

## CHAPTER VI

### CONCLUSION AND RECOMMENDATION

The purpose of this thesis is to develop the master production planning to support the improvement of the planning and production efficiency. The studied company is the rice cracker snack manufacturing who need to deal with the great variation of product range base on customer requirement. Based on the cause and effect analysis in chapter 3, it was found the major problem shown in table 6.1.

Table 6.1: Result of Cause and Effect analysis

<b>Problem symptom</b>	<b>Result of Problem</b>	<b>Solution</b>
Human error and low experience/skill	Wrongly assign machine and planning product process requirement	The planning module that help planner to generate the initial planning
Daily manual planning	Time consuming and require the experience planner	Computer base planning module
Customer based coding	Non product relate information, need to remember all difference code or take time to reference with database	New coding system to set up the feature base coding
Great variation of material without material grouping	Difficult to identify the difference on the product variation and cause wrongly operation	- New coding system to set up the feature base coding - Database control system that fast and easy acquire information
Frequent machine set up and washing	Every time that change product, the machine need to be set up and wash	Production planning that help group the like to like product for manufacturing

The author then proposed to use the Master Scheduling to solve the problem. The author also study on additional tools that can help MS to enhance the

effectiveness base on the current problem which result to the implementation of Group Technology and the Forecast Model.

The technique chose for new product coding was the poly coding which is to set up the code base on the product feature. This method can help planner, operator, or other product relate persons to be able to tell some of product feature from the visual coding. The coding is also aimed to support the master scheduling in the way that the same feature product can be managed and manufactured in the same interval.

The forecast model chose for new master scheduling was the Time-Series method which forecast base on the marketing sale order over period of time. The benefit of forecast model is that the planner can then plan the requirement over the period and alert to other relate department for any outstanding prediction.

The problem on inappropriate planning can be viewed as unnecessary waste and to develop the robust planning system would support the improvement of work efficiency and add time and capability to other analysis work using support from the system.

## **6.1. Result of Study**

The excel spreadsheet can indicate the available-to-purchase time per each order and report in the same spreadsheet. The planner can reschedule the current production and product plan for suitable situation. However, the input from production department still difficult as a lot of information need to be manually input and send back to the planner. Recommendation for improvement of this process is to have computer in each production line and train operator how to input information and all information must be input immediately after each job finish.

For quantitative measurement, the author had observed the production planning on the planning on one production line with one family of products. The result found that the improvement of production efficiency had increase 8%, as shown in table 6.2. This means the company will gain more capacity of 90 kg per day per machine running, which equal to 900kg or almost 1 ton increase per production day for full

capacity running. This means the XYZ can supply more capacity at 21 ton per months which will result to more income of 7,350USD per year when calculating at the average sell price of 0.34USD/kg.

The author also expect from the implementation of the tools proposed that more company benefit result should be found in other extended area which are decrease finish goods inventory, reduce planning time, reduce rate of human error, and . However, the measurement according to change will be subjected to track once model implement and the use have more familiar with the models.

**Table 6.2: Result of New Master Schedule Efficiency Improvement on Cutting Process**

		Day1	Day2	Day3	Day4	Day5	Day6	Day7
Total Order capacity consumption per machine* (kg)	Order 1	0.44	1.60	1.00	0.44	1.00	0.44	0.95
	Order 2	0.18	0.15	0.44	0.40	1.00	0.95	0.95
	Order 3	0.95	0.98	0.18	0.60	1.44	1.00	0.95
	Order 4	0.18	0.44	0.95	0.15	1.44	1.00	0.95
	Order 5	0.44	0.18	0.95	0.98	1.95	1.00	0.44
	Order 6	-	0.44	-	-	1.95	1.00	0.44
	Order 7	-	0.40	-	-	1.95	1.00	-
	Order 8	-	1.60	-	-	-	1.00	-
	Order 9	-	0.98	-	-	-	-	-
Total Order grouped by product coding (kg)	Group 1	0.95	0.98	-	-	-	-	-
	Group 2	0.81	3.97	2.13	1.15	9.30	5.39	3.30
	Group 3	0.44	1.43	1.39	0.44	1.44	2.00	1.39
	Group 4	-	0.40	-	0.98	-	-	-
Current Manual Process (min)	Production time	2.20	6.78	3.52	2.57	10.74	7.39	4.69
	Wash time	150.00	270.00	150.00	150.00	210.00	240.00	180.00
	loss due to wash	0.31	0.56	0.31	0.31	0.44	0.50	0.38
	Total usage	2.51	7.34	3.83	2.89	11.18	7.89	5.07
New Master Scheduling (min)	Production time	2.20	6.78	3.52	2.57	10.74	7.39	4.69
	Wash time	-	-	-	-	-	-	-
	loss due to wash	-	-	-	-	-	-	-
	Total usage	2.20	6.78	3.52	2.57	10.74	7.39	4.69
Efficiency improvement**	12%	8%	8%	11%	4%	6%	7%	
Average improvement							8%	

\*average at machine max capacity at 1126 kg per machine per day per 1 shift production

\*\*Efficiency improvement = (Current time usage -New MPS time usage)/Current time usage

## **6.2. Recommendation**

Apart from the critical factors explained in chapter 5 that need to be continuously improvement and measure, since the current measurable saving shown is small the author would recommend to utilize the zero investment system developed for 3 months in the pilot group running to measure other possible profit in value before any decision to implement the writing the program vise system.

The Master Scheduling is part of tools in Enterprise Resource Planning (ERP). In order to utilize best planning models, the company should do further study on extending to the other dimension of resource planning such as material planning, human resource planning, and others.