



Risk Analysis and Mitigation Strategies for the Supply Chain of Bread Products at MSME Muthia Bakery

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ABSTRACT

Muthia Bakery is a micro-scale business producing preservative-free bread and cakes in PPU Regency. This study aims to minimize supply chain risks by identifying, assessing, and developing mitigation strategies tailored to Muthia Bakery's operations. Using the Supply Chain Operation Reference (SCOR) model, the study mapped key activities (*plan, source, make, deliver, and return*) to provide a clear structure for risk identification. This mapping facilitated a focused risk analysis using the Failure Mode Effect Analysis (FMEA) method, with Action Priority (AP) used to prioritize critical risks requiring immediate mitigation. Root causes were examined using a Fishbone Diagram, and AHP was applied to prioritize effective mitigation strategies. Results highlight five primary risks, including (1) inaccurate material purchase quantities (RPN 144), mitigated by improving data collection and analysis (weight 0.1000); (2) raw material returns (RPN 144), addressed through SOP development for quality control (weight 0.673); (3) material ordering delays (RPN 140), mitigated via inventory control (weight 0.635); (4) incorrect raw material quantities received (RPN 120), with double verification during ordering (weight 0.444); and (5) production scheduling errors (RPN 105), mitigated by improved time management (weight 0.701). This research provides a systematic risk management approach for micro-scale bakery supply chains, supporting continuity and efficient operational processes.

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1. INTRODUCTION

Over time, the demand for bread has increased, leading to the emergence of numerous industries in the bread production sector, ranging from large scale to micro scale enterprises. Like other industries, the bread industry also faces risks within its supply chain. These risks can include low-quality raw

materials, errors in processing and storage, and contamination risks (Simba et al., 2017). To avoid or manage these risks, risk management must be implemented. Risk management involves measuring or assessing a risk, and based on that assessment, developing strategies to manage the risk. Strategies that can be used include transferring the risk to other activities or

subjects, avoiding the risk, reducing the negative effects of the risk, or accepting the consequences, whether partially or entirely, of a particular risk (Yahman et al., 2020). In the supply chain, it is very possible for some risk issues to occur that have an impact on business losses, Akdeenarong and Hengsadeeikul (2020) stated that risk is indeed an inherent part of the supply chain. However, these risks can still be controlled and there are solutions to overcome these risks, which is by supply chain risk management. Supply chain risk management is a strategy to manage risks in the supply chain by identifying, analyzing, evaluating, and mitigating risks (Ulfah et al., 2016). The purpose of supply chain risk management is to reduce operational disruptions and ensure the smooth distribution of products to end consumers, ensuring that a product is of high quality and can be delivered on time (Rizqi and Jufriyanto, 2020).

Muthia Bakery is a micro-scale industry engaged in the production and marketing of various types of bread and cakes without artificial preservatives, which means its products have a short shelf life. Muthia Bakery is located in Penajam Paser Utara Regency. Muthia Bakery also faces similar issues, especially in its supply chain, such as the risk of production machine breakdowns, quality issues, availability of raw materials, and so on. Additionally, the uncertain consumer demand can significantly impact the costs required, leading to numerous risks that must be managed in this business. Based on the aforementioned issues, the author conducts research using the Supply Chain Operation Reference (SCOR) model to map each supply chain activity and make it easier to identify risks, the FMEA method to identify and measure existing risks, and the Analytical Hierarchy Process (AHP) method to select risk mitigation alternatives for the bread supply chain at Muthia Bakery. This way, recommendations or suggestions can be provided to the company to prevent these failures from occurring.

2. LITERATURE REVIEW

Supply chain a unity of activities and production processes starting from the procurement of raw materials from suppliers, the value-added process that converts raw

materials into finished products, the inventory storage process, the process of shipping goods to retailers and consumers, until the product returns from consumers (Hidayati and Pulansari, 2023). In a supply chain, there are usually three types of flows that need to be managed. First, the flow of goods, which moves from upstream to downstream. For example, raw materials are sent from suppliers to manufacturers. Once the products are finished, they are sent to distributors, then to retailers, and finally to the end users. The second flow is the flow of money and related financial transactions, which can occur from downstream to upstream. The third flow is the flow of information, which can occur either from upstream to downstream or vice versa (Pujawan and Mahendrawathi, 2017).

According to Ariyanti and Andika (2016), Supply Chain Management (SCM) is a form of management that involves the flow of materials, information, and finances within a network of organizations, with the aim of producing and delivering products or services to customers through coordination and collaborating among various function within the organization network. SCM aim to minimize cost and enhance customers satisfaction meaning that companies must meet customer expectations with good product quality and timely delivery, but at a low cost. According to Melly et al. (2019), risk can be defined as the probability of an event occurring over a certain period, resulting in a loss. Risk can also be considered as an event that may occur in the future, which can be either predictable or unpredictable. According to Tjakra et al. (2013), the term "risk" has various definitions and scientific meanings. According to the online version of the Indonesian dictionary in the book "Business Risk Management" by Tony Pramana, 2011, risk can be defined as "the negative consequence or danger of an action or event." In other words, risk can refer to the possibility of situations or conditions that may threaten the achievement of the goals or objectives of an organization or individual.

Risk management is a process for measuring or assessing how much risk occurs and developing management strategies. There are

several strategies in risk management, including transferring risks to other parties, avoiding risks, reducing the negative impact of risks, and accommodating some or all of the consequences of a particular risk. Risk management aims to manage risk so that the organization can survive, or can optimize the risk of uncertainty. (Rabbani et al., 2021).

According to Darma (2018), risk management is carried out with the aim of reducing, avoiding, or accommodating risks, process of risk management is carried out through a series of activities as follows: (1) Risk Identification; Identifying potential risks that may occur, conducting an initial screening of risk events and potential risk status, and developing them into an initial risk status. (2) Risk Analysis; Analyzing or measuring potential risks to determine which risks should be prioritized and the methods used to resolve or reduce them. (3) Risk Control; After the first two steps are taken, the next step is to control the risk using two basic approaches: risk control, which involves avoiding risk, controlling losses, segregating risky activities, and combining these methods; and risk financing.

According to Ariyanti and Andika (2016), Supply Chain Risk Management (SCRM) is a process aimed at managing risks in the supply chain by coordinating or collaborating between supply chain partners. The goal is to ensure business continuity and optimal profit. SCRM can be defined as a coordinated approach among supply chain members to identify and manage risks, thereby reducing the overall vulnerability of the supply chain. According to Johnson Ganguly and Kumar (2019), there are several risks that often occur in the supply chain and these risks are grouped into two types of risks. Supply risks, such as capacity limitations, currency fluctuations, and supply disruptions, which will certainly cause delays in the operation process. Demand risks, such as erratic seasonal changes, trend volatility, and the emergence of new product types, can cause losses in business if not managed properly.

Supply Chain Operation Reference (SCOR) method is a reference model for supply chain operations that divides the supply chain process

into five stages: Plan, Source, Make, Deliver, and Return (Liputra, et al., 2018). The Plan stage includes planning for distribution, inventory, production, materials, capacity, and alignment with financial plans. The Source stage involves purchasing goods and services to meet current or planned demand. The Make stage involves production activities to create the final product from raw materials. The Deliver stage involves order management, transportation, and distribution of finished goods or services to consumers. The Return stage involves the return and receipt of products, including customer service after delivery (Pujawan and Mahendrawathi, 2017).

According to Zuniawan (2020), Failure Mode and Effect Analysis is an important technique used to identify and eliminate known failures or have the potential to improve the reliability and security of complex systems and is intended to provide critical information for making decisions in risk management. According to Andiyanto et al. (2017), the FMEA method produces a value called the Risk Priority Number (RPN), which is used to assess the risk level of a process. The RPN value is calculated by multiplying three quantitative ratings: severity (level of impact), occurrence (likelihood of cause), and detection (ability to detect) in each process, known as the multiplication of S, O, and D. According to AIAG and VDA (2019), Action Priority provides a visual representation of analysis results and can be used as input for determining action priorities based on criteria established by the company. The risk matrix includes 1,000 possible combinations of S, O, and D, created to place more emphasis on severity first, then occurrence, and finally detection. This logic follows the goal of failure prevention in FMEA.

According to Graubitz (2006), as cited in Prasetyo (2015), the fishbone diagram, also known as the ishikawa diagram, is one of the Seven Quality Tools used to identify the causes of a problem. This method divides problems into causes and effects, which consist of several factors such as machinery, management, materials, manpower, environment, measurement, and methods. According to Murnawan and Mustofa (2014), it is called a fishbone diagram because its shape resembles a

fish bone, with the head pointing to the right. The diagram shows the impact or effect along with its various causes. The effect is placed at the head of the fish, while the bones represent the causes according to the approach to the problem.

Analytical Hierarchy Process (AHP) is a hierarchy with primary input from human judgment, developed in the early 1970s by Prof. Thomas Lorie Saaty of the Wharton Business School. This method is used to determine the priority ranking of alternatives in solving complex problems and has become popular in effective decision-making (Umar et al., 2018). According to Darmanto et al. (2014), AHP breaks down complex multi-factor or multi-criteria problems into a hierarchy. This hierarchy consists of levels ranging from objectives, factors, criteria, sub-criteria, and alternatives that form a multi-level structure. By using a hierarchy, complex problems can be broken down into structured groups, making them appear more systematic. For various problems, a scale of 1 to 9 is the best scale to express opinions, with a commonly used pairwise comparison scale (Yulyantari and Wijaya, 2019). The research also confirmed that the provides a fairly structured and clear guide on how to do calculations using this AHP method, and this book also contains other methods that can be used as decision support tools.

Previous research by Ariyanti & Andika (2016), used FMEA, Pareto, and expert discussion (FGD) methods to determine risk mitigation directly. As a difference, this research is more comprehensive and systematic with an approach tailored to the needs of MSMEs. This research utilizes the SCOR framework to map supply chain activities followed by risk identification and assessment using FMEA prioritization through Action Priority, followed by root cause analysis using Fishbone Diagram, before finally formulating and filtering risk mitigation strategies using AHP method. With this approach, the research provides a more adaptive, structured, and targeted solution for MSMEs such as Muthia Bakery, which often have limited resources compared to large companies.

3. RESEARCH METHOD

The methods used in this research are Failure Mode and Effect Analysis (FMEA) and the Analytical Hierarchy Process (AHP). The research begins with data collection through brainstorming and interviews with the company. After that, the data obtained is input into the FMEA method for risk identification and assessment. Next, the process continues with the AHP method to determine the appropriate mitigation measures to be implemented at Muthia Bakery. The research flow diagram can be seen in the Figure 1 below.

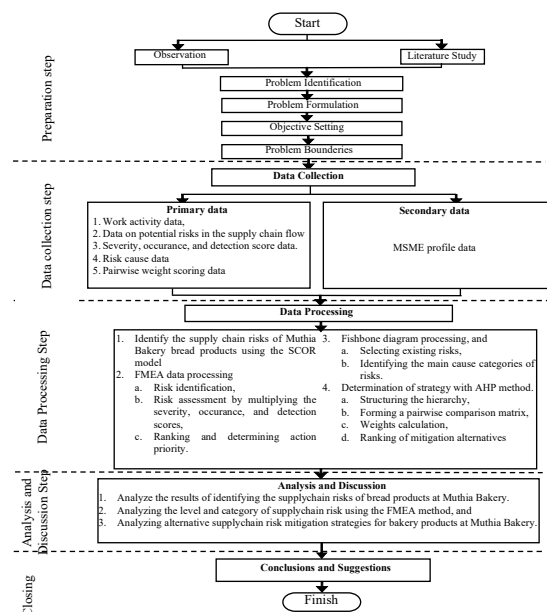


Fig. 1. Flowchart analysis stages

4. RESULT AND DISCUSSION

Supply Chain Activity Mapping

Based on the results of data collection through observations, interviews and filling out questionnaires, data processing is then carried out using the Supply Chain Operation Reference (SCOR) method to map supply chain activities to facilitate the identification of supply chain risks, the FMEA method to identify and measure existing risks and then use the Analytical Hierarchy Process (AHP) method to select risk mitigation alternatives in the Bread supply chain at Muthia Bakery. The first stage is to identify supply chain activities using the SCOR method. The following are the results of interviews related to the supply chain business process with the SCOR model which can be seen in Table 1 below.

Table 1. Supply chain activity mapping

Supply Chain Activities	Sub Activity	Detail Activity
Plan	Production Planning	Planning production quantities
	Material Requirement Planning	Plan the type and variety of materials for production Determine the appropriate raw material supplier
Source	Ordering raw materials from suppliers	Detailing what kind of material specifications are needed Record the quantity of materials that will be needed Contacting suppliers to place orders
	Delivery of raw materials by suppliers	Tracking the delivery of regularly
	Receiving raw materials	Checking the condition and completeness of the materials received Make payments to suppliers
	Returning to suppliers	Returning raw materials to suppliers if there is a mismatch
	Storing raw materials	Organize materials that have been received
Make	Production	Mixing ingredients with a mixer Dividing the dough Shaping and molding the dough Dough resting Giving various toppings and filling Preheating the oven Bread baking process
	Packaging	Performing inspection before bread is packed Packaging the finished bread
	Bread quantity calculation	Counting the number of loaves of bread
	Transfer of bread from production house to store	Bringing the packed bread to the store
	Storing bread in store displays	Arranging the bread in the shop window
	Return by customer	Managing returned bread
	Feedback	Receiving feedback from customers

Risk Identification and Risk Assessment

From the results of identifying supply chain activities, it can be continued by identifying and conducting risk assessments, and categorizing risks based on action priorities using the FMEA method. Before assessing severity, occurrence, and detection, first determine the scale and criteria of each to facilitate the interviewee in filling out the questionnaire. The determination of this parameter scale is adjusted to the object

and place of research and also based on the results of an agreement with the interviewee, in this research, the formulation of severity and occurrence parameters for detection parameters is used from the source of the book "Risk Management Using Failure Mode and Effect Analysis (FMEA)" by (D. H. Stamatis, 2018). The following severity and occurrence criteria can be seen in Table 2 and Table 3.

Table 2. Severity rating scale

Rating	Level	Range of loss
10	Hazardous	≥ IDR 3.000.001
9	Serious	IDR 1.500.001 - IDR 3.000.000
8	Extreme	IDR 1.000.001 - IDR 2.500.000
7	Major	IDR 800.001 - IDR 1.500.000
6	Significant	IDR 400.001 - IDR 800.000
5	Moderate	IDR 250.001 - IDR 400.000
4	Minor	IDR 55.001 - IDR 100.000
3	Slight	IDR 25.001 - IDR 55.000
2	Very slight	IDR 10.001 - IDR 25.000
1	None (N)	≤ IDR 10.000

Table 3. Occurance rating scale

Rating	Probability of Occurrence	Frequencies
10	Almost certain failure	≥ 28 times in 1 year
9	Very high frequency of failure	24-27 times in 1 year
8	High frequency of failure	21-23 times in 1 year
7	Moderately high frequency of failure occurrence	16-20 times in 1 year
6	Medium frequency of failure occurrence	13-15 times in 1 year
5	Low frequency of failure occurrence	11-12 times in 1 year
4	Slight occurrence of failures	9-10 times in 1 year
3	Very slight occurrence of failures	6-8 times in 1 year
2	Very rare occurrence of failures	3-5 times in 1 year
1	Failure almost never occurs (impossible)	1-2 times in 1 year

After determining the assessment criteria for each aspect, the owner fills out the questionnaire. Before entering into the RPN

calculation, identification is first carried out. The following results of identification and risk assessment can be seen in Table 4 below.

Table 4. RPN value of supply chain risk of Muthia Bakery's bread products

Activity	Code	Risk	S	O	D	RPN
<i>Plan</i>	P1	Improper determination of the amount of material purchased	6	6	4	144
	P2	Sudden increase in raw material prices	6	2	6	72
<i>Source</i>	S1	Error ordering materials to suppliers	7	2	2	28
	S2	Delay when ordering materials	7	5	4	140
	S3	Purchase of raw materials not from the main supplier	5	5	4	100
	S4	Delay in delivery of raw materials by suppliers	5	4	4	80
	S5	The quality of raw materials does not meet the established standards	5	2	4	40
	S6	The amount of raw materials received does not match the request	6	5	4	120
	S7	Return of raw materials to suppliers	6	6	4	144
	S8	Damaged raw materials due to storage errors	5	3	3	45
	S9	Raw materials expire before use	5	2	2	20
<i>Make</i>	M1	Delay or error in production schedule	5	7	3	105
	M2	Dough does not rise / puffy	4	3	3	36
	M3	Burnt bread during baking	5	2	2	20
	M4	Machine breakdown occurs	9	1	6	54
	M5	Minor work accident occurred	5	5	2	50
	M6	Decreased production quality	6	3	3	54
	M7	Damaged packaging	3	2	2	12
<i>Deliver</i>	D1	Error in calculating the order	4	4	3	48
	D2	There was overstock at the outlet	5	5	3	75
	D3	There is bread that falls when brought to the store	2	2	4	16
	D4	Lack of consumer interest in a bread variant	5	4	5	100
<i>Return</i>	R1	Product returns from consumers	3	1	4	12
	R2	Consumers experience disappointment (complaints)	4	2	5	40

After obtaining the output, namely RPN, then proceed with sorting the risks according to the RPN value starting from the risk with the highest RPN value to the lowest RPN value, for risk prioritization, action priority is used,

namely grouping risks into three categories, namely high, medium and low. The following are the priority risks that have the highest RPN and are categorized as Medium.

Table 5. Risk ranking based on RPN value output

Code	Risk	RPN	AP
P1	Improper determination of the amount of material purchased	144	M
S7	Return of raw materials to suppliers	144	M
S2	Delay when ordering materials	140	M
S6	The amount of raw materials received does not match the request	120	M
M1	Delay or error in production schedule	105	M

Analyze The Root Cause of The Risk Using Fishbone Diagram

Based on the risk ranking results, out of a total of 24 risks identified, there were no risks categorized as High. This indicates that the existing risks do not have a very critical impact on operations. However, there are 5 risks that fall into the Medium category, which means that it is highly recommended that corrective action or risk mitigation be taken to prevent a

greater potential impact in the future. These five risks will be used as priority risks and will be continued by using the fishbone diagram tool to find the root cause. Once the causes of these risks are identified, discussions are held with stakeholders to determine potential risk mitigation alternatives. Below are the results of the fishbone diagram analysis for the five prioritized risks in the bread supply chain at Muthia Bakery.

Table 6. Fishbone diagram analysis results

Risk	Factor	Root Cause	Alternative mitigation strategies
Improper determination of the amount of material purchased	Man	Lack of understanding of market demand Lack of employee participation or involvement in the planning process	A1 (Enhancing the collection and analysis of sales data)
	Environment	Unpredictable changes in market trends	
	Method	Lack of sales data monitoring and analysis No structured production planning process has been carried out	
	Material	Lack of quality control when receiving raw materials Lack of good communication with suppliers	
Return of raw materials to suppliers	Man	Raw materials do not meet production quality standards Raw materials that come are not in accordance with the order	A2 (Conducting supplier audits to reduce errors in quality or delivery) A3 (Creating SOPs related to the receipt of raw materials and quality control of raw materials) A4 (Improving communication with suppliers regarding expected specifications and quality standard)
	Method	There is no clear procedure in the process of receiving raw materials	
	Environment	Environmental influences such as inappropriate storage conditions	
	Material		
Delay when ordering materials	Man	Lack of knowledge related to procurement (supplier lead time) Forgetting to place orders on time No use of technology to help monitor inventory	A5 (Implementing inventory control) A6 (Developing efficient procurement SOPs)
	Machine	Lack of ability to efficiently monitor inventory	
	Method	Lack of supplier diversification, resulting in delays in finding alternatives when the main supplier is out of stock	
	Material		
The amount of raw materials received does not match the request	Man	Supplier negligenc Lack of communication with suppliers Employees make mistakes in the process of receiving raw materials	A7 (Creating SOPs for receiving raw materials) A8 (Performing double verification during ordering and receipt of materials) A9 (Expanding the supplier network) A10 (Managing time and creating work priority scales)
	Material	Raw materials received are already/approaching expiration	
	Method	Poor quality of raw materials from suppliers	
	Environment		
Delay or error in production schedule	Man	Lack of proper production planning Lack of coordination between workers	A11 (Improving production planning with more attention to detail and realism)
	Machine		
	Method	Unforeseen external conditions exist Lack of monitoring and supervision of production schedule implementation	
	Environment		

Analythic Hierarchy Process

There are 5 medium risks that will become

priority risks. For each priority risk, alternative mitigation strategies will be sought, so there

are only 5 risk mitigations that will be proposed for improvement. from the results of the analysis using the fishbone diagram, 11 alternative risk mitigations were obtained.

In AHP, the first step that needs to be done is the preparation of the hierarchy, the following is the arrangement of the hierarchy in this study, level 1 is the criteria in the form of risks with the highest RPN which are priority risks then at level 2 are the sub-criteria which are used as a measure that is the basis for determining the most suitable alternatives to be used as risk mitigation strategies, the sub-criteria used are the results of an agreement with the owner of Muthia Bakery and will be used for each criterion then at level 3 of the hierarchy are alternative risk mitigation

strategies, to make it clearer, you can see the hierarchical arrangement in the **Appendix**. After setting up the next hierarchy is the priority assessment of each element, by making pairwise comparisons filled in by the source, then synthesizing by summing the value of the value of each column in the matrix and dividing each value of the column by the total column concerned to obtain the normalization of the matrix, when the normalization of the matrix has been obtained, it is continued by summing the values of each row and dividing them by the number of elements to get the average value or weighting. The weighting results for each criterion and the weighting results for each sub-criteria can be seen in Table 7 as follows.

Table 7. Level 1 weighting results of criteria and sub-criteria

Criteria	Weight	Sub-criteria	Weight
Risk P1	0.160	HR Capability (K1)	0.145
Risk S7	0.196	Cost Factor (K2)	0.112
Risk S2	0.426	Facilities (K3)	0.083
Risk S6	0.153	Level of Usefulness (K4)	0.396
Risk M1	0.065	Scalability (K5)	0.264
Total	1.000	Total	1.000

The calculation of pairwise comparison weights between alternatives will be carried out on each sub-criteria so that the weight results for each alternative in the sub-criteria will be summed up

to get the partial weight of each alternative, the following are the results of weighting on alternatives.

Table 8. Level 3 weighting result

Risk	Alternative	K1	K2	K3	K4	K5	Total
P1	A1	0.145	0.112	0.083	0.396	0.264	1.000
	A2	0.023	0.016	0.008	0.042	0.051	0.141
S7	A3	0.086	0.064	0.056	0.278	0.189	0.673
	A4	0.036	0.032	0.019	0.076	0.023	0.187
S2	A5	0.036	0.028	0.021	0.330	0.220	0.635
	A6	0.109	0.084	0.062	0.066	0.044	0.365
S6	A7	0.046	0.065	0.023	0.065	0.036	0.235
	A8	0.081	0.035	0.052	0.214	0.063	0.444
	A9	0.018	0.012	0.008	0.118	0.165	0.320
M1	A10	0.109	0.075	0.055	0.264	0.198	0.701
	A11	0.036	0.037	0.028	0.132	0.066	0.299

After getting the weight for each alternative, then a consistency test can be carried out to determine the level of consistency of pairwise comparisons. Testing is carried out with the CR (Consistency Ratio) parameter ≤ 0.10 (10%), and for each pairwise comparison that

has been carried out results in a consistency ratio of less than or equal to 10%, which means that all pairwise comparisons at levels 1, 2 and 3 are consistent. With structured risk analysis using SCOR, FMEA, fishbone diagram and AHP method, Muthia Bakery can prioritize the

most impactful risk mitigation. Implementing improvements such as improved sales recording and raw material receipt SOPs will reduce operational costs, increase production efficiency, and maintain customer satisfaction through better supply chain management.

5. CONCLUSION

Based on the research conducted, using the FMEA method, 24 potential risks have been found, of all these risks, 5 priority risks with the highest RPN value were found that disrupt the supply chain process of bakery products at Muthia bakery, namely risk P1 (Inaccuracy in determining the amount of material purchased), S7 (Return of raw materials to suppliers), S2 (Delay in ordering materials), S6 (The amount of raw materials received does not match the request), and M1 (Delay or error in production schedule). Through further analysis with the fishbone diagram of the 5 prioritized risks, a total of 11 alternative strategies were found. And to simplify the decision-making process and ensure efficiency in implementation, the AHP method was used to give weighting to the 11 mitigation proposals. From this weighting, one best mitigation for each priority risk was selected, resulting in 5 mitigation strategies that are most relevant and effective to implement. The following mitigation strategies are Improving sales data collection and analysis, Creating SOPs related to raw material receipt and raw material quality control, Implementing inventory control, Re-verifying when ordering and receiving materials, and Managing time and creating work priority scales. Suggestions for future research is to measure the effectiveness of risk mitigation strategies that have been implemented, such as using Key Performance Indicators (KPIs) to measure the success of mitigation strategies. By using this quantitative approach, it is possible to monitor changes in supply chain performance and assess how effective the strategies are.

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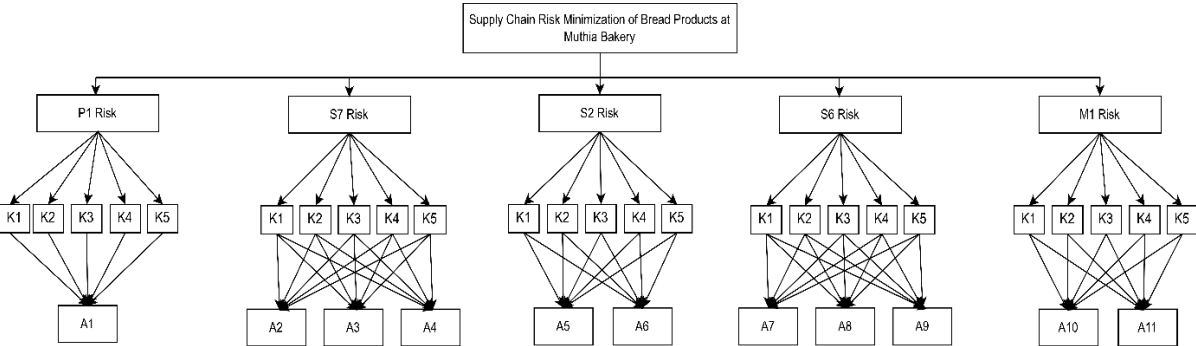
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APPENDIX



Hierarchical structure of bread product supply chain risk mitigation strategies

Description

Risk P1: Inappropriate determination of the amount of material purchased	A3 :	Creation of SOPs related to raw material acceptance and raw material quality control
Risk S7: Return of raw materials to suppliers	A4 :	Improve communication with suppliers regarding expected specifications and quality standards
Risk S2: Delay when ordering raw materials	A5 :	Perform inventory control
Risk S6: The amount of raw materials received is not in accordance with the request	A6 :	Create an efficient procurement SOP
Risk M1: Delay or error in production schedule	A7 :	Making raw material receipt SOP
K1 : HR capability	A8 :	Perform double verification when ordering and receiving materials
K2 : Cost Factor	A9 :	Expanding supplier network
K3 : Facility	A10 :	Perform time management and prioritize work
K4 : Level of Usefulness	A11 :	Improve production planning by being more thorough and realistic
K5 : Scalability		
A1 : Improve data collection and analysis		
A2 : Conduct supplier audits to reduce errors in quality or delivery		