This study aims to describe descriptively the strategies and challenges faced by PT MAP in managing the marketing

risks of canned crab exports. With a narrative approach based on observations during research activities, it is hoped that this study can provide insight into other fisheries industry players facing the export market dynamics.

II. Literature Review and Hypothesis Development

2.1. Risk Management in Export Marketing of Fishery Products

Risk management is an important aspect in the export marketing of fishery products due to various uncertainties that can affect the success of sales in the international market. Common risks include product rejection due to non-compliance with food safety standards, trade regulation changes, and supply chain disruptions. (Indrotristanto et al., 2022; Tran, 2018). Therefore, implementing an effective risk management strategy is essential to maintain the sustainability of exports and the competitiveness of fishery products in the global market. One of the effective risk management strategies in fishery product exports is implementing the Hazard Analysis and Critical Control Points (HACCP) system. This system focuses on identifying, evaluating, and controlling hazards significant to food safety. By implementing HACCP, companies can ensure that exported fishery products meet international food safety standards, thereby reducing the risk of rejection in the destination market. For example, a study by Tran (2018) Emphasizes the importance of compliance with quality and food safety standards in the seafood supply chain in Vietnam. The study identifies critical factors affecting compliance risk and suggests strengthening the risk management system to enhance export competitiveness. In addition, using technologies such as smart containers can improve risk management by providing real-time tracking data in the seafood logistics chain. This allows for faster risk detection and more effective decision-making at all operational levels. (Wattanakul et al., 2018).

2.2. Risk of Compliance with Food Safety Standards

One of the main challenges in exporting fishery products is meeting the strict food safety standards in the destination markets. According to Tran (2018) Lowering the chance of export rejection and boosting global consumer confidence depend heavily on adherence to food quality and safety regulations. This requires businesses to put in place reliable quality control and management systems. Effective risk management techniques, such as food safety systems like HACCP (Hazard Analysis and Critical Control Points) and ISO 22000, must be implemented by businesses to address these hazards. The research also identified three groups of critical factors that influence the risk of non-compliance in the seafood supply chain in Vietnam: (1) internal challenges in the supply chain, such as raw material quality and supplier management; (2) complex regulatory and standard characteristics; and (3) the business environment, which includes government support and industry associations. This research emphasizes the importance of collaboration between industry players, the government, and other stakeholders to reduce compliance risks and enhance export competitiveness.

A qualitative study on the rejection of fisheries product exports because of food safety concerns was carried out in Indonesia by Indrotristanto et al. (2022). They discovered that several issues led to export rejections, including inadequate risk management procedures, incorrect product handling, and a failure to take corrective action. To increase the efficacy of preventative measures, this study suggests putting quantitative risk analysis and a framework for food safety objectives into practice. Businesses can detect, assess, and manage serious risks to food safety by putting food safety management systems like HACCP and ISO 22000 into place. This system consists of hazard analysis, identifying essential control points, monitoring, and verifying that the exported goods meet international standards.

2.3. Using Technology to Manage Supply Chain Risk

Risk management in the export fishing supply chain is essential to guarantee the seamless delivery of goods to foreign markets. Potential problems interrupting the export process can be avoided with a preventive strategy that identifies upstream and downstream risks. Business actors must coordinate and provide transparent data to consistently follow quality standards and avoid export rejections and financial losses. Technology in supply chain risk management refers to applying digital solutions to identify, monitor, and mitigate risks that can disrupt the smooth distribution of products, especially in the context of fishery product exports. This technology provides real-time visibility, transparency, and predictive capabilities that help companies make timely and effective decisions. Several types of technology used in supply chain risk management include:

- a. Frost-sensor: This tool-based cold chain monitoring using IoT platforms in the food industry shows that real-time temperature and humidity sensors can maintain optimal environmental conditions during distribution, thereby minimizing product damage (Aguiar et al., 2022).
- b. Smart Containers: These containers have real-time sensors that track their location, temperature, and humidity. This is crucial to improve risk management in logistics, including quality control of food and fish products (Wattanukul et al., 2018).
- c. Internet of Things (IoT): IoT gadgets enable real-time data collection (GPS, RFID, environmental sensors), creating complete visibility in the supply chain and supporting risk analysis and supply chain resilience (Zrelli & Rejeb, 2024).
- d. Blockchain: According to Sermpinis & Sermpinis (2018) This technology offers an unchangeable and transparent recording system that guarantees data integrity and makes monitoring products from their source to the final customer easier.
- e. Artificial Intelligence (AI) and Machine Learning. This technology is used to analyze big data and predict potential disruptions in the supply chain, enabling companies to take proactive measures. Introduced an AutoML framework that uses XGBoost and LightGBM for predicting fraud activities, machine failures, and order delays, with an accuracy above 88%–93% (Wang et al., 2024).
- f. Transportation Management System (TMS): TMS helps in planning, executing, and optimizing goods delivery, as well as providing end-to-end visibility in the supply chain (Financial Times, 2025).

By implementing these technologies, fishery export businesses can increase operational effectiveness, lower the chance of product damage, and adhere to international food safety regulations, boosting their competitiveness in the worldwide market.

2.4. Indonesia Crab Marketing Case Study

Research by Agustina et al (2014) Analyzed the distribution of crab marketing in Betahwalang Village, Demak Regency. This research identifies two main marketing channels: (1) from fishermen directly to collecting traders, and (2) from fishermen to crab peelers before being sold to exporters. The results show that fishermen obtain lower profit margins than other marketing actors, due to the dominance of mini plants in setting prices and a capital loan system that binds the fishermen. Research by Laksono et al. (2023) Employed a quantitative method to examine the marketing effectiveness of blue crabs in Tuban Regency, East Java. Fishermen → intermediaries → local consumers and fishermen → intermediaries → miniplant → exporters were identified as the two primary marketing routes in this study. According to the findings, the first channel delivers a 70% fisherman's share, while the second only provides 49%. With an efficiency value of 26.5%, the miniplant marketing institution had the highest marketing efficiency. In order to create an export marketing plan, PT GTS's internal and external actors are examined using a SWOT analysis in a study by Malik (2015).

Since the company's results place it in quadrant I (aggressively), an ambitious expansion strategy that uses current possibilities and competencies is being adopted.

Nurhuda et al. (2019) A case study in Takalar Regency's Galesong District was conducted to examine the blue crab selling chain. According to this study, other marketing actors like collectors and exporters enjoy the remaining 30% of the ultimate selling price, whereas fishermen only receive around 30%. This study advises the creation of fishermen's cooperatives to improve their welfare and negotiating power.

2.5. Risk Mitigation Strategies in the Indonesian Fisheries Industry

In Indonesia, risk mitigation strategies in fishery product exports have been developed to reduce product rejection due to food safety issues. Indrotristanto et al. (2022) Stressed that quantitative risk analysis and applying a framework for food security objectives are essential to guarantee the success of these mitigation initiatives. The following are some instances of risk mitigation strategies used in the Indonesian fishing industry:

- a. **Supply Chain Application of the House of Risk (HOR) Method**
The House of Risk (HOR) method has proven effective in identifying risk agents and events in the fisheries supply chain, as seen in the anchovy study in Lekok (13 risks and 16 agents) (Defriyanti & Ernawati, 2021).
- b. **The Use of IoT Technology and Machine Learning in Fish Farming**
Integrating Internet of Things (IoT) technology and machine learning in fish farming enables real-time water quality monitoring and better decision-making. Research from (Dhinakaran et al., 2023) Created an Internet of Things (IoT)-based environmental control system that incorporates sensors and decision assistance based on machine learning to enhance the well-being and productivity of fish in ponds.
- c. **Establishing Climate Change Early Warning Systems**
The fishing industry is at serious risk from climate change. In order to safeguard fishermen and coastal infrastructure, early warning systems for storms, weather variations, and other sea conditions are becoming increasingly important. Heck et al. (2023) Describing how worldwide fisheries are extremely susceptible due to changes in sea temperature, water surface, and storm frequency, necessitating proper adaptation and early warning systems.
- d. **Implementation of ISO 31000-Based Risk Management System**
A risk management strategy based on ISO 31000:2018 is implemented by PT Perikanan Indonesia (2024) Implementing an ISO 31000-based risk management system. This approach entails methodical identification, evaluation, and mitigation of risks. This strategy assists the business in controlling risks and taking advantage of opportunities brought forth by business uncertainties.

The tactics highlight the significance of a comprehensive strategy for risk reduction in Indonesia's fishing sector, which considers management, technology, and environmental change adaptation.

III. Research Method

3.1. Type and Approach Research

This research uses survey and field observation methods to obtain empirical data on risk management in marketing canned blue crab (*Portunus pelagicus*) products at PT. MAP. The survey method was conducted by distributing open-ended questionnaires and unstructured interviews to employees involved in export activities. Meanwhile, direct observation was conducted to see the company's processes, marketing strategies, and risk management. This research was conducted from January to February 2025 at

PT. MAP is in Gajah District, Demak Regency, Central Java Province. The selection of this location is based on the role of PT. MAP is one of the area's active exporters of canned crab products. This approach aligns with the opinion of Sugiyono (2016), which states that survey and observation methods are suitable for obtaining factual and in-depth information about actual conditions in the field, especially in management and marketing research.

3.2. Location and Time of Research

This research was conducted at PT. MAP, a processing and export company for canned blue crab products, is in Gajah District, Demak Regency, Central Java Province. The selection of this location is based on the relevance of the company's export activities to the leading fishery commodity, namely blue crabs, as well as its ability to penetrate the international market. This research will take place from January to March 2025, coinciding with cadets' Field Work Practice (PKL) activities as part of the direct primary data collection.

3.3. Sources of Data

The survey results and question-and-answer questionnaires with the PT. The MAP person in charge served as the research data source. Researchers can use this method to gather detailed information about the canned crab product marketing phases. Primary and secondary data are the two data sources used in this study. Direct observation, documentation, interviews with pertinent individuals, and involvement in the business's marketing initiatives were all used to gather primary data. Literature, company records, information, and previously collected data are secondary sources.

3.4. Data Collection Techniques

The data collection techniques in this study were carried out through three primary methods:

- a. Direct Observation
The researcher conducted direct observations of the operational activities at PT. MAP, particularly those related to the export marketing process of canned crabs, including the risk management strategies implemented in the export activities.
- b. Unstructured Interviews
Interviews were conducted informally with several company staff involved in the export marketing chain. The aim is to delve into narrative and in-depth information regarding challenges and risk management strategies.
- c. Documentation Study
Supporting data were obtained through internal company documents such as export reports, SOP (Standard Operating Procedure), marketing activity archives, and secondary data from relevant scientific publications.

This strategy supports the assertion made by Vivek et al. (2023) Producing rich and trustworthy data in qualitative research requires integrating observation, interviews, and recording. (SimplyPsychology, 2024).

3.5. Analysis of Data

Data analysis in this study uses a qualitative analysis approach. That is conducted naturally with the researcher as the primary instrument. Data collection methods such as observation, interviews, and document studies are used as multiple sources. The analysis is inductive and interpretative, where themes and patterns are developed from raw data and the researcher's reflection on their biases (SimplyPsychology, 2024). The

first step in the analytical process is gathering primary data through interviews. Secondary data from company papers and literature reviews follows this. In order to show the marketing process of canned blue crab (*Portunus pelagicus*) export products, identify different types of risks that occur in export marketing activities, and assess the tactics used by PT. MAP to prevent and manage those risks, the acquired data is then descriptively analyzed. This analysis aims to provide a comprehensive and in-depth understanding of export marketing risk management in companies and offer recommendations based on empirical findings in the field.

IV. Results and Discussion

4.1. Analysis Result

This study used a descriptive qualitative approach with survey methods and direct observation at PT MAP. Data was collected through interviews, questionnaires, and internal documentation at the company. Afterward, thematic analysis was conducted to identify the risks of exporting canned crabs.

4.1.1. Canned Blue Crab Exports

Canned crab products (*Portunus pelagicus*) from PT. MAPs are exported to several countries in North America, Europe, and Asia-Pacific—the primary target market of PT. MAP is the United States. In order to expand its business network and introduce its products to potential buyers, the company participates in the international trade exhibition, the Boston International Seafood Expo. The export process for this product is carried out using the PO or Purchasing Order system. The company produces according to the buyer's request, regarding specifications and product quantity. The time required by the company from the ordering process until the goods are ready for export is one week or more, depending on the availability of raw materials. Meanwhile, the shipping takes 30 to 45 days. Each month's export volume is 2-3 containers, each 40 ft in size, with an average monthly total reaching 36 to 50 tons. In the fourth quarter of 2024, PT. MAP exported its products to America in the amount of 195.47 tons and to Hong Kong in the amount of 4.68 tons. PT runs the marketing process. MAP can be seen in the image below.

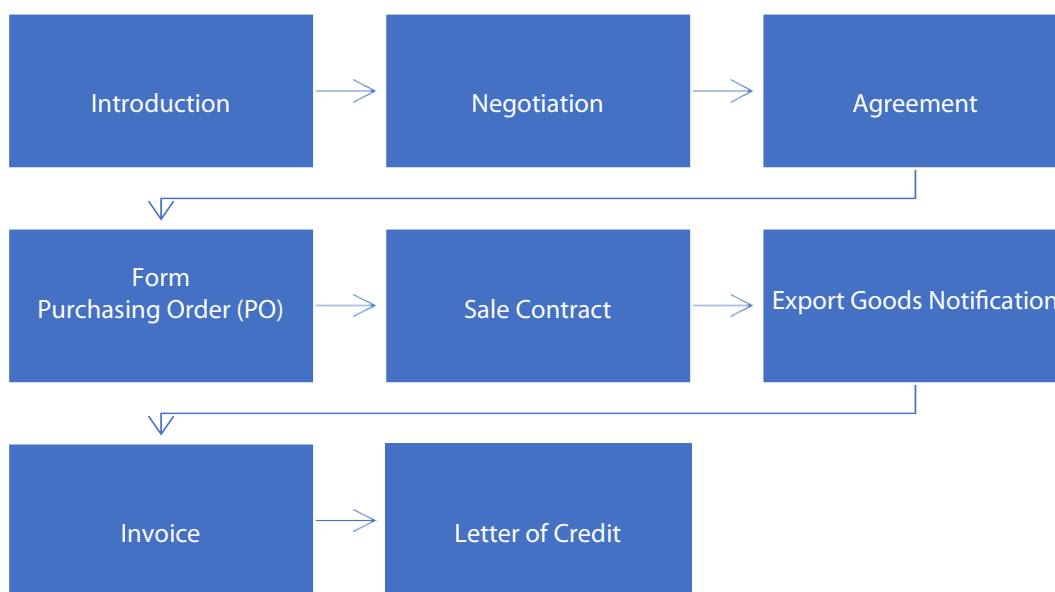


Figure 1. Marketing Process Flow of PT. MAP Products

The product export process begins with introducing the product to prospective buyers, so that buyers can find out about the canned crab products produced by PT. MAP. After getting to know the product and the company, the buyer and the company negotiate to agree on price, specifications, brand, and other provisions. After the negotiation, the buyer and the company have an agreement. Usually, the agreement is made in a contract. After the agreement is reached, the buyer will send a purchasing order (PO) form as a sign of an official request to send the goods. This PO form is a reference for starting the production process. After the production process is complete, the shipment is made. Before shipping, the exporter must submit an export notification document (PEB) to the customs and excise authorities. After all requirements are met and the customs and excise officers issue the PEB, the shipping process can be carried out and continued by issuing an invoice as a bill to the buyer. After the invoice is sent to the buyer, payment is made using a Letter of Credit (LC) payment guarantee.

4.1.2. Quality of Canned Crab Products

The products to be exported are of high quality and guaranteed quality. The company has met national and international standards as evidenced by halal certification, the Indonesian National Standard (SNI) Certificate of Good Manufacturing Practices (GMP), International Organization for Standardization (ISO) Hazard Analysis & Critical Control Point (HACCP), Processing Feasibility Certificate (SKP), Sanitation Standard Operating Procedure (SSOP), and many more certifications held by the company. Sanitation Standard Operating Procedure (SSOP) is a written procedure that food processors must use to meet sanitation conditions and practices. Food sanitation aims to achieve optimal cleanliness in production areas, storage, preparation, food serving, and water sanitation. These aspects are essential in every food handling method. (Pratama et al., 2017). SSOP is a standard procedure for implementing management carried out through sanitation and hygiene activities. SSOP aims to ensure that procedures and sanitation work efficiently to control safety hazards in fishery products. The implementation of SSOP at PT.MAP meets 8 SSOP keys, namely:

1. Water and ice safety.
2. Condition and cleanliness of surfaces in direct contact with food ingredients.
3. Prevention of cross-contamination.
4. Hand washing facilities and toilet sanitation.
5. Chemicals, cleaners, and sanitation.
6. Labeling, storage, and use of hazardous chemicals.
7. Supervise team member health and hygiene conditions.
8. Control of pests.

Hygiene was implemented at PT. MAP includes the cleanliness of all employees so as not to cause cross-contamination of products. All employees who enter wear special uniforms, masks, head coverings, and boots used explicitly in the production area. Before entering the production room, all employees must wash their hands with soap. All employees who enter are not allowed to use accessories, make-up, skincare, perfumes, and are not allowed to bring mobile phones except for the Team Leader (TL) and Quality Control (QC).

4.1.3. Export Quality Standards for Crab

Crab (*Portunus pelagicus*) is a leading Indonesian export commodity, especially in the form of pasteurized crab meat in hermetic packaging. To ensure product quality and safety, various quality standards are applied. The quality standards set for export products at PT. MAP includes national and international quality standards. The national quality standards set are the Indonesian National Standard or SNI, which are set by the regulations of the Indonesian government. Meanwhile, the international quality standards PT sets

are the Food and Drug Administration (FDA). The FDA is an American institution that operates in the food safety and hygiene of food products for American and European countries. The FDA has determined that using antibiotics such as chloramphenicol in food-producing animals is not permitted due to the potential risk to human health, including bone marrow disorders that can cause aplastic anemia (US FDA, 2025). Meanwhile, microbiological, chemical, and CAP (chloramphenicol) tests are carried out to meet the FDA's quality standards. Microbiological tests are carried out to determine the content of *Escherichia coli*, *Staphylococcus aureus*, and *Salmonella typhimurium*. Organoleptic testing is carried out for physical tests.

Meanwhile, CAP testing uses chemical testing to determine the levels of chloramphenicol according to the Chloramphenicol ELISA Kit; this is done with various specifications from the supplier. For raw materials that have been tested, if there is Chloramphenicol content, the raw materials will be returned to the supplier. Chloramphenicol is a broad-spectrum antibiotic effective against several types of bacteria and anaerobic germs. (Dian et al., 2015). The buyer conducts routine inspections to ensure product quality. Inspections for the Aquastar and Pier Port brands occur every time an export is carried out. Before shipping the goods, the initial step is the export preparation process, namely checking the container. The container is checked to see whether it is suitable and by company standards. Container checks include physical checks, aroma checks, and temperature checks.

Physical checks help ensure that the container walls are not damaged and that dampers have been installed on all sides of the walls. Aroma checks ensure that the container has a neutral aroma or odor. To neutralize the odor of the container, it is washed using chlorine. Next is temperature checks. Temperature checks help ensure that the container can reach the temperature specified by the company. If the container is in normal condition, the time needed to reach the optimal and even temperature at the back of the container is 20 minutes. The next stage is stuffing or arrangement. The arrangement starts with products with high specifications and then continues with specifications below them for safety reasons. The arrangement of products in the container must be even. The height of the product must not exceed the maximum limit in the container. The lines at the bottom must also not be completely closed to maintain product circulation. Inside the container, the company also adds a thermo recorder or temperature monitor placed in the master carton in a different position. The temperature monitor is connected to a smartphone so that if damage occurs, it can be detected from the device. This temperature monitor can only be used once and for only 50 days after being turned on. After the stuffing process is complete and the documents are complete, the container is sealed. Sealing serves as a sign that the contents of the container have never been opened since being sealed and meet customs requirements.

4.1.4. Export Risk

Risk is an undesirable possibility that can occur and cause losses. In export activities, many risks may occur. Perdana (2021) States that the smoothness of distribution and production can be affected by uncertainty in the supply chain, including the supply of raw materials. In order to reduce risk, Juliano et al. (2022) Emphasized the importance of a company's strategy in managing the volatility of raw material supply. Based on the results of interviews and observations during the research activities, the risks faced by PT are as follows: MAP was as follows:

1. Export delays due to product non-conformity with FDA (Food and Drug Administration) or SNI (Indonesian National Standard) standards

Export delays at PT MAP can occur because, during an inspection, a product is found that does not comply with the order or the standards that have been set. From this incident, the company will dismantle the can and replace it with a new product that meets the standards requested by the buyer. Meanwhile, new products will also go through inspection. If they are in accordance, the export process will be carried out. In this case, product quality in the export process is essential. According to Liu et al. (2023), there is a delay in

export resulting from the product's incompatibility. Provide information about the steps and mechanisms involved in the export process that might be related to product inspection and development. Subsequently, Sumarwanto et al. (2024) explain the steps and mechanisms in the export process that can be linked to product inspection and replacement. Because of this, there is a risk associated with the sale of kaleng rajungan products, which can hinder the production process and provide a significant obstacle for businesses, one of which is the payment delay.

2. The availability of fluctuating raw materials.

The availability of raw materials is one of the dangers that could occur during the marketing process. The supply of raw materials required for the production process is unclear due to the risk of raw material availability. The marketing of canned crab goods may be at risk, which could hold down manufacturing and have detrimental effects on the business, including late payments. According to the research, there is a danger that the availability of raw materials will impact the marketing process. Fraiha (2022) Describes how supply chain material delays may impact the company's cash conversion cycle and pricing. Furthermore, Gurtu & Johny (2021) State that risk management is crucial for the supply chain if they want to.

3. Pure risk (container temperature instability, natural disasters).

Pure risk is a risk accompanied by the possibility of loss and the absence of the possibility of gain. (Magdalena & Vannie, 2019), 2019). At the practice location, two pure risks may occur during export: container temperature instability and global security issues such as disasters, wars, etc. The instability of the container temperature causes losses because canned crab products have a storage temperature standard of 32°F or 0°C. Potential losses include decreased product quality, and the product may change texture, color, and taste. In addition, temperature instability can affect the shelf life of the product. This also causes economic losses, such as a decrease in selling price and loss of consumer trust. The study by Badia-Melis et al. (2015) This shows that canned crab products that require a constant temperature of 0°C are susceptible to temperature fluctuations. Meanwhile, global security risks can also cause losses because they can hinder the export process, such as damaging infrastructure, which can slow the product distribution. Global security risks, such as natural disasters, can disrupt loading and unloading activities at ports, change, or even cancel ship schedules. A report from UNCTAD (2024) Identifies the vulnerability of global supply chains due to disruptions at crucial maritime points such as the Suez and Panama Canals. The report also directly impacts the export and distribution processes, including a 50% decrease in ship traffic and increased shipping costs due to route diversions.

4. Payment risk (default, currency fluctuations)

Payment risk has many types, one of which is non-payment risk. Non-payment risk is a situation where the importer cannot pay the agreed amount of the invoice, or the exporter does not receive payment for the goods that have been exported. Several factors cause non-payment risk, including commercial, credit, political, and transfer risks (Imami, 2019). From the results of fieldwork practice and interviews, there is a risk of non-payment in export activities. One of the causes of the non-payment risk is that the destination country is experiencing a global security risk, namely war. However, there has never been a non-payment risk during the export activities at the practice location. However, the company still takes precautions to avoid non-payment risk by using export and shipping insurance.

4.1.5. Risk Mitigation Strategy

Risk mitigation is managing risks to determine the appropriate handling to address emerging risks (Fradinata et al., 2022). The application of risk mitigation is an instrument of risk management that can reduce

the negative impact of export risks. For that reason, Fradinata et al. (2022) recommend mitigation strategies that can be implemented, including strict supervision of quality standards (SNI and FDA), supplier diversification, the use of export credit insurance, and the Letter of Credit (L/C) instrument. The findings align with the study (Khotimah, 2020), which states that operational and financial risks dominate fishery product exports. Therefore, the existence of HACCP and ISO 22000 certifications will increase the trust of international buyers and reduce the risk of product rejection (Wahyuni et al., 2019). In this study, the following mitigation strategies are applied:

1. Mitigation of Export Delay Risk

Export delays often occur due to product non-compliance with the specifications the buyer requests. Among them are differences in quality, quantity, or other technical specifications. This necessitates the unpacking and re-manufacturing of the products, which delays the shipping process and potentially tarnishes the exporter's reputation. To prevent this, producers need to ensure that the products produced meet the standards set by international institutions and the destination countries. In Indonesia, implementing the Indonesian National Standard (SNI) on export products—such as tuna and skipjack fisheries—has proven to enhance product compliance with international standards and trading partners. However, some differences in technical requirements still need to be addressed through gap analysis. (Aprilia et al., 2023). In addition, product certification through accredited institutions, as regulated by the National Accreditation Committee (KAN), becomes a strategic step to ensure that the products meet internationally recognized quality and safety standards, including those by the Food and Drug Administration (FDA) in the United States. (Nugroho et al., 2017)

2. Mitigation of Raw Material Inventory Risk

The availability of raw materials is a crucial factor that will cause uncertainty in the production process. To address this, PT MAP implements a supplier diversification strategy. Establishing partnerships with suppliers who consistently meet the raw material needs. To ensure a smooth supply, the company is expanding its distribution network and increasing the coverage area for raw material absorption. This strategy aligns with research showing that supplier diversification can enhance supply chain resilience against disruptions and reduce the risk of dependence on a single supply source. (Ersahin et al., 2024; Handayani I.D., 2018, 2018). Thus, the company can minimize the risk of production delays and avoid buyer payment delays by ensuring a stable supply of raw materials.

3. Export Credit Insurance

PT MAP uses export credit insurance to reduce international buyers' default risk. This insurance protects exporters from economic and political hazards that can prevent buyers from paying or cause goods to be damaged during shipment. Heiland & Yalcin (2021) Found that export credit guarantees provided by the government can reduce export market uncertainty and improve export performance, especially for countries with high political risk. Additionally, PT MAP uses Shipping Insurance to protect its goods from damage during transit. With export credit insurance and Shipping Insurance, PT MAP can reduce financial risks and maintain smooth cash flow. This will help the company continue to operate and enhance its reputation in the international market.

4. Letter Of Credit

PT MAP uses a Letter of Credit (L/C) as a payment instrument in export transactions to reduce non-payment risk. L/C serves as a payment guarantee from the issuing bank to the exporter, which will only be paid after the exporter meets the conditions and submits the documents according to the terms of the L/C. This shifts the payment risk from the importer to the issuing bank, providing certainty for the exporter. Research by Raspita & Apriyanto (2024) explains that using L/C can facilitate international trade transactions by reducing uncertainty and increasing trust between exporters and importers. The process begins with a sales contract agreement that includes the specifications of the goods, quantity, payment method, shipping company, delivery schedule, and complete addresses of

both parties. After the contract is agreed upon, the importer requests the issuing bank to issue an L/C according to the agreed terms. The issuing bank then sends the L/C to the exporter, who subsequently ships the goods according to the contract terms and the L/C.

4.2. Interpretation and Implications

The research findings show that the risk of export delays and container temperature instability indicates the supply chain's vulnerability to technical and external factors. This reinforces the findings of Magdalena & Vannie (2019) That logistics uncertainty significantly impacts export performance. Then, PT will implement Thermo Data Logger and Shipping Insurance. MAP is a practical innovation to mitigate temperature risks, which aligns with the recommendation Bassett et al. (2022) Regarding the importance of real-time monitoring technology. Real-time temperature monitoring based on IoT can reduce the risk of product damage by up to 30% in fishery exports. Unfortunately, geopolitical risks such as wars and disasters remain challenging to control. Therefore, using L/C and export credit insurance has proven effective as payment risk mitigation amid geopolitical instability. (Rokoyah & Mediawati, 2024).

4.3. Significance and Broader Context

The results of this study also affirm that export risk management not only focuses on internal aspects but also requires adaptation to global dynamics. Research shows that fishery exports contribute to job creation and foreign exchange earnings, making risk mitigation key to economic sustainability. (Zamzami et al., 2020). In this case, PT. MAP successfully leveraged international certifications (Hazard Analysis Critical Control Point/HACCP and International Organization for Standardization/ISO) as a competitive advantage, in line with findings that global standard compliance enhances the competitiveness of fishery products. FAO stated in *Aquaculture Products: Quality, Safety, Marketing and Trade* (2018) that the implementation of the HACCP system and ISO certification helps harmonize international standards, facilitates access to global markets, and makes fishery products more trusted and easier to trade (Josupeit et al., 2000).

4.4. Comparison with Other Research and Implications for Future Research

The payment risk faced by PT. MAP is similar to PT. Eka Timur Raya, where the Letter of Credit (L/C) is the leading solution (Imami, 2019). However, this research reveals the weaknesses of L/C in facing political crises, which have not been thoroughly discussed in previous studies. Moreover, the findings regarding dependence on local raw materials strengthen the argument. Pratiwi & Kurniawan (2017) Supplier diversification is a critical strategy to reduce supply risk, especially in industries that rely on seasonal raw materials such as fisheries. The results of this study highlight the importance of conducting further research on developing risk management models that integrate big data analysis to predict supply chain disruptions (e.g., the use of AI to monitor raw material price fluctuations). Further research should also explore the impact of climate change on crab stocks, considering that a study FAO (2018) Predicts a stock decline due to global warming. Collaboration with international institutions such as the World Bank for political risk mitigation is also recommended.

4.5. Limitations and Unresolved Areas

This research has a limitation, namely a single case study with a qualitative approach, so the generalization of the findings requires validation through cross-company quantitative studies. (Mulyana et al., 2024). The reputational risk due to product rejection in the target market has not yet been investigated. This research still leaves open questions, including: (1) How effective is export credit insurance in facing a global economic crisis? (2) Can green certification (e.g., MSC eco-label) reduce trade risks?

V. Conclusion

From the research on "Breaking into the Global Market: Strategies and Challenges of Export Risk Management for Canned Blue Swimming Crab (*Portunus pelagicus*) at PT MAP Central Java," the following conclusions were obtained:

1. Export Risk Findings

This research reveals four dominant risks faced by PT MAP in the export of canned crabs:

a. Export Delays

This risk is primarily caused by the product's non-compliance with international (FDA) or national (SNI) food safety standards. For example, a buyer's inspection can reveal product specification discrepancies, forcing the company to redo the production process, which is time-consuming and costly. Case studies show that such delays disrupt delivery schedules and damage the company's reputation in the eyes of international trade partners.

b. Instability of Raw Material Supply

Fluctuations in the availability of fresh blue crabs as raw materials have become a significant operational hurdle. Seasonal factors, climate change, and dependence on local suppliers exacerbate this uncertainty. As a result, PT MAP often experiences production delays, which impact their ability to meet purchasing orders (POs) on time.

c. Pure Risk

Included in this are the temperature instability of the container during shipping, which can damage the product quality (for example, changes in texture or taste). Also, natural or geopolitical disasters (such as conflicts along shipping routes) that disrupt distribution. This uncontrollable risk significantly impacts the company's finances, especially if it results in product rejection in the target market.

d. Payment Risk

Export transactions are vulnerable to default due to currency exchange rate fluctuations, economic crises in the destination country, or trade partner fraud. PT MAP once faced this risk when one of the buyers in a conflict zone experienced liquidity difficulties.

2. Mitigation Strategies Implemented by PT MAP

To address the above risks, PT MAP adopts a multidimensional approach:

a. Implementation of Strict Quality Standards

The company uses the HACCP system, ISO 22000, and SSOP (Sanitation Standard Operating Procedures) to ensure that products meet FDA and SNI requirements. Concrete examples include microbiological testing (e.g., detecting *E. coli* and *Salmonella*) and monitoring container temperatures with a thermo recorder.

b. Diversification of Raw Material Suppliers

PT MAP does not rely on just one supplier. The company collaborates with several suppliers in various regions to minimize supply disruptions. This strategy is supported by previous research. Ersahin et al. (2024), which proves that supplier diversification enhances supply chain resilience.

c. Real-Time Monitoring Technology

Smart containers with IoT sensors enable temperature and humidity tracking during shipping. If any deviations occur, the logistics team can immediately take corrective action.

d. Financial Instruments to Secure Payments

PT MAP utilizes Letters of Credit (L/C) and export credit insurance to mitigate the risk of default. L/C guarantees payment through the bank, while insurance protects the company from losses due to force majeure (such as war or disaster).

The findings of this research have broad relevance. This study emphasizes that international certification (such as HACCP) is not merely a formality, but a competitive advantage that reduces the risk of product rejection. Additionally, collaboration with institutions such as the Ministry of Marine Affairs and Fisheries (KKP) is necessary to address raw materials and logistics challenges. This research enriches the literature with empirical evidence that proactive approaches (such as supplier diversification and IoT technology) are more effective than reactive responses. These findings are consistent with Tran (2018) Study on the seafood supply chain in Vietnam. For Government Policy, there is a need for incentives for fishery SMEs to adopt quality monitoring technology and export insurance, considering the contribution of this sector to foreign exchange and employment (KKP, 2025). Although it provides valuable insights, this research has several limitations: The analysis only focuses on one company (PT MAP), so the findings may not necessarily apply to other exporters with different scales or markets. Uncovered Risks; for example, reputational risk due to product rejection or the impact of climate change on crab stocks. Based on that, our study gives guidance for future Research:

1. Quantitative study to measure the effectiveness of mitigation strategies (for example, how much IoT reduces product damage).
2. Exploration of Green Policies, such as MSC (Marine Stewardship Council) certification, to meet sustainability demands in the global market.
3. Multidisciplinary Collaboration, such as with climatology experts, to predict the impact of climate change.

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