

AGARWOOD SUPPLY CHAIN MANAGEMENT IN CENTRAL JAVA PROVINCE

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ABSTRACT

This paper aims to analyze the supply of agarwood, the inhibiting factors of agarwood supply, and the amount produced from one agarwood tree in one harvest. Data was obtained from the head of a plantation farmer group in limpung sub-district, a Field Extension Officer in limpung sub-district, a branch office head in limpung sub-district, and company owners. The research method uses qualitative methods. The results of the study concluded that the supply of agarwood in November 2015 to August 2016 experienced a shortage and even a supply vacuum. Factors that hinder the availability of supplies are natural factors and vaccines or drugs injected into agarwood trees. The harvest obtained from one agarwood tree is 5 kg per tree assuming one harvest reaches 10 agarwood trees with a total amount of agarwood as much as 50 kg.

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1. INTRODUCTION

Nowadays supply chain management is no longer considered a new thing for companies. Many companies have implemented supply chain management in their business to increase the efficiency of the company's logistics processes. Purpose of chain management Supply is to minimize total supply chain costs in meeting fixed and irregular needs. Total costs include raw material costs and surcharges, shipping transportation costs, investment facility costs, direct and indirect production costs, inventory costs, and so on.

According to Wuwung's research (2013) supply chain management is a system that involves the process of production, delivery, storage, distribution, and sale of products in order to meet the demand for these products. In the supply chain includes all processes and activities involved in delivering products to consumers. According to Heizer and Render (2001) supply chain management can include the determination of (1) carriers, (2) credit and cash transfers, (3) suppliers, (4) distributors and banks, (5) payables and receivables, (6) order fulfillment, (7) order fulfillment, and (8) dispensing information on demand forecasts, production, and inventory control activities.

According to Poerwanto (2010) the risks that can arise in the supply chain flow, namely (1) Risk of supply disruption, (2) Risk of needs and supply plans, (3) Risk of purchase prices, (4) Risk of inventory and obsolete goods (obsolete),

(5) Risk of inefficient processes, (6) Risk of expertise and qualification of human resources. The implications of supply chain failures will lead to significant losses and delays in delivery to customers. The plantation is any activity that cultivates certain crops on soil and / or other growing media in the appropriate ecosystem; processing, marketing goods and services from these plants, with the help of science and technology, capital and management to realize welfare for actors plantation and community business.

In Wikipedia, plantations are divided into two according to their intensive nature, namely agroforestry and silviculture (forest cultivation). Maintenance plantations play an important role, while in agroforestry and silviculture plants tend to be allowed to grow according to natural conditions. Plantations almost always apply the monoculture mode of cultivation due to its intensive nature, except for certain commodities such as pepper and vanilla. This study aims to determine the supply of agarwood, inhibiting factors of agarwood supply, and the amount produced from one agarwood tree in one harvest.

2. LITERATURE REVIEW

According to Heizer (2010) supply chain management is the integration of material and service procurement activities, deformation into semi-finished goods and final products, and delivery of goods to

customers. All of these activities include purchasing and outsourcing activities, as well as other functions that are important to the relationship between suppliers and distributors. According to Storey (2006), the focus in his research is supply strategy, strategy, and supply chain management aimed at operating strategy. One function and process that is often lost is the supply network. While other networks are expanded, for example, approaches that focus on purchasing activities and components of these supply activities (system components). According to Heizer (2010) companies must decide on a supply chain strategy in order to obtain goods and services from outside. One strategy is the approach of negotiating with many suppliers and pitting one supplier against another. The second strategy is to develop long-term partnership relationships with few suppliers to satisfy customers. The third strategy is vertical integration where companies can decide to use vertical reverse integration by purchasing these suppliers. The fourth variation is a combination of few suppliers with vertical integration known as the keiretsu network. Inside keiretsu suppliers become part of a unified company. According to Jebarus (2001) In general, the application of the concept of supply chain management in the company will provide benefits namely customer satisfaction, increasing revenue, decreasing costs, higher asset utilization, increasing profits, and getting bigger companies.

According to Ma'arif (2003) managing the supply chain means planning, organizing, directing, and controlling the flow of goods from suppliers to consumers. There are several things that can be done to manage the supply chain, namely delays or downloads, assembly lines, reducing or stopping shipments, ordering entirely, purchases that do not use invoices, ordering electronic and fund transfers, purchases that do not lead to inventory, standardization, establishing lines of credit for suppliers, reducing bank floats, coordination of production and delivery schedules with its suppliers and distributors, mutual share in market research, and optimize the use of vacant space in warehouses.

According to Cheny (2004), companies carry out various initiatives and approaches to discuss various issues related to the supply chain, namely purchasing strategy, supply management, logistics integration, and provision of coordination networks. According to Ma'arif (2003) there are two things that must be considered in the application of supply chain, first internal supply chain, namely looking at the business process and seeing things that can be improved in terms of technology and referring to efficiency in operating companies. Secondly, external supply chain, some of the components needed are supplied from outside so that each supplier has a link.

According to Haming (2012), to support the smooth receipt of materials from suppliers and distribution out to consumers, transportation facilities are important. Companies and suppliers in choosing the type of transportation to be used need to consider six factors, namely what transportation is available, the inventory of materials and products to be transported, transportation distance, nature of the products to be transported, the volume of goods transported, administration, duties or excise duties to be paid, risks and damage to products, handling and packing costs.

3. METHODS

This type of research is descriptive with a qualitative approach, which uses data in the form of words, schemes, and images. According to Moleong (2004: 6) qualitative research is research that intends to understand the phenomenon of what is experienced by research subjects holistically and by way of description in the form of words and language in a special context that is natural and by utilizing various natural methods. In this study, the object is supply chain management. The object of research according to Maryadi et al. (2013) is the variable studied, either in the form of events, behavior, activities, or other social symptoms. Data sources in this study were obtained from company owners, branch office heads, field extension officers (PPL), and farmers in plantations. According to Moleong (2004), the main data sources are the words and actions of the people observed and interviewed. The main data sources are recorded through written records or through recording, photographing or filming. The source of the data in this study was obtained clearly and definitively.

According to Sugiyono (2010), data collection techniques are the most strategic step in research because the main goal in research is to obtain data. The data collection technique used in this study was using interview and documentation methods. The stages of this research are (1) Data collection. Data collection is the first step in carrying out a study, where researchers dig as deep as possible into the data related to the study. In this study the data collected in the form of interviews with the company, namely company owners, branch office heads, field extension officers (PPL) and farmers in plantations, (2) Data Reduction. Data reduction is summarizing the data that has been collected then directing and emphasizing important things about the data so that it becomes a narrative of data presentation. Based on the data that has been collected, researchers select some appropriate data so that it can be used to answer the problem

formulation, (3) Presentation of data. The purpose of presenting data is for research to be more focused and make it easier for researchers and readers to understand the existing data. According to Sugiyono (2012), in qualitative research, data presentation will be carried out in the form of brief descriptions, charts, intercategory relationships, flowchart, and so on. Based on this opinion, in this study the data presented by researchers is in the form of descriptions or narratives of interviews with respondents, schemes, and images. (4) Drawing Conclusions. At this stage, researchers draw conclusions based on previously presented data to answer problem formulations about supply chain conditions, inhibiting factors, and the large amount of agarwood produced in one tree.

4. RESULTS AND DISCUSSION

Agarwood Supply Chain Analysis

From the data that has been obtained, the results can be taken, namely, Agarwood is one of the plantation products with a selling price determined by market and consumer conditions. Injected agarwood can be harvested after reaching the age of 8 years and has passed the stages in the process of planting, vaccination, and tree care. Vaccination against trees can be done after the tree reaches the age of 4 years. As for natural agarwood, it can be harvested after reaching the age of 20 years. The process of harvesting trees from cutting to curving takes 6 weeks. In one harvest can reach 10 trees, the amount of harvesting is adjusted to the demand of buyers and the needs of the company. For one harvest per one tree can produce agarwood as much as 5 kilograms. Factors that often influence failures in supply availability and harvesting are weather factors and vaccines injected into trees. Weather factors greatly affect the condition of agarwood trees. Excess hot weather causes trees to dry out and excess rainy weather causes mold to grow on trees.

From the distribution flow scheme above, it is known that supplies entering the central company come from plantations located in the Bontang and Balikpapan regions sent to east Kalimantan branch offices, Rasau Jaya and Sekadau regions are sent to west Kalimantan branch offices, regions Sampit was sent to the Central Kalimantan branch office, the Riau region was sent to the Riau branch office, and the Wonosobo and Kendal regions were sent to the Central Java branch office.

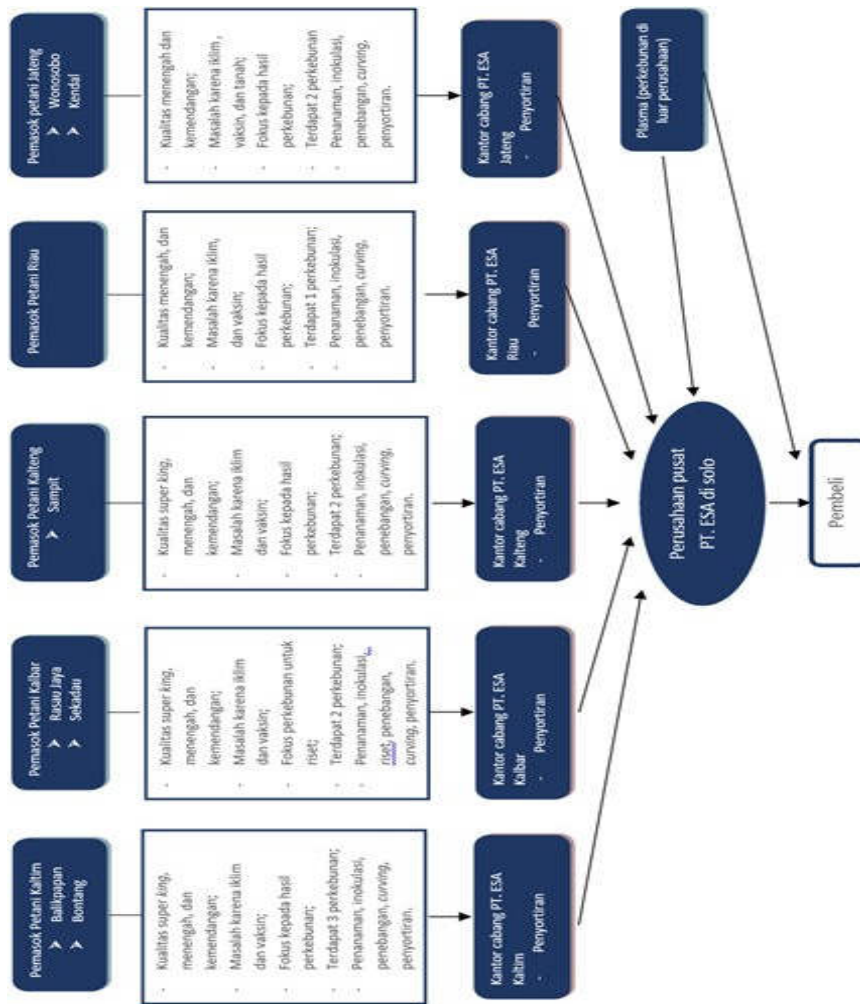


Figure 1. Agarwood Supply Chain Flow Scheme

Agarwood that enters from farmers to branch offices will first be re-sorted at PT. ESAs located in each region. This sorting is done according to the needs of companies that request grouping of wood based on quality and based on requests from agarwood buyers. After arriving at the central company, the company immediately sends the goods to the buyer. Local buyers can come directly to the company and choose wood Agarwood as desired or through ordering and directly delivered to the buyer's destination. As for furniture originating from abroad, the goods are sent only to Jakarta then the goods are brought by the buyer to their respective countries with the licenses they have.

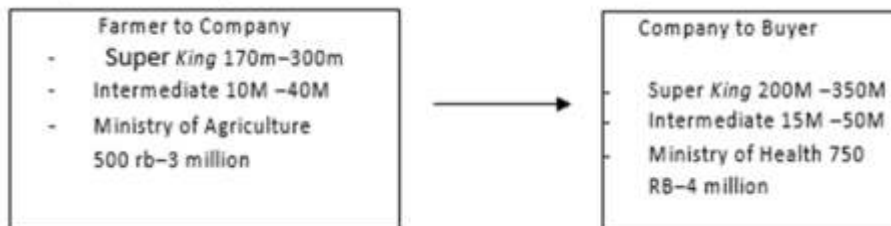


Figure 2. Agarwood Price Flow Scheme

Table 1. Average Lowest and Highest Purchase Prices of Agarwood

Lowest Price	Highest Price	Lowest Price	Highest Price	Lowest Price	Highest Price
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Farmer	150 million	350 million	8 million	50 million	300K	4 million
Company	200 million	400 million	10 million	55 million	500K	5 million

The average price from farmers ranges from 170 million-300 million/kg for super king quality, 10 million-40 million/kg for medium quality, while for the kemendangan class 300 thousand-3 million/kg. The price is sold by the company at a super king quality price 200 million-350 million/kg, medium quality 15 million-50 million/kg, while for the Ministry of Agriculture class 750 thousand-4 million/kg. The price is determined based on agarwood market conditions and buyer demand. The transportation cost of transporting wood from the plantation to the branch office averages 3 million using a pickup truck, while the transportation cost from the branch office to the company an average of 50 thousand/kg with using cargo service delivery.

Discussion

Agarwood Supply Conditions at PT. Immortal Ocean Eagle. Supply contained in the company PT. Elang Samudra Abadi is currently experiencing a supply vacuum or there is no agarwood in the central company. This happens because the plantations owned by the company have not been able to harvest agarwood from their own plantation products. Frequent occurrence of failures in agarwood harvesting causing a supply vacuum. The supply vacuum occurred from November 2015 until now.

Factors that Hinder the Availability of Agarwood Supply at PT. Immortal Ocean Eagle. Supply shortage in the company PT. The Eternal Ocean Eagle is caused by several factors. The first factor is due to extreme weather, if there is excessive or wet rain, agarwood will be easily exposed to fungi that will cause death to agarwood trees, otherwise if the climate is too hot then the tree will experience drought and die. The second factor is the vaccine or drug injected into the agarwood tree, if the drug or vaccine is not suitable for the agarwood tree then the tree will die. The failure rate that occurs in plantations can reach 70% or even more, if it has reached that number then agarwood cannot be harvested.

Supply that Can Be Produced from Each Agarwood Tree PT. Eternal Ocean Eagle. Agarwood that can be produced in one harvest of 100% of the agarwood tree can be utilized. From 100%, for refining oil can be taken from the whole log. The total that can be produced from agarwood per stick can reach 5kg of agarwood with resin. In one harvest can reach 10 tree trunks with a total amount of agarwood that has resin of 50 kg. From the harvest of agarwood gardens can produce agarwood which is grouped in several classes. Starting from a super class King can reach the highest price of 400 million / kg, for agarwood with the middle class can reach the highest price of 50 million / kg, while for the kemendangan class with the highest price of 5 million / kg.

Agarwood Distribution Pattern PT. Immortal Ocean Eagle. Distribution in the company PT. Elang Samudra Abadi covers several points, namely the activity of distributing goods from farmers to companies and from companies to buyers. The company delivers goods in accordance with regulations determined by the forest service in accordance with a predetermined quota. According to Heizer (2010: 4) supply chain management is the integration of material procurement activities and services, changing the form into semi-finished goods and products end, as well as delivery of goods to customers.

Agarwood Supply Chain PT. Immortal Ocean Eagle. Company PT. Elang Samudra Abadi carries out activities to convert raw goods into semi-finished goods, namely from the form of agarwood trees into wood that has been curving and can be directly processed by buyers. The company prioritizes the quality of agarwood sold and utilizes maximum time to carry out maintenance to agarwood harvesting. In line with theory According to Heizer (2001: 412). Supply chain management or supply chain management is the processing of activities in order to obtain raw materials, transform material The raw becomes work-in-progress and finished goods, and ships the product to consumers through the distribution system.

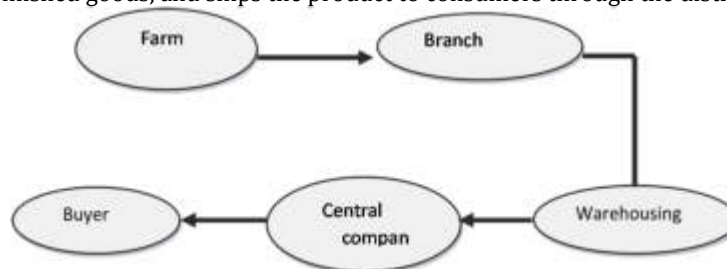


Figure 3. Supply Chain Flow of PT. Eternal Ocean Eagle

Agarwood supply chain flow of PT. Elang Samudra Abadi starts from farmers then sent to branch offices, warehouses are carried out at branch offices, then agarwood is sent to the head company in Solo and from the head office then sent to buyers. PT. Elang Samudra Abadi in 2013 produced 130 kilograms of agarwood, in 2014 as much as 100 kilograms, and in January 2015 to October 2015 produced 50 kilograms. From November 2015 to August 2016 PT. The Eternal Ocean Eagle is experiencing a shortage of supply and even a void in its supply.

5. CONCLUSION

From the research that has been done, the following conclusions can be drawn: Agarwood supply conditions PT. The Eternal Ocean Eagle at this time is experiencing shortages and even supply vacancies. This happens because of frequent failures in agarwood harvesting. This void in supply occurred from November 2015 to August 2016. Failure in harvesting is caused by several factors that can affect the growth of fierce wood and even death of agarwood trees. Factors that hinder the availability of agarwood supply at PT. The first Eternal Ocean Eagle is a natural factor, if the weather is too extreme rain or rainfall is too high it will cause death because the growth of fungi on agarwood trees and agarwood will be flooded by rainwater. After the rainy season and excessive hot weather, there will be drought of agarwood trees and the trees will die. The second factor is the vaccine, if the vaccine injected into the agarwood tree does not match the tree, that is, the mixed medicine in the vaccine is not suitable, then the agarwood tree will die. These two factors are the main triggers for failure in agarwood harvesting. Agarwood that can be produced from each agarwood tree at PT. The Eternal Ocean Eagle can reach 5 kilograms per log. One harvest can reach 10 logs with a total harvest of up to 50 kg for wood that produces resin. The number of agarwood logs harvested by the company is in accordance with the demand from buyers and the needs of the company. The results of research on agarwood supply chain management in PT. Eternal Ocean Eagle Agarwood Green Gold In Central Java, there are still shortcomings that researchers find. Researchers provide several suggestions, including: The company more often checks and controls trees so that there is no death and destruction of trees. Companies should conduct research on trees to anticipate factors that can cause death so that they can be overcome early. Company owners more often conduct evaluations at each branch office to find out shortcomings in the management of their plantations. Companies often forge partnerships with local farmers to address supply shortages. Companies often conduct research to develop technology in agarwood cultivation.

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