Chapter 6

Results of Analysis, conclusion, and Recommendation

6.1 Result of analysis and conclusion

This project is a study of the incremental cost analysis of a substitution of whole milk powder by fresh milk in liquid coffee product. This is an additional investment from the existing processing line, which originally use whole milk powder as a raw material. From all mention all chapters, it can be summarized as follows:

6.1.1 Summary of chemical component in fresh milk and whole milk powder

From the result of study, it can be concluded that fresh milk can be substitute as whole milk powder. Because whole milk powder is a fresh milk standardize fat, and brought to spray dry process to evaporate water out. The spray dry process is one type of food preservation, whole milk can be kept longer than fresh milk. The major component of fresh milk is likely with the component of whole milk powder, solid-non fat (SNF), fat, and moisture. SNF is solid in the milk, which does not include fat. In fresh milk, it has a protein and will be coagulated after heat treatment, it will mix in the milk powder. However, the composition of fresh milk and whole milk powder has been varied from source to source and also depending on the season and climatic. All these factors are the effect of the variation in term of composition in milk.

As the study and data receiving of fresh milk and whole milk powder, it can be seen that in each year the compositions are varied but not too much. The forecasting composition are based on the experience of predictor and information of suppliers. Especially, on the historical data of receiving quantity and analysis composition results. It can be summarize that with this study use the forecasting composition by

Fresh milk

- %fat 3.84
- %SNF 8.46

For the whole milk powder

- %fat 27
- %SNF 69.50
- %Moisture 3.5

Fresh milk and whole milk powder has a same color that is turbidity white color. In term of taste, fresh milk will give more in milk butter and fresh taste. This different thing will be an advantage of fresh milk over whole milk powder. But the storage time of fresh milk has less than whole milk powder, because of fresh milk is has more % of water in composition while whole milk powder

is in dry form. These water can be activated the growth of microorganism, which ready to destroy milk by consuming as their foods. The quantity of substitution between fresh milk and whole milk powder can be done based on the calculation of solid-non fat because of the major component is solid-non fat.

6.1.2 Summary of marketing analysis

It can summarize that the Nescafe has market share of Nestle around 38%, the 1st competitor is Birdy brand hold the market share around 60%. The best selling type is Birdy robusta and second is Nescafe extra. The selling volume of this kind of product is not too much growth in the past.

Fresh milk production volume in the country is less than the demand, however, the government try to encourage to have more cow's farm. So, the contract supplier is one solution, which can be supported and made a confidant to cow's farm that they can sell and has a clear market place. Especially, Nestle also give the knowledge of cow's farming to the cow's farmer, this is an advantage of good relationship with suppliers. It can be seen from the number of fresh milk suppliers to the company. Moreover, the storage time of fresh milk is less, so the cow's farmer has to contact with fresh milk consumer, such as factory, before in order to make sure that they can sell it with a short time.

6.1.3 Summary of technical analysis

The benefit point of use tubular heat exchanger is easy to maintenance and easier to clean. However, the cost of tubular is normally more expensive than other types of heat exchanger. The study of dairy technology sometime depends on which owner technology, if it can find the technology partner it is the benefit point for the investment term.

From this study we got the estimation investment cost at 7,641,109 Baht.

6.1.4 Summary of incremental cost analysis, break event point, sensitivity analysis

The incremental cost analysis is used as decision- making tools to identify the cost of product, which may increase or decrease. From the study, cost of product, which used fresh milk, is cheaper than use whole milk powder. In fact, the reduction of is coming from the cost of raw material itself. The different in cost can be made a profit to company and increase in competitiveness in the market. With this, it will bring to find out the measurement value of this project, NPV, IRR, Payback period and break-event point. With this project study we got

NPV	102.79 Million Baht
IRR	448 %
Payback period	2.73 Months
BEP	9318.43 Ton

The result from sensitivity analysis the raw material factor is the most sensitive factor to this project. It may say that this kind of product has a majority cost from raw

material cost, around 68% of total cost. Thus, when the raw material cost is changing, it is directly effect to the product cost.

The production volume and investment cost have the same level of sensitivity but it is the reverse of direction. It is obviously that event the product cost is very but the sale volume or production volume is quiet low. It is impossible to have a profit comparing to the investment cost in a short time. Moreover, the longer time of payback period time may reduce the value of money in the future. NPV is the measurement value, which represent the worthwhile of the project by using the reduction value rate of money in each year. After that, it will see the value of income in the long term.

Anyhow, the conclusion of this project study it is possibility to use whole milk powder with fresh milk in liquid coffee product from the result of study from all above chapters.

6.2 Recommendation

With this project study the raw material cost is the sensitive factor to this project study. Most of raw materials are local, except in some ingredients they have to import. The company should study more in term of using all local raw materials. The advantage is much more in the long term, such as by using fresh milk. It is an supporting people in Thailand has a jobs at their home, reduction of working generation move from province to big city or metropolitan.

The government should give more supporting in term of cow's farming technology and knowledge to cow's farmer. This will encourage having more cows' farm in country. In fact, the supply side is less than demand side so, it has a good opportunity to expand the farming.

With this study we can see that this project has a perfect of economic analysis value, NPV, IRR, and payback period. But this study didn't study on the shelf life of product, which may study in future. Shelf life of product is very important point in foods industries, it is a measurement of product quality consistency, how long that consumers can keep this product and safe enough to consume. In fact, in the period of shelf life, product must be the same quality or minimal deviate from the fresh product. With this, the company should be study more on the consistency of product quality during the shelf life, normally 1 year.

In term of fresh milk receiving schedule, the company should have a study more in details in term of frequency of incoming or precision of plan. As we see from the supply of fresh milk in country is less than demand, so the company should have a study for contingency plan also.

In term of inconsistency quality of incoming fresh milk, quality of fresh milk is depending on source, climate and handling process before selling to factory. All these are the causes of inconsistency of raw material. The company should concentrate more how to improve it.