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# Analysis of Marketing Risk Mitigation Strategies in Shedded Tuna Fish Products Using Failure Mode and Effect Analysis (FMEA) and Analytical Hierarchy Process (AHP) Methods (Case Study: UMKM Abon Jaya Mandiri)

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**A B S T R A C T**

UMKM Abon Jaya Mandiri is a small business that processes tuna fish into shredded fish products. The marketed tuna floss products have several advantages, such as being a healthy option for families as they are made without the use of cooking oil and MSG, and they are certified with SNI standards. Despite these strengths, the business faces marketing challenges, including product damage, price competition, an unstrategic sales location, and minimal social media promotion. These challenges result in many products not being sold optimally each month. This study aims to, Identify marketing risks faced by UMKM Abon Jaya Mandiri. Assess and categorize marketing risks using the Failure Mode and Effect Analysis (FMEA) method. Provide risk mitigation strategies that can be implemented by UMKM Abon Jaya Mandiri. The research findings show the RPN values for each marketing activity. For promotion strategies, the risk of outdated social media content (R8) has a weight score of 0.510, with the priority alternative strategy being the use of content editing technology, scoring 0.594. This strategy involves using editing applications to attract attention on social media. For place strategy, the risk of incomplete address information (R6) has a weight score of 0.237, with the priority alternative strategy being mentoring employees, scoring 0.528. This involves guiding employees to always provide complete address details to customers unfamiliar with the business location. For pricing strategy, the risk of competitors lowering prices (R5) has a weight score of 0.182, with the priority alternative strategy being the implementation of a Standard Operating Procedure (SOP) for market research, scoring 0.633. This strategy seeks to minimize human error during the frying process, ensuring employees are knowledgeable about maintaining product quality to prevent mold growth.



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## 1. INTRODUCTION

The latest data from the Central Statistics Agency (2023) shows that tuna production in 2020 reached 819 tons, increasing by 12% to 922 tons in 2021. This increase in production presents significant opportunities for the tuna processing industry in Bontang (Caesari et al., 2023). As this industry continues to grow, competition among businesses in marketing processed tuna products, particularly shredded

tuna, has intensified. This competition requires each company to develop marketing strategies tailored to market demands. Understanding consumer behavior is key for companies to design effective marketing strategies. This is crucial to ensure that products such as shredded tuna can compete and be well-received by consumers (Rahayu, 2023).

One of the businesses involved in this industry is the UMKM Abon Jaya Mandiri. This UMKM is known as a producer of shredded tuna and other processed products, such as shrimp paste, bawis chips, and tuna chili sauce. Based on an interview conducted on June 10, 2024, with the business owner, Mrs. Astril Wedy, it was revealed that the UMKM produces approximately 1,184 packs of shredded tuna per month, with an average daily production of 74 packs. However, the average sales from January to July 2023 only reached 570 packs per month. This indicates a disparity between production and sales, which could impact the business's sustainability.

Based on the STP analysis (Segmentation, Targeting, and Positioning) of this MSME, the market segmentation for shredded tuna products is aimed at the residents of Bontang City. The business positions its product as a healthy family food, as shredded tuna is made without MSG or cooking oil and has been certified by the Indonesian National Standard (SNI).

However, despite these advantages, UMKM Abon Jaya Mandiri still faces several challenges in achieving its sales targets. Issues include product damage, price competition, an unstrategic sales location, and minimal promotion on social media. These challenges result in many products not being sold optimally each month.

To address these issues, effective risk management is necessary to protect the business from risks that may hinder the achievement of its objectives (Mulyawan, 2015). One approach that can be applied is the implementation of the Failure Mode Effects Analysis (FMEA) and Analytic Hierarchy Process (AHP) methods.

By applying these methods, it is expected that UMKM Abon Jaya Mandiri can reduce the risks it faces and ultimately achieve better sales targets in the future.

## 2. LITERATURE REVIEW

### 2.1 Risk Management

Risk is defined as the uncertainty caused by changes. The uncertainty factor that leads to the emergence of risk in an activity. From a business perspective, risk can generally be defined as the potential, possibility, or expectation of an event that could negatively affect revenue and capital (Arta et al., 2022).

Risk is the possibility of an event occurring that could harm the company. Essentially, risk is an event that has a negative impact on the company's goals and strategies. The likelihood of a risk occurring and its consequences for the business are fundamental aspects that need to be identified and measured (Sirait & Susanty, 2022).

Risk management is a field of study that examines how an organization implements measures to solve problems using a comprehensive management approach. The risk management process aims to understand and address potential losses in a clear and structured manner (Arta et al., 2022).

Risk management is related to various departments within a company, such as accounting, finance, marketing, production, personnel, engineering, and maintenance, as some departments create risks while others manage them. In marketing, risk management plays a role in handling risks that arise, such as during the delivery of products to customers. These risks must first be analyzed by risk management. Therefore, each marketing activity and risk management function must have clear and coordinated information (Arta et al., 2022).

### 2.2 Strategies

A strategy is a plan developed by a company executive that focuses on long-term goals that will improve the quality of the company's business. Of course, in every business he has a strategy to launch the business he has made. Strategy plays an important role in the

functioning of a business, whether it is a business in the wet noodle industry or any other business there is the best strategy to facilitate its business operations (Musyawarah & Idayanti, 2022).

### 2.3 Marketing

Marketing is dancing for people, in the marketing of goods, services, property, people, places, and others. marketing is everywhere formally or informally, organizations are involved in a large number of activities that can be done a good marketing is becoming an increasingly important ingredient for business success and influence in everyday life (Kotler & Keller, 2006).

Marketing is an organizational function and a series of exchange processes requiring a great deal of work and skill. The social process in which individuals or groups get what they need and produce with desire in creating, offering, and freely exchanging products and services of value from others. Marketing is a process of planning and implementing the conception, determination, pricing, promotion, goods, and services. Marketing is the art and science of selecting target markets and acquiring, retaining, and developing these customers through creation, delivery, or communication (Kotler & Keller, 2006).

#### 2.3.1 STP (Segmentation, Targeting, and Positioning)

According to Kotler & Keller, 2006, marketing starts with dividing the market into segments. The segments are STPD (Segmentation, targeting, and positioning) The following is an explanation of these segments.

1. Segmentation
   Market segmentation is the division of a market into several different groups of buyers who may require a product or marketing. The goal is that the segmentation that has been carried out is right on target. Segmentation is geographic, demographic, and psychographic segmentation.
2. Targeting
   Target marketing is carried out after market segmentation, so there are several viable and potential segments. Determine the target market by developing the size and attractiveness of the segments and then selecting segments, then choosing one of the ways to measure and attract segments in selecting targets.
3. Market position (Positioning)
   In the market positioning system is to determine a competitive position in a product or market. This activity is carried out after determining the segment to be entered, with the aim of determining market positioning is to build and communicate the competitive advantages of the products produced into the minds of consumers.

#### 2.3.2 Marketing Mix

According to Kotler & Keller, 2006, marketing mix activities consist of 4 categories, which are as follows:

1. Product
   Products are everything that is offered in meeting a market need which includes a quality, characteristics, brand, packaging, service, warranty, and others. product is the most important thing in a marketing strategy shown by a company in marketing a good or service because through it consumer interest by providing products that suit their needs, have the best quality, performance, or are innovative.
2. Price
   Price is one of the important aspects of marketing. Price is an amount of money that is given up in exchange for a good or service, determining the price is very important to pay attention to, considering that the price becomes the product offered.
3. Place
   This relates to a distribution process which is an activity of a company that is interrelated in order to make a product or service used or consumed. A strategic and easily accessible place is of course also a supporting factor for buying decisions in a good or service.
4. Promotion
   Promotion is an important part of a marketing strategy that aims to provide information and persuasion to potential customers about the products or services offered. By using advertising, public relations, and sales force methods, companies can create consumer awareness, interest and desire for these products or services. Promotion also plays an important

role in increasing sales and overall marketing success.

### 2.4 Diagram Fishbone

According to Malabay (2016), the Fishbone Diagram is a graphical technique used to organize and link various interactions with factors that influence a process. This diagram is useful for analyzing and identifying factors that significantly affect or have an impact on determining the quality characteristics of the output. These impacts can be both positive and negative. By identifying the causes, it is hoped that the results can be improved by modifying the controlling factors of a process through identifying the root causes of potential problems and linking the causes together.

### 2.5 Failure Mode Effect Analysis (FMEA)

According to Stamatis (1995) in Hanif et al. (2015), FMEA is an engineering technique used to determine, identify, and eliminate known failures, problems, errors, and the like from a system, design, process, and/or service before it reaches consumers.

According to Sellappan & Palanikumar (2013) in Suherman & Cahyana (2019), Failure Mode And Effect Analysis (FMEA) is a systematic model for identifying and preventing problems that exist in a system. FMEA uses the criteria of likelihood of occurrence, detection, and severity to determine risk priority numbers (RPN) so that later it is used to determine the action of prioritized risks.

The determination of the RPN value is closely related to the severity (S), Occurrence (O), and Detection (D).

RPN = S x O x D

According to Ebrahemzadih et al. (2014), crisis levels consist of normal, semi-critical, and critical levels, which are explained as follows:

1. Normal Level, where all three RPN factors have values less than 5 or very low RPN numbers, and no corrective or preventive action is needed, although action can still be taken, i.e., when RPN < 70.
2. Semi-Critical Level, where at least one of the three RPN factors has a value greater than 5, but the RPN is relatively low. In this case, corrective or preventive actions are still important but do not need to be urgent, i.e., when 70 < RPN < 140.
3. Critical Level, where at least two of the three RPN factors have high values or the RPN is too high, indicating that corrective or preventive actions must be taken immediately, i.e., when RPN > 140.

### 2.6 AHP (Analytical Hierarchy process)

AHP (Analytical Hierarchy Process) is a method used to simplify the decision-making process by breaking down the problem into its components, categorizing them, and assigning numerical values to subjective assessments. This method combines various considerations to assist in decision making (Hendri et al., 2023).

According to Saaty (1993) in Rahmansyah & Lusinia (2021), AHP is a decision support model that organizes complex multi-criteria problems into a hierarchical structure. This hierarchy divides the problem into several levels, with the first level representing the main objective, followed by factors, criteria, sub-criteria, and so on, until reaching the final level, which consists of alternatives.

## 3. RESEARCH METHOD

This research will be conducted in several stages, including the preparation stage, data collection stage, data processing stage, analysis and discussion stage, and conclusion stage. The preparation phase is the first step in this research. This phase involves establishing a preliminary study, identifying the problem, determining the research objectives, and setting the problem limitations that will guide the research. Below is a detailed description of the preparation phase, preliminary study, problem identification, research objectives, and problem limitations.

The data collection stage is a phase carried out according to the research needs, where the researcher conducts field observations to gather the necessary data to address the issues aligned with the research objectives. The data sources in this research are divided into two types: primary data and secondary data.

Primary data includes interview and questionnaire data. The interview aims to understand the marketing strategies such as segmentation, targeting, market positioning, and the 4P marketing mix (product, price, place, and promotion). The interview was conducted on June 10, 2024, and followed up on September 9, 2024, by directly asking the business owner about the current marketing activities of the UMKM Abon Jaya Mandiri. The questionnaire is a data collection technique conducted by providing a series of questions regarding risk assessment and pairwise comparisons. This questionnaire assessment was directed to the owner of the UMKM Abon Jaya Mandiri business on September 13, 2024. Furthermore, the questionnaire assessment on pairwise comparisons was directed to the owner of the UMKM Abon Jaya Mandiri business on September 18, 2024. Secondary data refers to data obtained indirectly in a study. The data required for this research includes a profile description of the UMKM Abon Jaya Mandiri and sales data from January to July 2023.

The data processing stage is carried out after the data collection stage. The following are the steps taken in the data processing stage: determining the Risk Priority Number (RPN), determining the risk categories, and identifying risk mitigation strategies.

The analysis and discussion stage is conducted by analyzing the marketing risks obtained from identifying marketing activities. This is followed by an analysis of the level and category of marketing risks, which are derived from the Risk Priority Number (RPN) assessment and categorized into three levels: critical, semi-critical, and normal. Next, the analysis focuses on marketing risk mitigation strategies based on the weighted values from the criteria assessment and alternative strategies.

In the closing stage, a conclusion will be provided based on the analysis of the research objectives. In addition to the conclusion, the closing stage will include recommendations for the research site, which are expected to provide input and assistance to the location. The stages of the research conducted to complete this study can be seen in the flowchart below in the following figure.

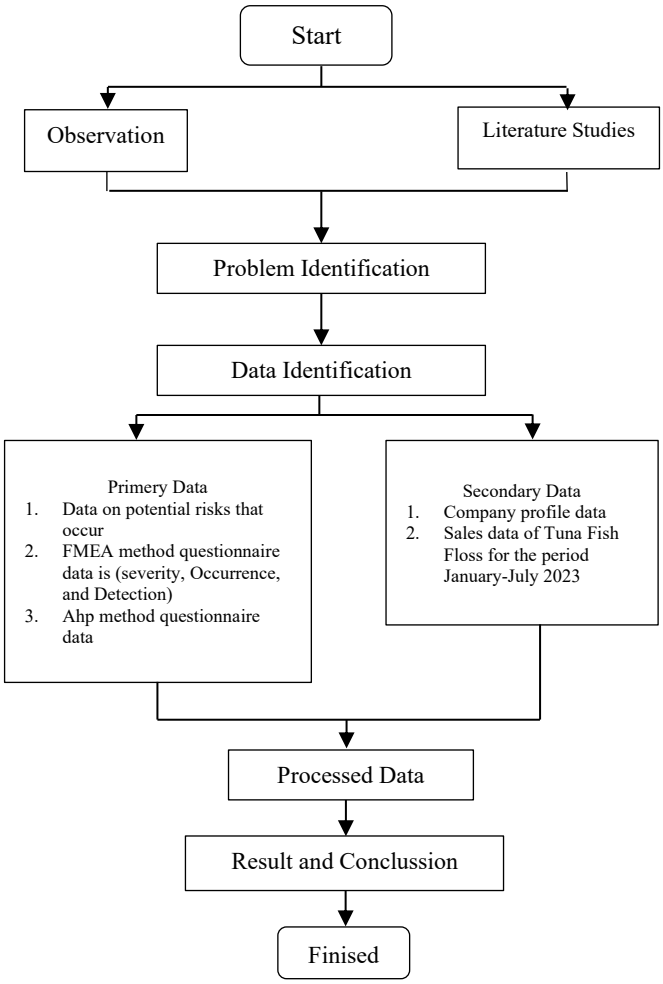


**Figure 1.** Flowchart analysis stages

## 4. RESULT AND DISCUSSION

### 4.1 Company Overview

UMKM Abon Jaya Mandiri is a home-based industry located in Loktuan Village, North Bontang District, Bontang City. Abon Jaya Mandiri MSME has 7 members involved in the production and marketing processes. In addition, there are 14 partner members who are part of the group managing and marketing fishery products. The favorite product is tuna fish floss, which is known for its beneficial properties for families. The product is made without the use of cooking oil or MSG. Abon Jaya Mandiri MSME has also obtained the Indonesian National Standard (SNI) Certificate.

### 4.2 Data Collection

The required data includes the current marketing strategy, the flow of the marketing process or activities, the causes of risks that have occurred and have the potential to occur, as well as the assessment data for each potential failure obtained.

### 4.2.1 Current Marketing Strategy of the Company

Based on the data collected on June 10, 2024, the STP (Segmentation, Targeting, and Positioning) and marketing mix data were obtained. The marketing strategy is a plan developed by the company or business to effectively promote products or services to the target market.

Segmentation is aimed at consumers in Bontang City, with the target market being employees and entrepreneurs. The product is positioned with the advantage that tuna fish floss is a healthy food for families, processed without the use of MSG and cooking oil, and has obtained the SNI certificate. This market positioning differentiates the product from competitors' products. The marketing mix includes the product strategy applied by Abon Jaya Mandiri MSME, which offers a healthy product for families, with ingredients that do not include MSG or cooking oil. The pricing strategy applied by Abon Jaya Mandiri MSME is to maintain stable prices from 2015 to 2024. The place strategy relies on the home as the offline marketing venue, while the business also provides ordering services via WhatsApp, Facebook, and Instagram online. The promotional strategy used by UMKM Abon Jaya Mandiri involves utilizing social media platforms such as Instagram and Facebook to offer products.

### 4.2.2 Company Marketing Process

Marketing is a series of processes that include planning and implementing concepts, setting prices, promotions, and distribution to create exchanges that support the achievement of goals. A marketing plan summarizes the insights gained about the market and explains how the company plans to achieve its marketing objectives. The marketing plan itself is an essential part of the marketing process (Kotler and Keller, 2006). Currently, UMKM Abon Jaya Mandiri is planning a marketing strategy for its tuna fish floss product. This plan includes determining the product quality, which is free from MSG and cooking oil, maintaining a stable price since 2015 at IDR 27,000 per package, and utilizing both offline marketing at home and online marketing through WhatsApp and social media. Promotion will be carried out through social media and events/exhibitions. In practice, this strategy is implemented by producing the floss according to standards, selling both offline and online, and promoting the product on Instagram, Facebook, and exhibitions.

### 4.2.3 Identification of Marketing Process Risks and Risk Value Measurement

Risk identification in marketing activities was obtained through interviews with the owner of Abon Jaya Mandiri MSME. The potential risk identified was the failure of products to be sold at maximum levels. An interview was conducted regarding the product failures in marketing on September 9, 2024, with the business owner, followed by the measurement of the risk value process, which involves determining the severity, likelihood of occurrence, and detection, all of which are used in evaluating failures using the FMEA (Failure Mode and Effects Analysis) method. This measurement was performed on the 9 potential failure modes that were previously identified. This can be seen in the table below.

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**Table 1.** Assessment of severity, occurrence, and detection

| Activity | Potensial Failure Mode | Effect of failure | Code | Rating | | |
|---|---|---|---|---|---|---|
| | | | | S | O | D |
| Product Strategy | Burnt floss | - Produces dark brown floss<br>- Has a bitter taste<br>- Cannot be sold or marketed | R1 | 9 | 3 | 4 |
| | Moldy floss | - Mold appears on the surface of the floss<br>- Has a strong odor<br>- Not suitable for sale or consumption | R2 | 9 | 4 | 4 |
| | Floss without fibers | - The texture of the floss is smooth like flour<br>- Has a bland taste / not savory<br>- Not suitable for sale or consumption | R3 | 9 | 2 | 3 |
| | Packaging with holes or open | - The floss becomes damaged, such as moldy, damp, and not crispy | R4 | 8 | 3 | 4 |
| Pricing Strategy | T he competitor's price has decreased, becoming cheaper | - Consumers switch to competing products | R5 | 4 | 2 | 6 |
| Place Strategy | Location that is hard to find | - Consumers get lost when searching for the business address<br>- Consumers decide not to buy the product | R6 | 8 | 5 | 4 |
| | Difficulty accessing the business location | - Four-wheeled vehicles cannot enter | R7 | 6 | 5 | 3 |
| Promotional Strategy | Social media that is not up to date | - Followers are not familiar with the product | R8 | 5 | 7 | 4 |
| | Few social media followers | - The product becomes less known | R9 | 4 | 7 | 3 |

### 4.3 Data processing

The data processing stage is carried out using the Failure Mode Effect Analysis (FMEA) method, which is used to assess existing risks. This assessment is based on three main factors: S (Severity), O (Occurrence), and D (Detection) for each potential risk. After that, the risk priority value will be calculated based on these three factors. The assessment results will be grouped into risk categories according to the predefined range.

#### 4.3.1 Kategori Risk Priority Number (RPN)

The higher the RPN value generated from a risk, the greater the priority for immediate action. The risk categories serve to identify risks that require urgent attention. These categories are divided into several levels based on criteria defined as the criticality level.

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**Table 2.** Categories of RPN

| Potensial failure mode | Code | S | O | D | RPN | Categories |
|---|---|---|---|---|---|---|
| Location that is hard to find | R6 | 8 | 5 | 4 | 160 | Critical |
| Moldy floss | R2 | 9 | 4 | 4 | 144 | Critical |
| Social media that is not up to date | R8 | 5 | 7 | 4 | 140 | Critical |
| Burnt floss | R1 | 9 | 3 | 4 | 108 | Semi Critical |
| Packaging with holes or open | R4 | 8 | 3 | 4 | 96 | Semi Critical |
| Difficulty accessing the business location | R7 | 6 | 5 | 3 | 90 | Semi Critical |
| Few social media followers | R9 | 4 | 7 | 3 | 84 | Semi Critical |
| Floss without fibers | R3 | 9 | 2 | 3 | 54 | Normal |
| Competitor's price has decreased, becoming cheaper | R5 | 4 | 2 | 6 | 48 | Normal |

### 4.4 Diagram Fishbone

A Fishbone diagram is a diagram used to

identify the root causes of a problem, used to analyze an issue and determine its causes (Putri et al., 2023). Below is the Fishbone diagram for the risks in each marketing activity. One of them is the product strategy, which can be seen in the Fishbone diagram as follows.

In the product strategy activity, there is a failure, which is moldy floss. This results in mold appearing on the surface of the floss, making it unsuitable for sale or consumption. Therefore, handling is needed in the product

strategy activity to prevent this failure from happening again by identifying the risk causes of the moldy floss, using a Fishbone diagram. Below is the Fishbone diagram for the failure of moldy floss.

The priority risk in the product strategy activity, namely moldy floss, has sub-causes originating from several factors, as follows:

cause in this element is the lack of instructions or advice on the correct frying process. This is due to negligence by the team during the production process, which results in the floss not being cooked properly, and workers using techniques that do not comply with the SOP.

b.Method

Based on the Fishbone diagram above, the cause in this element is the failure to carry out the packaging process correctly. This is due to the packaging being done in a humid condition, which causes the floss to be contaminated by air, and the absence of a detailed SOP for the packaging process.

c.Machine

Based on the Fishbone diagram above, the cause in this element is that the packaging is not tightly sealed or is open. This is because the packaging equipment is not functioning properly, and the sealer machine is not hot when used

Based on the Fishbone diagram, after identifying the potential effects of failure and potential causes of failure.

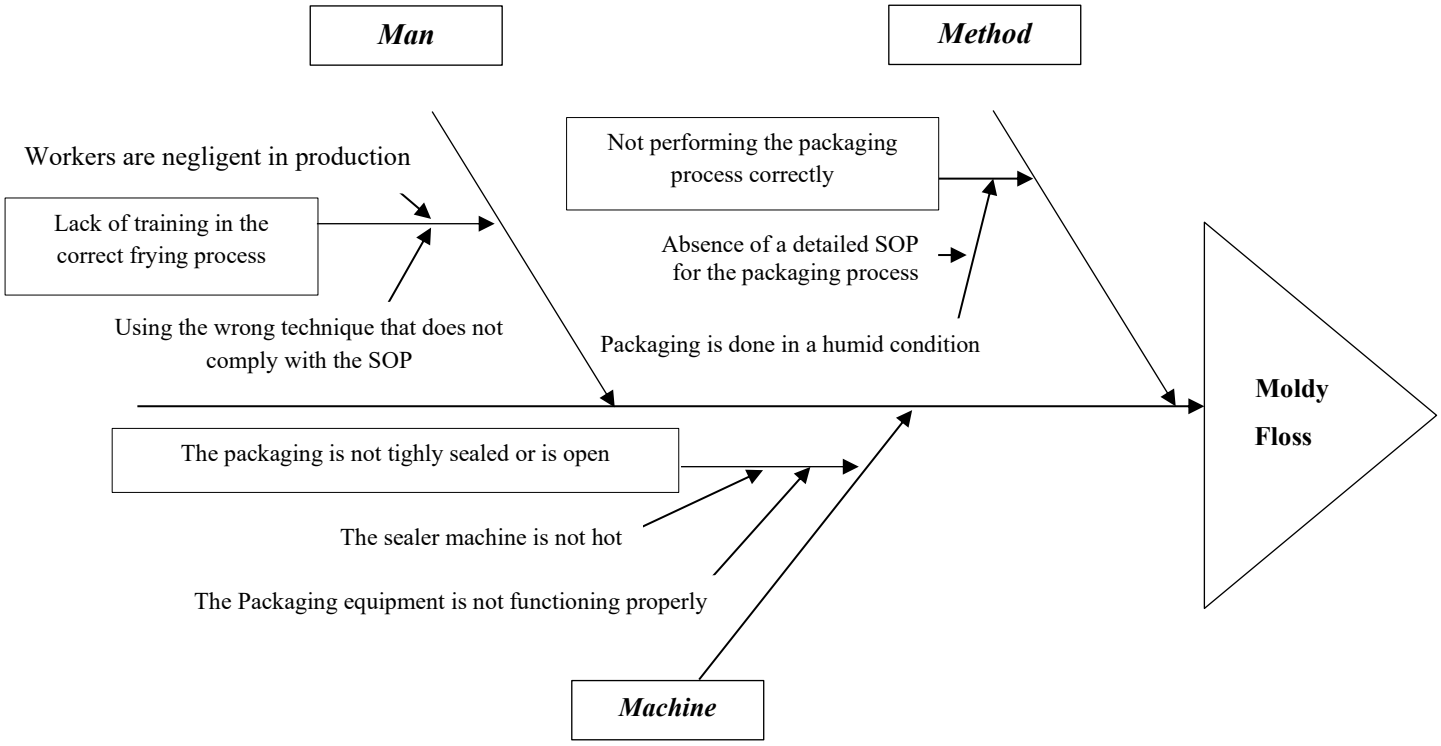


**Figure 2.** Fishbone moldy floss

**Table 3.** Assessment of severity, occurrence, and detection

| Failure Mode | Potensial effect of failure | S | Potensial cause of failure | O | Detection/Current Control | D | RPN |
|---|---|---|---|---|---|---|---|
| Moldy floss | Mold appears on the surface of the floss<br>Has a strong odor<br>Not suitable for sale or consumption | 9 | Lack of training in the correct frying process<br>Failure to carry out the packaging process correctly<br>Packaging not tightly sealed or is open | 4 | Conduct mentoring for employees<br>Implement Standard Operating Procedure (SOP) in the packaging process<br>Perform maintenance on the sealer machine | 4 | 144 |
| The competitor's price has decreased, becoming cheaper | Consumers switch to competing products | 4 | The producer or business owner does not conduct market price research used by competitors<br>The market research process is not structured<br>Occurrence of tough market competition | 2 | Regular training for employees<br>Implementation of Standard Operating Procedure (SOP)<br>Monitoring competitor market prices | 6 | 48 |
| Location that is hard to find | Consumers get lost when searching for the business address<br>Consumers decide not to buy the product | 8 | Workers provide incomplete tools<br>Lack of navigation as information<br>No clear directional signs in the alley | 5 | Conduct mentoring for employees<br>Use Google Maps as the business location reference<br>Provide a signboard indicating the business location | 4 | 160 |
| Social media that is not up to date | Followers are not familiar with the product | 5 | Lack of visual material for posting content<br>Not using tools to create attractive designs<br>Presence of competition or changes in social media trends | 7 | Develop content<br>Utilize content editing technology<br>Follow changes in social media trends | 4 | 140 |

## 4.5 Analytical Hierarchy Process

Data processing using the Analytical Hierarchy Process (AHP) method aims to obtain the best strategy alternatives to minimize and mitigate priority risks occurring in each marketing activity, namely product strategy, place, and promotion. The data processing is assisted by the Expert Choice software. In this data processing, there are several stages: determining the mitigation strategy, structuring the hierarchy, weighting the values, normalizing the weights and consistency testing, and determining the priority of the risk mitigation strategy. Below are the results of determining the risk mitigation strategy, which can be seen in the following hierarchy structure.

After performing normalization calculations and consistency testing, the next step is to select

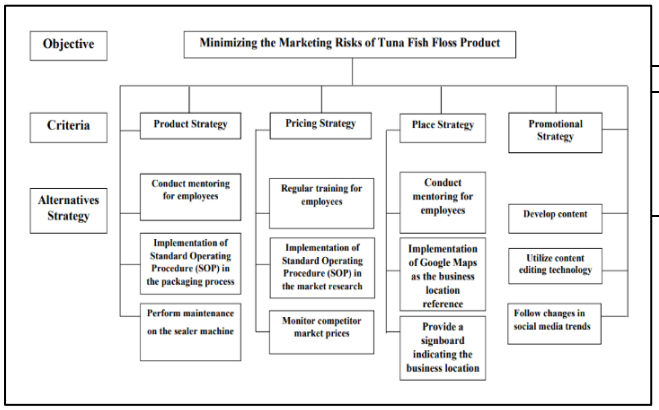


**Figure 3.** Hierarchy structure

### 4.5.1 Criteria Weighting

Criteria weighting is compiled based on data from the pairwise comparison matrix questionnaire for alternative strategies that have been given to respondents. The value of the weighting of criteria in the pairwise comparison matrix is obtained from the owner of the Abon Jaya Mandiri MSME business. The results of the criteria weighting assessment for each strategy alternative can be seen as follows.

a. Pairwise Weighting between Criteria

Pairwise weighting between criteria based on the results of the questionnaire that has been filled in by respondents is then described in the form of a pairwise comparison matrix which will calculate the number of each column so that it can facilitate conducting normalization tests and consistency tests such as Table 4.

**Table 4.** Pairwise comparison matrix between criteria

| Criteria | (A1) | (A2) | (A3) | (A4) |
|---|---|---|---|---|
| Product Strategy (A1) | 1,000 | 0,250 | 0,333 | 0,200 |
| Pricing Strategy (A2) | 4,000 | 1,000 | 0,500 | 0,333 |
| Place Strategy (A3) | 3,000 | 2,000 | 1,000 | 0,333 |
| Promotion Strategy (A4) | 5,000 | 3,000 | 3,000 | 1,000 |
| **Total** | **13,000** | **6,250** | **4,833** | **1,867** |

### 4.5.2 Normalization and Consistency Test

Consistency testing is carried out to compare between elements obtained at each hierarchical level. The results of the research require consistency testing to determine whether the research conducted has been consistent or not.

A reliable decision is one that shows a good level of consistency. The results of normalization calculations and priority determination between criteria can be seen in the table below.

**Table 5.** Calculation of normalization and priority criteria

| Criteria | (A1) | (A2) | (A3) | (A4) |
|---|---|---|---|---|
| Product Strategy (A1) | 1,000 | 0,250 | 0,333 | 0,200 |
| Pricing Strategy (A2) | 4,000 | 1,000 | 0,500 | 0,333 |
| Place Strategy (A3) | 3,000 | 2,000 | 1,000 | 0,333 |
| Promotion Strategy (A4) | 5,000 | 3,000 | 3,000 | 1,000 |
| **Total** | **13,000** | **6,250** | **4,833** | **1,867** |

The next step is to make a hypothesis to test normalization, which is as follows :

H0: consistency criteria, the assessment results can be justified and justified

H1: inconsistent criteria, the assessment results cannot be justified and are not justified and must be recalculated.

Decision if, H0 is accepted if CR <0.1.

The following is the calculation of consistency index (CI) and consistency ratio (CR) as follows.

$\lambda maks = (13 \times 0{,}073) + (6{,}250 \times 0{,}187) + (4{,}833 \times 0{,}234) + (1{,}867 \times 0{,}505)$
$= 4{,}198$

$CI = (4{,}198 - 4)/(4-1)$
$= 0{,}066$

$CR = 0{,}066/0{,}900$
$= 0{,}073$

The value obtained from the calculation of CR is 0.073 with priority the main criterion is the promotion strategy (A4). If the pairwise matrix CR value ≤ 0.100 then it can be said to be consistent, can be accounted for and the results of the calculations obtained are consistent.

### 4.5.3 Prioritization of Marketing Risk Mitigation Strategies

The risk mitigation strategy for marketing based on the highest evaluation from the data processing using the AHP method. The selection of this priority strategy aims to minimize the occurrence of marketing risks for the tuna fish floss product, focusing on the highest weights of each criterion and subcriterion alternative strategy. The calculation of the weight for the criteria and subcriteria of the alternative strategies can be seen below.

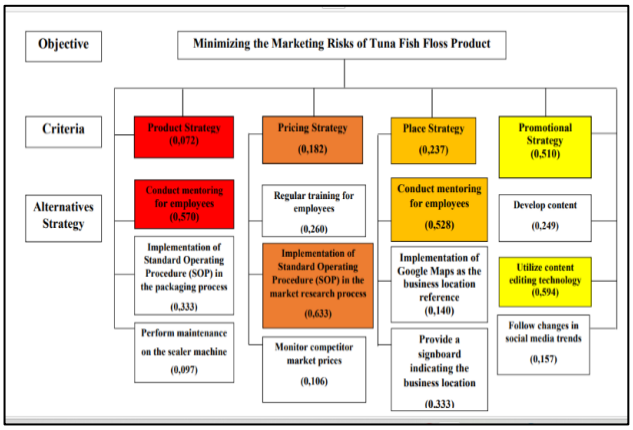


**Figure 4.** Hierarchy structure

Based on Figure 4.12, it can be seen that to mitigate the marketing risk of shredded tuna fish products, the main risk priorities are obtained, namely in the Strategy criteria promotion (A4) with a value of 0.510, alternative strategies to utilize content editing technology (E2) with a value of 0.594. In the second criterion Place strategy (A3) with a value of 0.528, alternative strategies for mentoring employees (D1) with a value of 0.528. On the criteria Price strategy (A2) with a value of 0.182, alternative strategies for implementing the Standard Operating Process (SOP) in the market research process (C2) with a value of 0.633. At product strategy criteria (A1) with a value of 0.072, alternative strategies for mentoring employees (B1) with a value of 0.570.

## 5. RESULT AND DISCUSSION

Based on the research conducted on 'Analysis of Risk Mitigation Strategy for Marketing Tuna Fish Floss Product using Failure Mode and Effect Analysis (FMEA) and Analytical Hierarchy Process (AHP) (Case Study: UMKM Abon Jaya Mandiri),' the following conclusions can be drawn.

1. The results of risk identification conducted using marketing activities, namely product strategy, pricing strategy, place strategy, and promotion strategy. In the product strategy activity, four risks were identified: burnt floss, moldy floss, floss without fibers, and packaging with holes or open. In the pricing strategy activity, one risk was identified: the

competitor's price becoming cheaper. In the place strategy activity, two risks were identified: difficult-to-find location and difficulties in accessing the business location. In the promotion strategy activity, two risks were identified: social media that is not updated and few social media followers

2. Based on the calculation of the Risk Priority Number (RPN), a total of 924 was obtained, with the highest RPN value found in the potential failure of difficult-to-find location, with an RPN value of 160. The lowest RPN value was found in the potential risk of competitor price changes becoming cheaper, with an RPN value of 48. The risk categorization results showed that 3 risks or potential failures had the highest RPN values and were categorized as critical risks requiring immediate corrective actions. These three risks are: difficult-to-find location (R6) with an RPN value of 160, moldy floss (R2) with an RPN value of 144, and outdated social media (R8) with an RPN value of 140. In the normal category, corrective actions can also be taken for the risk of competitor price changes becoming cheaper, with an RPN value of 48.
3. Based on the results of calculations using the AHP method, the priority criteria and alternative strategies to mitigate risks in each marketing activity were obtained. In the first priority criterion, the promotion strategy with the risk of outdated social media had a weight of 0.510, and the alternative strategy was utilizing content editing technology, with a weight of 0.594. In the second priority criterion, the place strategy with the risk of a difficult-to-find location had a weight of 0.237, and the alternative strategy was conducting mentoring for employees, with a weight of 0.528. In the third priority criterion, the pricing strategy with the risk of competitors' price changes becoming cheaper had a weight of 0.182, and the alternative strategy was implementing Standard Operating Procedures (SOP) in the market research process, with a weight of 0.558. In the fourth priority criterion, the product strategy with the risk of moldy floss had a weight of 0.072, and the alternative strategy was conducting mentoring for employees, with a weight of 0.570.

The suggestions that can be given to companies and further research are.

1. UMKM Abon Jaya Mandiri needs to pay attention to and manage risks, especially those that are critical, by implementing the recommended mitigation strategies. In the product aspect, the company can provide training to workers during the production process to ensure the product quality remains fresh, fibrous, and durable. In the pricing aspect, it is recommended to adopt the proposed SOP to effectively monitor market price changes. In the location strategy, mentoring should be provided to workers to ensure that the business address is written correctly to make it easier for customers to find the location. Meanwhile, the promotion strategy can be optimized by utilizing editing technology to attract consumer attention through social media. It is hoped that these steps can be implemented routinely and sustainably to improve marketing effectiveness and achieve sales targets.

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