

CHAPTER I

INTRODUCTION

This chapter consists of Background, Problem Formulation, Research Objectives, Research Scopes, and Outline of the Report.

1.1 Background

Indonesia as an agrarian country has developed agriculture sector into one of economic power beside industries and service sector (Badan Pusat Statistik, 2015). It becomes one of economic power because it is able to accommodate a lot of jobs. Badan Pusat Statistik (2015) indicated 34% of Indonesian labor work in this sector. The high potential would be advantageous if developed properly, because it would increase PDB (Produk Domestik Bruto) of the country (Ichsan, 2013). The percentage of Indonesian labor based on economic sector can be seen in **Table 1.1**.

Table 1.1 The Percentage of Indonesian Labor based on Economic Sector (Badan Pusat Statistik, 2015)

Economic Sector	2010	2011	2012	2013	2014
(1)	(2)	(3)	(4)	(5)	(6)
Agriculture	38,3	36,4	35,2	34,8	34,0
Industries	14,0	14,8	15,3	14,8	14,9
Mining	1,2	1,3	1,4	1,3	1,3
Manufactures	12,8	13,5	13,9	13,5	13,6
Service	47,7	48,8	49,5	50,4	51,3
Commerce	20,8	20,8	20,9	21,4	21,7
Other Service	26,9	28,0	28,6	29,0	29,6
Total	100,0	100,0	100,0	100,0	100,0

In agriculture sector, the government usually focus on the food commodities such as rice, corn, and bean. One of food commodities that have a strategic role in the national economy is corn (Sesbany, 2008). In 2015, corn has become the second largest contributor after rice in food crops in Indonesia (Badan Pusat Statistik, 2015). Indonesia's corn demand continues to increase every year, both for food and cattle diet product as well as industrial fuel (Sesbany, 2008). The increasing of corn production in Indonesia can be seen in **Table 1.2**.

Table 1.2 Harvest Area of Corn, Productivity, and Corn production in Indonesia based on region, year 2014–2015 (Badan Pusat Statistik, 2015)

Description	2014	2015	Growth	
			2014-2015	
			Scale Error	%
a. Harvest Area (Ha)				
Java	1,954,175	1,952,289	-1,886	-0.1
Outside of Java	1,882,844	1,834,526	-48,318	-2.57
Indonesia	3,837,019	3,786,815	-50,204	-1.31
b. Productivity (quintal/Ha)				
Java	51.98	54.37	0.85	2.39
Outside of Java	47	49.04	4.01	2.04
Indonesia	49.54	51.79	2.27	2.25
c. Production (Ton)				
Java	10,158,725	10,614,441	455,716	4.49
Outside of Java	8,849,701	8,997,263	147,562	1.67
Indonesia	19,008,426	19,611,704	603,278	3.17

Table 1.2 shows the number of corn production in 2015 as 19.61 million tons, and it increased 0.60 million tons (3.17%) compared to 2014. The increasing of corn production occurred in Java and outside Java with 0.46 million tons and 0.15 million tons respectively. The increasing of production occurs due to the increasing of productivity by 2.25 quintal/hectare (4.54%). On the other hand, the harvest area is decreased by 50.20 thousand hectares (1.31%).

In order to meet the needs of national corn and decrease the volume of imports, Indonesian government has projected the corn productivity enhancement program since 2007 to expand the harvest area of corn planting of augments and the use of hybrid varieties (Sesbany, 2008). Currently, the national harvest area is about 3.70 million hectares with a production of 2.25 quintal/hectare, while the needs of the society for corn will be fulfilled with an area reaches 5.0-10.0 ton/hectare depend on the land condition, local environment, and technology applied (Sesbany, 2008). This fact shows the productivity of the corn still need to be developed.

Due to the increasing of society consumption to the corn as well as the availability of the current corn, it is necessary to increase the corn production. The increasing of the corn consumption can also indicate the increasing of the corn's role in the growth of the national food crop. The increasing demand of corn in Indonesia has encouraged the development of cultivation corn itself. Currently, the development of corn plants have been conducted by producing seeds corn plants, known as hybrid corn.

West Sumatera is one of corn producers province in Indonesia. Extensive harvest area in West Sumatera has reached 89.560 hectares (Badan Pusat Statistik Provinsi Sumatera Barat, 2015). The largest harvest corn area in West Sumatera are at West Pasaman (44.948 Ha), South Pesisir (14.208 Ha) and Agam (7.932 Ha). The comparisons of harvest area, productivity, and corn production in West Sumatera can be seen in **Table 1.3**.

From **Table 1.3**, it can be seen West Sumatera has a high corn production in 2015 with a total of 618.833 tons. It has increased 2.23% (605.352 tons) compared then previous year. The increasing of corn production is also followed by the increasing of productivity as 4.21 quintals/hectares or around 6.26%.

Table 1.3 The Comparison of Harvest Area, Productivity, and Corn Production In West Sumatera year 2014-2015 (Badan Pusat Statistik Provinsi Sumatera Barat, 2015)

Corn	2014	2015	Growth	
			2014-2015	
			Scale Error	%
a. Harvest Area (Ha)				
January – April	28,083	28,463	380	1.35
May – August	25,299	29,857	4,558	18.02
September – December	39,715	31,240	-8,475	-21.34
January – December	93,097	89,560	-3,537	-3.80
b. Productivity (quintal/Ha)				
January – April	65.18	69.09	3.91	6.00
May – August	63.93	70.22	6.29	9.84
September – December	65.61	68.03	2.42	3.69
January – December	64.91	69.11	4.21	6.26
c. Production (Ton)				
January – April	183,045	196,651	13,606	7.43
May - August	161,737	209,656	47,919	29.63
September - December	260,570	212,526	-48,044	-18.44
January - December	605,352	618,833	13,481	2.23

PT Citra Mandiri Nusantara (PT CNM) is one of the largest companies of hybrid corn in West Sumatera that operates to fulfill the society need. PT CNM is located in Ampang Kualo, Solok, West Sumatera . It was founded by H. Shukri Suid in 1999. Nowadays, PT CNM has successfully developed 6 hybrid corn varieties as can be seen in **Table 1.4**.

Table 1.4 Varieties of Corn Hybrid in PT Citra Nusantara Mandiri

No.	Varieties	Released Year
1	Hybrid Corn A4	2001
2	Hybrid Corn NT 10	2005
3	Hybrid Corn N 35	2005
4	Hybrid Corn N 37	2012
5	Jagung Varietas NT 104	2012
6	Jagung Varietas NT 105	2012

PT Citra Nusantara Mandiri supply the raw corn to be processed into the hybrid corn from various areas in West Sumatera. The suppliers area are in Solok, Tanah Datar, and Dharmasraya. The total harvest areas reach 1.100 Ha (Badan Pusat Statistik, 2015). Currently, PT CNM has partnered with more than 1.500 farmers throughout of supplier area. In addition to collaborate with the farmers from various regions, PT CNM also worked with CV Usaha Tani in Solok as a supplier of chemical supplies and fertilizer.

Related to marketing aspect, PT CNM has collaborated with PT Pertani as a government institution of hybrid corn distributor in Indonesia. PT Pertani distributes the hybrid corn to retailers that has ordered. PT Pertani Bukittinggi as a distributor of PT CNM has 7 retailers located around Bukittinggi and Batusangkar. List of all retailers of PT Pertani can be seen in the **Table 1.5**.

Table 1.5 Retailers of PT Pertani Bukittinggi

No.	Retailers	Location
1	CV SUMBER TANI	Balai Panjang, Bukittinggi
2	CV INDOTANI	V Kaum, Batusangkar
3	CV SUBUR UTAMA	V Kaum, Batusangkar
4	CV CAHAYA TANI	Sungai Tarab, Batusangkar
5	TOKO SAHABAT TANI	Sungai Tarab, Batusangkar
6	TOKO PUTRI SAIYO	Sungai Tarab, Batusangkar
7	TOKO YARA TANI	Batusangkar

In order to fulfill the customer demand, PT CNM should manage the right amount of their stock and at the right time when making an order of the raw corn to the suppliers. One of the problem is the losses of the company because of cancellations the order due to delivery delays or out of stock. In addition, the instability of corn prices also has a big impact to the suppliers (farmers) as well as PT Citra Nusantara Mandiri itself.

Supply chain problems of Agriculture Company will be more complicated compared than other companies because of the agricultural product itself and also the influence of nature in the production process (Astuti, 2010). Supply Chain Risk Management (SCRM) identifies any possible risks that need to be considered, and analyze the risks and the causes (Rhamadani, 2015). SCRM considers each actor in the supply chain network which the upstream (suppliers), as well as the downstream (distributors).

The big supply chain network of hybrid corn, collaborating with more than thousand farmers and retailers throughout West Sumatera certainly has many risks. The differences of corn quality from the suppliers is one of the risks occurred in PT Citra Nusantara Mandiri. In addition, the fluctuation in demand and the corn prices in the market are also the risks for each actor in the supply chain of hybrid corn. The changes of the weather and lack of knowledge of corn cultivation can be the problems for the farmers. It caused of the wrong time of planting, therefore when the time of harvest, the corn price will decrease.

The distance of each actor location will also lead some risks. Those risks include traffic accident, delivery delays, and high transportation cost, especially for the distributors and retailers. These risks could make some losses for each actor. It will also reduce the productivity and the amount of corn in the market, thus the society needs cannot be fulfilled.

The possible risks occurred in the supply chain of hybrid corn can be managed by applying the supply chain risk management. Therefore, an appropriate risk management is required to achieve a higher profit for the entire actor in the supply chain stage. The whole supply chain actors of the hybrid corn need to arrange an appropriate strategy to reduce or eliminate the risks. By determining the risks handling, the profit for each actor in the supply chain stage and the productivity of hybrid corn can be increased as well as the society needs can be fulfilled, especially in West Sumatera.

1.2 Problem Formulation

Based on the research background, the problem formulation for this research are:

1. What are the possible risks in the supply chain of hybrid corn?
2. What are the preventive action to manage the risks in the supply chain of hybrid corn?

1.3 Research Objectives

The research objectives of this research are:

1. Identify and analyze the possible risks in the supply chain of hybrid corn.
2. Develop the preventive action to manage the risks in the supply chain of hybrid corn.

1.4 Research Scopes

The scopes of this research are:

1. The research is limited to a single distributor, PT Pertani Bukittinggi.
2. The suppliers in this research are focused only on the suppliers in Solok area.

1.5 Outline of The Report

The Final Project Report is structured as follow:

CHAPTER I INTRODUCTION

This chapter consists of Background, Problem Formulation, Research Objectives, Research Scopes, and Outline of the Report.

CHAPTER II LITERATURE REVIEW

This chapter consists of theoretical background related to the problem. The literatures consist of theory on hybrid corn, supply chain management, risk management, supply chain risk management, failure mode and effect analysis (FMEA), quality function deployment (QFD), house of risks (HOR), sampling technique, and ABC Method.

CHAPTER III RESEARCH METHODOLOGY

This chapter describes the methods and techniques used in this research consist of data collection, objects of study, and theory applied in this research. The steps of research methods are preliminary study, literature review, problem identification, problem formulation, research object, collecting data by interview and questionnaire, risk handling using First and Second House Of Risk (HOR) Model, discussions, conclusions, and suggestions.

CHAPTER IV THE IMPLEMENTATION OF HOUSE OF RISK (HOR) METHOD

This chapter describes the implementation of House of Risk (HOR) method in risk management of the supply chain of hybrid corn. House of Risk (HOR) method divided into two models, the First House of Risk Model and the Second House of Risk Model.

CHAPTER V DISCUSSIONS

This chapter discusses the research results consist of, risk event and risk agent, severity, occurrence, correlation, aggregate risk potential (ARP) assessment, risk evaluation, and risk response.

CHAPTER VI CONCLUSIONS

This chapter consists of research conclusions and suggestions for the future research.

