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Analysis Of Operational Risk Of Coffee Processing Factories In Perumda Perkebunan Kahyangan, Jember Regency

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Abstract: Jember Regency has a local coffee product, namely Kopi Kahyangan. Kahyangan Coffee is a ground and roasted coffee product produced by the Perumda Perkebunan Kahyangan Jember with coffee raw materials originating from Perumda's coffee plantations. Production risks can occur if they are not anticipated. The aim of this research is to analyze operational risks arising from processed coffee production activities at Perumda Perkebunan Kahyangan Jember and develop efforts to overcome them. The research results show that of the 8 types of risk, 2 risks have an extreme risk level that requires risk management with immediate countermeasures. 4 risks have a high risk level that requires senior management attention in overcoming them. 2 risks have a moderate risk level which requires determining management responsibility for overcoming them.

Keywords: Coffee, Plantations, Operational risk

INTRODUCTION

Coffee (coffea sp) is a type of tropical plant. There are many other benefits obtained from consuming coffee, coffee with its antioxidant content can significantly improve cognitive function in the form of memory ability. The types of coffee cultivated in Indonesia include Arabica, Robusta, Liberica and Ekselsa. One of Indonesia's mainstay export commodities from plantation crops is coffee. Apart from being an export commodity, coffee is also a source of income for farmers, a producer of raw materials and a source of employment. Indonesia is the largest coffee producing country in Southeast Asia and the third largest in the world after Brazil and Vietnam [1]. Coffee production in Indonesia increases every year. Coffee production in Indonesia in 2019 reached 741,657 tons, in 2020 coffee production in Indonesia increased with total production reaching 762,380 tons, and in 2021 coffee production in Indonesia will still consistently increase with total production reaching 780,869 tons.

The need and consumption of coffee in Indonesia continues to increase every year as Indonesia is one of the largest coffee producers in the world. The increase in coffee consumption in Indonesia is partly due to changes in trends and behavioral patterns of Indonesian people, from initially only consuming food and drinks at home to outside the home in line with the dynamics of changing times.[2]. The opportunities for the Indonesian coffee industry in the domestic and international markets are quite high

Jember Regency also has a local coffee product that has a distinctive taste, namely Kopi Kahyangan. Kahyangan Coffee is produced by Perumda Perkebunan Kahyangan Jember. The coffee used is also coffee that comes from coffee plantations spread across several sub-districts in Jember. The Kahyangan coffee factory was founded in 2008 and continues to produce to this day. It is impossible for a company to be free from risks. Risk is the possibility of deviation from expectations which can cause losses. Risks can arise at any time, so that risks do not hinder activities, risks must be managed and addressed properly [3]. Operational risk is a risk

that is influenced by several factors, namely human factors, processes, procedures, systems and external events. Therefore, risk management is very important in a company. Risk management can be defined as a scientific approach to dealing with pure risk by anticipating potential accidental losses, designing, and implementing procedures that will reduce the financial impact of losses to a minimum [4]. The aim of risk management is to ensure that a company or organization can understand, measure and monitor the various kinds of risks that occur and also ensure that the policies that have been created can control the various kinds of risks that exist [5].

The aim of the research is to analyze operational risks that arise from processed coffee production activities at Perumda Perkebunan Kahyangan Jember, as well as develop efforts to overcome operational risks that arise in processed coffee production activities at Perumda Perkebunan Kahyangan Jember.

METHOD

This research was carried out at the Regional Public Company (Perumda) Kahyangan Plantation, Jember Regency. The selection of this research location was carried out purposively with the consideration that at that location there was a coffee processing factory with various types of products.

The sampling technique used in this research is purposive sampling. Purposive sampling technique is a technique for determining and taking samples determined by the researcher with certain considerations. In this research, the sample consisted of 3 people consisting of factory heads, production employees and warehouse heads. The reason the researcher took these samples was because they were directly related to the operational activities of the Perumda Perkebunan Kahyangan Jember coffee processing factory and were responsible for the raw materials for Perumda Perkebunan Kahyangan Jember's processed coffee products.

The types of data that will be used in this research are primary data and secondary data. The primary data required for research at the Perumda Perkebunan Kahyangan Jember coffee processing factory is as follows: observations focused on the operational activities of the Perumda Perkebunan Jember coffee processing factory and the storage of raw materials for Perumda Perkebunan Jember processed coffee products. Interviews were conducted face-to-face and preceded by a fjd with the three respondents to identify information regarding operational risks that could arise at the Perumda Perkebunan Jember coffee processing factory. Secondary data sources are obtained from literature or written data related to research such as journals and books. The data sources in the research were obtained directly from objects regarding history, profiles, rules and policies, as well as documentation of activities related to the coffee processing factory at Perumda Perkebunan Kahyangan Jember.

To answer the objectives, the Enterprise Risk Management (ERM) analysis method was used, by identifying, assessing, responding to and controlling risks in the operational activities of the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory. Company management can measure and assess the size or scale of the risks faced and can determine the impact of these risks on company operations. By measuring this risk, the company can prioritize risks (the most relevant)[6].

The level of probability or possibility of risk occurring (likelihood) is divided into five groups, namely very rare, rare, moderate, frequent and very frequent. Meanwhile, the level of severity/impact (severity) is also divided into five groups, namely very small, small, medium, large and very large impacts. Risk assessment is carried out to obtain risk scoring, where the risk scoring calculation is the product of the likelihood and severity of each risk [7].

Next, mapping is carried out in a risk matrix to find out which risks are the most priority to be addressed. Each risk value from the level of likelihood (likelihood) and level of severity (severity) is included in the risk matrix to make it easier for researchers to know each risk event according to its level, namely risk level extreme, high, moderate, low, very low.

Table 2 Matriks risk

Likelihood		*Severity*				
		1	2	3	4	5
		Very Low	*Low*	*Moder-ate*	*High*	*Very High*
5	*Very High*	H	H	E	E	E
4	*High*	M	H	H	E	E
3	*Moderate*	L	M	H	E	E
2	*Low*	L	L	M	H	E
1	*Very Low*	L	L	M	H	H

Explanation :

Likelihood : Shows how often the risk occurs.

Severity : Shows how severe the impact of the risk.

After the risk level matrix stage is carried out, risk control can be carried out according to the level of each risk, risks with level E (Extreme risk) must be controlled with immediate countermeasures, risks with level H (High risk) must be controlled with the attention of senior management required , risks with level M (Moderate risk) must be controlled with management responsibilities must be determined, risks with level L (Low risk) can be controlled with low procedures (Table 3).

Table 3 risk control based on risk level

Risk level code	Information	Risk control
E	*Extreme risk*	Immediate countermeasures
H	*High risk*	Senior management attention is required
M	*Moderate risk*	Management responsibilities must be determined
L	*Low risk*	Can be overcome with low procedures

RESULTS AND DISCUSSION

Based on the results of the identification and assessment of operational risks at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory, each risk has a different risk value, namely as follow (Table 4) :

The internal risk that has the highest probability value is the risk of cooling the coffee beans producing thick smoke and coffee skin dust (A3) with a probability value of 5 because the probability of occurrence is quite frequent, namely every day when the Kahyangan coffee production process takes place, then the risk of damage to the coffee grinder machine (A1) and packaging machines (A2) with a probability value of 3 each because the probability of the risk of damage to the coffee grinding machine and packaging machine at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory is moderate. The highest severity value

is the risk of damage to the coffee grinding machine (A1) and packaging machine (A2) with a severity value of 4 each because the severity impact arising from the risk of damage to the grinding machine and packaging machine is large, where if the coffee grinding machine is damaged it can resulting in the cessation of the ground coffee production process, whereas when damage to the packaging machine occurs it can result in the cessation of the production process of all types of ground and roasted coffee, because the packaging process cannot be carried out, so it is very detrimental to Perumda Perkebunan Kahyangan Jember, then the risk of cooling the coffee beans produces smoke thick and coffee skin dust (A3) with a severity value of 1 because the severity impact arising from the risk of cooling the coffee beans producing thick smoke and coffee skin dust is very small.

External risk is the occurrence of a disaster, such as a fire (B1) with a probability value of 1 because the probability of a fire disaster risk occurring at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory is very rare. For the severity value of the risk of a disaster, such as fire (A1) with a severity value of 5 because the severity impact arising from the risk of a disaster, such as a fire at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory, is very large, because when a fire disaster occurs and there is no immediate response It could quickly burn down all parts of the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory due to the large number of flammable materials and equipment.

Table 4 Results of risk identification and assessment

Type of risk	**Code**	**Risk**	**Probability level (*Likelihood*) 1-5**	**Severity level (*Severity*) 1-5**
Internal risk	A1	Coffee grinder machine damage	3	4
	A2	Packaging machine damage	3	4
	A3	Cooling coffee beans produces thick smoke and coffee skin dust	5	1
External risk	B1	Disaster such as a fire occurs	1	5
HR risk	C1	Error in recording reports on raw materials, products in process and finished products	2	3
	C2	Inaccuracies in the quality control process for products to be marketed	2	3
	C3	Work accident	1	4
Raw material risk	D1	Contaminated with fleas	2	4

The HR risk that has the highest probability value is the risk of errors in recording reports on raw materials, products in process and finished products (C1) and the risk of lack of quality control on products to be marketed (C2) with a probability value of 2 respectively because the probability of the risk of error occurring in recording reports on raw materials, products in process and finished products, and the risk of inaccuracy in the quality control process for products that will be marketed at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory which is rare, then the risk of work accidents (C3) with a probability value of 1 because of the probability The risk of work accidents at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory is very rare. The highest severity value is the risk of work accidents (C3) with a severity value of 4 because the severity impact arising from the risk of work accidents that occur at the Jember Kahyangan Plantation Perumda Coffee Processing Factory is large, because when a work accident occurs it can be detrimental to workers and the Kahyangan Plantation Perumda. Jember, including production activities having to stop temporarily, workers being unable to work either temporarily or permanently, the company having to issue compensation or work accident benefits, then the risk of errors in recording reports on raw

materials, products in process and finished products (C1), and the risk of inaccuracy in the quality control process for products to be marketed (C2) with a severity value of 3 each due to the severity impact arising from the risk of errors in recording reports on raw materials, products in process and finished products, and the risk of inaccuracy in the quality control process for products which will be marketed at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory is moderate.

The risk of raw materials is the risk of being contaminated with fleas (D1) with a probability value of 2 because the probability of risk of flea contamination occurring in the Perumda Perkebunan Kahyangan Jember storage warehouse is rare. For the severity value of the risk of being contaminated with lice (D1) with a severity value of 4 because the severity impact arising from the risk of being contaminated with lice in the storage warehouse of Perumda Kahyangan Jember Plantation is large, because if the coffee beans contaminated with lice are not immediately dealt with it can cause the coffee beans to become hollow and destroyed, this has an impact on reducing the weight of the coffee beans, which can reduce the profits of Kopi Kahyangan.

Next, a risk matrix analysis is carried out to map which risks are the most priority to be addressed. Based on the results of research that has been carried out, there are 8 operational risks at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory with different risk levels, 2 risks have an extreme risk level, 4 risks have a high risk level, and 2 risks have a moderate level. (Table 5).

Table 5 Risk matrix results

Likelihood		*Severity*				
		1	2	3	4	5
		Very Low	*Low*	*Moderate*	*High*	*Very High*
5	*Very High*	A3				
4	*High*					
3	*Moderate*				A1, A2	
2	*Low*			C1, C2	D1	
1	*Very Low*				C3	B1

The risk of damage to the coffee grinder machine (A1) and damage to the packaging machine (A2) has an extreme risk level that requires risk management with immediate countermeasures. Overcoming the risk of damage to the coffee grinding machine (A1) and packaging machine (A2) by immediately repairing damage that occurs to the coffee grinding machine and packaging machine at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory and making a regular preventive maintenance schedule to minimize damage to the machine coffee milling and packaging machines at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory. Preventive maintenance is routine maintenance, which is carried out to ensure machine and equipment assets and eliminate potential equipment failure or downtime that may occur. Implementation of this maintenance policy requires planning schedules that must be arranged appropriately and optimally, so that the maintenance activities carried out do not hinder the continuity of the production process [8].

Table 6 Results of operational risk analysis at the Perumda Perkebunan Kahyangan Jember coffee processing factory

Type of risk	**Code**	**Risk**	**Risk Level**
Internal risk	A1	Coffee grinder machine damage	*Extreme*
	A2	Packaging machine damage	*Extreme*
	A3	Cooling coffee beans produces thick smoke and coffee skin dust	*High*
External risk	B1	Disaster such as a fire occurs	*High*

HR risk	C1	Error in recording reports on raw materials, products in process and finished prod-ucts	*Moderate*
	C2	Inaccuracies in the quality control process for products to be marketed	*Moderate*
	C3	Work accident	*High*
Raw material risk	D1	Contaminated with fleas	*High*

The risk of cooling coffee beans producing thick smoke and coffee skin dust (A3), the occurrence of disasters, such as fires (B1), work accidents (C3) and contamination by lice (D1) have a high risk level that requires senior management attention to overcome. To overcome the risk of cooling coffee beans producing thick smoke and coffee skin dust (A3), Perumda Perkebunan Kahyangan Jember as the agency that manages the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory must pay attention to the health of workers regarding the emergence of thick smoke and coffee skin dust from the production process by implementing a system Good K3 includes using PPE such as special clothing, masks and hair coverings as well as increasing the socialization of regulations on the use of PPE, especially providing strict sanctions if workers do not use PPE during Kahyangan Coffee production activities and senior management must always be consistent in implementing the regulations on the use of PPE and providing sanctions for workers who do not use PPE. Personal protective equipment (PPE) is a set of tools used by workers whose function is to protect against all or part of the possibility of potential hazards occurring in the workplace [9].

To overcome with the risk of disasters such as fire (B1), Perumda Perkebunan Kahyangan Jember must ensure that the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory is equipped with fire extinguishers (light fire extinguishers) in order to provide a quick response when a fire disaster occurs, and senior management can provide training to workers to know the handling procedures when a fire disaster occurs at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory. A fire extinguisher is a fire extinguisher that can be carried or carried and operated by one person. The fire extinguisher has a weight of 0.5 kg-16 kg according to needs and is used in early stage fires or fires [10].

To overcome the risk of work accidents (C3), Perumda Perkebunan Kahyangan Jember, it is very important to carry out training and socialize the importance of the K3 system, and senior management can tighten the K3 system at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory in order to avoid and minimize the possibility of work accidents occurring in the Processing Factory Kopi Perumda Perkebunan Kahyangan Jember. It is very important to pay attention to the K3 system because by implementing a good K3 system, the number of work accidents can be minimized so that every company activity continues to run smoothly and is not disrupted [11].

To overcome the risk of lice contamination (D1) in the Perumda Perkebunan Kahyangan Jember storage warehouse is by improving the quality of the storage warehouse by installing senior management by installing temperature control devices so that the storage warehouse space remains dry and not damp so as to avoid lice contamination (D1) in the Perumda storage warehouse. Jember Kahyangan Plantation is improving the quality of the storage warehouse by installing senior management by installing temperature control devices so that the storage warehouse space remains dry and not damp so as to avoid contamination by vermin (D1). the appearance of lice on coffee beans. As well as tightening supervision of storage warehouses by periodically checking sacks containing coffee to ensure the presence of pests.

The risk of errors in recording reports on raw materials, products in process and finished products (C1) and inaccuracies in the quality control process for products to be marketed (C2) have a moderate risk level which requires determining management responsibility for overcoming them. Overcoming the risk of errors in recording reports on raw materials, products in process and finished products (C1) by management improving the performance of workers at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory by conducting training and maintaining the condition of workers so that they always feel comfortable and safe at work by implementing a good K3 system to maintain worker concentration and performance at work. Concentration can be interpreted as the ability to overcome threats faced mentally, physically, emotionally and spiritually by humans so that all activities can be carried out with high levels of satisfaction. The effect of concentration on work performance is very significant [12].

Overcoming the risk of inaccuracy in the quality control process for products to be marketed (C2) by increasing and tightening management supervision of the quality control process at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory in order to minimize the presence of damaged and defective products that escape the quality control process and spread to consumers.

CONCLUSION

Based on the results of research conducted at the Perumda Perkebunan Kahyangan Jember Coffee Processing Factory and discussions, it can be concluded that the risk of damage to the coffee grinding machine (A1) and damage to the packaging machine (A2) has an extreme risk level that requires risk management with immediate countermeasures. The risks of cooling coffee beans producing thick smoke and coffee skin dust (A3), disasters such as fires (B1), work accidents (C3) and contamination by lice (D1) have a high risk level that requires senior management attention in overcoming them. The risk of errors in recording reports on raw materials, products in process and finished products (C1) and inaccuracies in the quality control process for products to be marketed (C2) have a moderate risk level which requires determining management responsibility for overcoming them.

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