CHAPTER 1

INTRODUCTION

1.1 Research Background

Indonesia is on the top ten of sugar consumer in the world. The people put sugar in most of the foods, drinks, cakes, bakery, etc. The existence of sugar for Indonesian people becomes more important as a source of calories and flavorings. It, then, becomes one of the basic foods which grow rapidly along with the growth of the population. Direct human consumption of sugar in Indonesia is estimated at 2,8 million tons. Per capita consumption is estimated at 19 kg (USDA, 2013).

Since the demand of sugar is high, sugar industry plays an important role to supply it. Sugar industry was first introduced in Indonesia by The Dutch East Indies in the nineteenth century in order to be exported. According to Mubyarto (1984) in Dachliani (2006), in 1928, Indonesia had 178 sugar factories which utilized 200.000ha field. It was the glorious period of Indonesian sugar industry. They produced almost 3million tons sugar which half of them were exported. Indonesia became the second largest exporter in the world after Cuba at that time.

However, after Indonesia proclaimed its independency, the net export decreased due to instable economic condition. The productivity of sugar industry could not fulfill the continuous increasing demand (Table 1.1.). It reached its climax on 1966 when export was totally stopped. The next year, in 1967, Indonesia started to import sugar. Since then, import increases annually until now. The current sugar import and export are shown in Table 1.2. According to the Global Trade Atlas, Thailand (58%), Australia (14%), India (9%), and South

Korea (9%) were the main suppliers of refined sugar to Indonesia. For raw sugar, Thailand (56%), Brazil (29%), Australia (12%) and the Philippines (2%) were the main suppliers (USDA, 2013).

Table 1.1.
Indonesia's Sugar Production and Consumption (1994-2004)

Year	Production (000 ton)	Consumption (000 ton)
1994	2.460,9	2.941,2
1995	2.104,6	3.179,1
1996	2.100,5	3.073,8
1997	2.196,5	3.373,5
1998	1.491,5	2.739,3
1999	1.488,6	2.999,9
2000	1.690,7	3.020,3
2001	1.725,5	3.085,8
2002	1.755,4	3.190,5
2003	1.631,9	3.229,1
2004	2.051,6	3.267,7
Growth (%/year)	-0,63	1,39

Source: Indraningsih and Malian, 2006. *Perspektif Pengembangan Industri Gula Indonesia*. Bogor: Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian.

Table 1.2.
Indonesia's Sugar Import and Export (in thousand)

Sugar, Indonesia	2011/2012	2012/2013
Raw imports	2.888	2.860
Refined Imports	139	340
Total Imports	3.027	5.649
Raw Exports	0	0
Refined Exports	0	0
Total Exports	0	0

Source: USDA (United States Department of Agriculture. 2013. Indonesia Sugar Annual Report 2013. Report published.

Many factors affected sugar industry to lose its glorious period, such as the lack of sugar cane field and the obsolete technology of sugar industry. Indonesia only has 375.000 ha sugar cane field (USDA, 2013). It is only 29% compared to Thailand which has 1.300.000 ha field. Farmers in Indonesia are less intended to plant sugar cane due to the obsolete technology of sugar industry. The income that

the farmer gets also depends on the capability of sugar factory to generate sugar cane into crystal sugar whereas the sugar factories in Indonesia are still inefficient. Indraningsih and Malian (2006) conducted research in sugar industry. The research showed that mill extraction, boiling house recovery and overall recovery of Indonesian sugar factory are below normal efficiency.

However, Joko Widodo, in his campaign speech to become president said that if he became a president, he will stop import to motivate the farmer. He believed that Indonesia could do it since everything is available, vegetables, rice, fishes, etc. The effort of farmer to produce foods needs to be appreciated in order to motivate them to produce more (Kompas.com, 2014). As he becomes a president now, the lack of sugar cane field may be solved in the future. The problem which needs to be solved is, thus, the eeficiency of sugar factory.

Indraningsih and Malian (2006) discovered that most of Indonesian sugar factories are still inefficient both economically and technically. Sugar factory is categorized into economically efficient if the cost to produce sugar is less than Rp2.100. In another hand, it is categorized as technically efficient if it can produce sugar more than 7ton/ha. Figure 1.1 showed the quadrant of efficiency in Indonesian sugar factory. Quadrant 1 represents economically and technically efficient factories. Quadrant 2 represents economically efficient but technically inefficient factories. Quadrant 3 represents economically and technically inefficient factories. Quadrant 4 represents technically efficient but economically inefficient factories.

2	Economically Efficient	1
No Factories		1. Gunung Madu Plantation 2. Sweet Indolampung 3. Indolampung Perkasa

Technically		
3	**Efficient**	4

3			4
1. Jatitujuh	18. Merican	35. Soedhono	1. Sumberharjo
2. Karangsuwung	19. Ngadirejo	36. Wonojangan	2. Mojo Panggung
3. Sindang Laut	20. Pesantren baru	37. Wringinanom	3. Jatiroto
4. Subang	21. Tulangan	38. Kuala Madu	
5. Tersana Baru	22. Watutulis	39. Bunga Mayang	
6. Gondang baru	23. Asembagus	40. Cinta Manis	
7. Jatibarang	24. Gending	41. Bone	
8. Mojo	25. Kanigoro	42. Camming	
9. Pangka	26. Kedawung	43. Takalar	
10. Rendong	27. Olean	44. Madukismo	
11. Sragi	28. Pagotan	45. Candi	
12. Tasikmadu	29. Pajarakan	46. Krebet Baru	
13. Cukir	30. Panji	47. Rejoagung	
14. Gempolkrep	31. Poerwodadi	48. Kebon agung	
15. Jombang Baru	32. Prajekan	49. Trangkil	
16. Krembung	33. Rejosari	50. Gula Putih Mataram	
17. Lestari	34. Semboro	51. Tolangohuda	

Source: Indraningsih and Malian, 2006. *Perspektif Pengembangan Industri Gula Indonesia*. Bogor: Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian.

Figure 1.1.
The Analysis of Technical and Economic Efficiency of Indonesian Sugar Factories

The quadrant shows that only three factories are included to the quadrant one. Most of all are included to the quadrant three which is categorized into economically and technically inefficient sugar factories. One of the factories included in quadrant one is PT. Gunung Madu Plantation, located in Lampung.

On the other hand, one of the factories included in quadrant three is PG Trangkil. PG Trangkil is located in Pati, Central Java and owned by PT. Kebon Agung. Below is a benchmark table between PT. Gunung Madu Plantation which represents sugar factories in quadrant one and PG Trangkil which represents sugar factories in quadrant three.

Table 1.3.
Extraction Rate 2010

Factory	Built in	Capacity (TCD)	Total Sugar Cane Crushed (ton)	Total Production (ton)	Extraction Rate (kg/ton of cane)
PT. GMP	1976	14000	2.322.000	210.244	91
PG Trangkil	1835	6360	966.339	55.302	57

Source: Processed data, 2014.

Actually, many sugar factories in Indonesia are built in the era of The Dutch Indies, for instance PG Trangkil. The table shows that PT. Gunung Madu Plantation, which is relatively new sugar factory in Indonesia, could extract a ton of cane into 91 kg sugar, while PG Trangkil which is built in 1835 only extracted 57kg sugar from a ton of cane. PT. Gunung Madu Plantation extraction rate is close to the average Thailand sugar factory which reached 101kg/ton of cane while PG Trangkil extraction rate is far too low compared to them. However, the extraction rate is influenced by the yield of cane as well as by the sugar industry's machinery. But, if the sugar industry's machinery is not optimal, even the best quality of cane cannot increase the productivity whereas the main problem faced by most Indonesia's sugar factory is the obsolete machinery.

Currently, PG trangkil has been upgraded its machinery into the modern one. But, they upgraded it partially. The partial upgrade could lead to inefficiency as well as could cause problem to the other machinery. For instance, in 2013, PG

Trangkil had a hydraulic machine which could operate more than 2500 psi. By using power more than 2500psi, PG trangkil was expected to be able to produce more than 5000 TCD. However, the milling capacity was only able to support 5000TCD. Therefore, the hydraulic machine power needed to be decreased into 2000psi. Due to the difference capacity standard, there was a mill broken at that time.

The modernization of machinery in PG Trangkil Pati did not solve its efficiency problem. Technically, they still produced less than 7ton/ha and its overall recovery is still less than 85%. Economically, the modernization which is not integrated did not optimally utilize the machinery. It was even needed more repairment cost. Therefore, to be economically and technically efficient, PG Trangkil needs to build a totally new factory with capacity more than 8000 TCD. The new factory is expected to increase the machine efficiency as well as to reduce cost.

However, to any company, decision to build a new factory is not easy to be done. Investment, especially in major plant assets will cost a lot of money. Manager should carefully decide whether to invest or not by forecasting the cost and the benefit. Expected benefit from building new factory should be larger than the cost. At PG Trangkil, decision to invest in the major plant asset is in the hand of board of directors at PT Kebon Agung as they are the source of fund. Yet, PG Trangkil is still able to propose the investment.

Capital budgeting system based on financial information system is expected to be able to help in several ways. First, it is able to warn PG Trangkil Pati regarding its overall factory efficiency which then will be a trigger to build a

new factory. Second, it provides information to the manager regarding the forecasted cost and benefit of investing in new sugar factory. Third, currently, PG Trangkil Pati does not implement capital investment calculation method, such as NPV, IRR, PI and payback period. The system is also expected to provide those information, thus, the decision quality will increase.

1.2 Problem Statement

Based on the background described above, the problem can be formulated into: "*How is the design of capital budgeting system based on financial information system in order to automatically detect inefficiency of sugar factory as well as to analyze capital investment of new factory, study case at PG Trangkil Pati?*"

1.3 Research Objective

In conducting the research, the objective expected to be achieved is:

To generate a capital budgeting system based on financial information system that helps manager to automatically detect inefficiency of sugar factory as well as to analyze capital investment of new factory.

1.4 Research Contribution

The expected benefits in conducting this research are:

1. Society

   The result of this research is expected to help reducing import of sugar in Indonesia by providing system that can maintain Indonesian sugar factory.

2. PG Trangkil Pati

   The result of this research is expected to help management to automatically detect inefficiency of sugar factory as well as to analyze capital investment of new factory.

3. Academics

   This research is expected to provide additional knowledge in management information system theory which can be developed in the future.

4. Author

   This research is expected to be the implementation of theories which author learned during lectures, especially in management information system course.

1.5 Research Systematics

Generally, this research consists of five chapters which are related to each other, as below:

CHAPTER 1: INTRODUCTION

This chapter describes about the research object, PG Trangkil Pati, and the main problems in this research related. The problems are the condition PG Trangkil Pati which is economically and technically ineffective. Research background, problem statement, and benefits of research are described in this chapter.

CHAPTER 2: LITERATURE REVIEW

This chapter describes about the concepts and theories that cover the problems outlined. The concepts and theories include financial information system, decision support system and capital budgeting. Besides, this chapter also describes about the previous research related to research question.

CHAPTER 3: RESEARCH METHOD

This chapter describes about the research approach used in research to solve research problem, such as subject and object of research, design research, the scope of research, research limitations, the type and source of data, data collection procedures, and analysis technique used in solving problems.

CHAPTER 4: RESULTS AND DISCUSSION

This chapter describes about the overview of the company as the object of research. Then discusses and analyzes the problem based on the data obtained from PG Trangkil Pati.

CHAPTER 5: CONCLUSION AND SUGGESTION

This chapter contains conclusion and suggestion from the result of research, in conformity to the problem statement in chapter 1 and theories in chapter 2. It is expected to be beneficial for society as well as for PG Trangkil Pati.