

CHAPTER I

INTRODUCTION

This chapter contains the background of this research, problem formulation, research objectives, scopes and outline of this research.

1.1 Background

According to *Badan Pusat Statistik* (2019), industrial sector is a very important sector in Indonesia because the industrial sector plays a key role as an engine of development. The industrial sector has several advantages compares to other sectors because the value of embedded investment is very large, the ability to absorb a large workforce, as well as the ability to create added value from every raw material processed. One of the industrial sectors in Indonesia is the Small and Medium Industry. In 2017 *Badan Pusat Statistik* noted there were around 450,000 small and medium industries in Indonesia.

In managing an industry a proper production planning is needed. According to Bedworth (1986), production planning and control is needed at the production of manufactured goods. The purpose of production planning and control is to effectively the utilize limited resources in production system to satisfy customer demand, inrease productivity, create a profit and minimize costs.

The production plan is the basis for determining capacity requirement that must be consistent with capacity availability. The resource required by the procution plan in any period include labor, materials, facilities, equipment, and the funds required to pay the employees, purchase the materials, and pay other expenses (Fogarty, 1991).

One of the small and medium industries in Indonesia is CNG Tofu Factory. CNG Tofu Factory is an industry that has been established since 2002. The CNG Tofu Factory is located in Tanah Garam, Solok City, West Sumatra. CNG Tofu Factory does the production process every day. In a day, CNG Tofu Factory can produce 1.3 tons to 1.5 tons of raw materials. The raw materials used in the tofu production process are soybeans and water. In a day, CNG Tofu Factory can produce 300 to 400 sheets of tofu. Tofu production process starts from the process of soaking, grinding, boiling, filtering, pressing and cutting. The flow diagram of tofu manufacturing process is shown by **Figure 1.1**

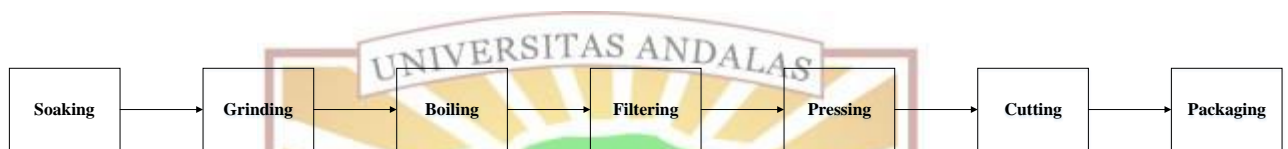


Figure 1.1 Tofu Manufacturing Process

CNG Tofu Factory applies a make to stock and make to order response strategy in fulfilling customers demand. Make to stock strategy is to carry out the production process without relying on demand by providing safety stock. The make to stock strategy is used to meet the demand for customers who come directly to the CNG Tofu Factory. While the make to order strategy is to carry out the production process after an order received from a customer. The make to order strategy is carried out to meet the demand of customers who order a certain number of products.

The process of fulfilling customer orders must be done on time in accordance with the time promised to customers to maintain customer satisfaction. In fulfilling customer orders, CNG Tofu Factory apply the FCFS (First Come First Serve) strategy. CNG Tofu Factory must be able to determine when customer orders can be fulfilled by considering various aspects that exist on the production floor. According to Kencana (2013), the product completion time will be as expected if resources such as people, equipment, machinery, raw materials, energy, information and so on are available so that the production process can run well.

The absence of a system that can calculate the time it takes to complete an order can make an inaccuracy in estimating the time of order fulfillment to the customer. This can also have an impact on excess production capacity because the time to complete orders cannot be estimated accurately. The owner may continue to receive orders even though the available capacity is no longer able to fulfill incoming orders, so this problems will result in excess production capacity.

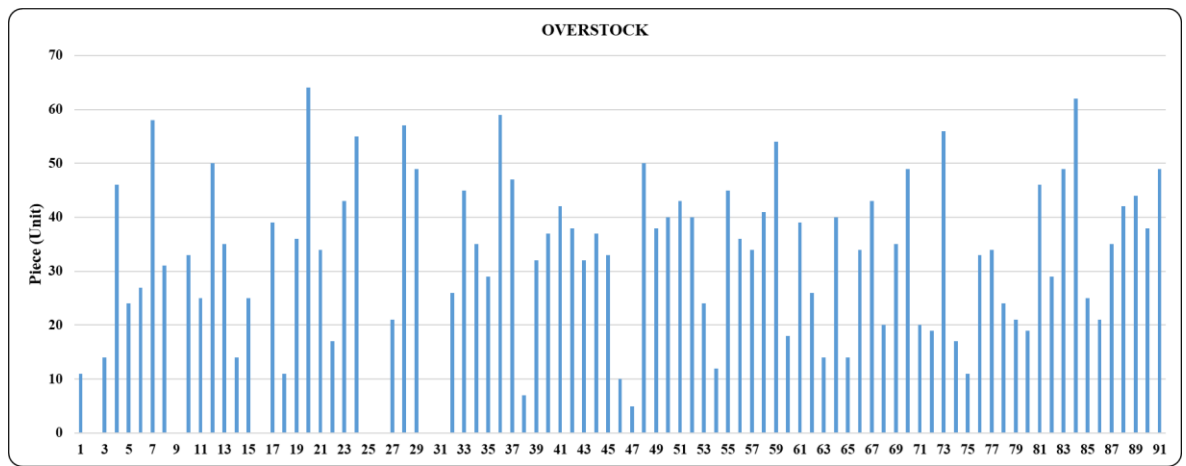


Figure 1.2 Tofu Product Overstock
Source : CNG Tofu Factory

Based on **Figure 1.3** it can be seen that CNG Tofu Factory also experienced overstock in the production process. Overstock results in the risk of product being wasted. This cause loss to the company because the products are classified to products that expire quickly. Products can only last for a day after being produced, so there is a risk of being wasted. Overstock also hampers the production process because the previous day's overstock is stored in the pressing machine. This causes the production process for the next day to be delayed. The overstock of tofu products produced the previous day cannot be used to fulfill orders, so the production process for incoming orders can only start if the overstock of the previous day is sold out. So that the order fulfillment time cannot be estimated accurately. From July to September, CNG Tofu Factory experienced an overstock approximately 2816 pieces of tofu products or about 31 pieces per day.

Based on observations at the CNG Tofu Factory this problems can occur because CNG Tofu Factory not good enough in managed the make to stock and make to order production systems. The causes of this problems are CNG Tofu Factory does not have a standard time for every process in producing tofu and in determining the number of products to produced and in determining the order lead time of an order only based on the estimation and experience of the owner.

First, CNG Tofu Factory does not have a standard time for every process in producing tofu. In determining the processing time, CNG Tofu Factory only determines based on estimates using historical or past experiences, so CNG Tofu Factory cannot determine with certainty how much production time is needed. The estimated time can be inaccurate, it can be faster or slower. This also has an impact on targeting and production time.

Second, in determining the number of products to produced and order lead time only based on the estimation and experience of the owner of CNG Tofu Factory. If there is no reference in determining the amount of production, it will have an impact on the occurrence of overstock or understock. Overstock or understock can be a loss for the CNG Tofu Factory. This problems also disrupts the production process for the next day and causes delay in fulfilling costumers order. CNG Tofu Factory can also experience production overload due to excess orders. This problem can happen because the calculation of order fulfillment time is not known precisely.

Another problem faced by the company is that the company does not have a facilities that can provide accurate information relating to sales and product production. So far, the recording of sales and production is done manually in a book. This information is very useful for companies in determining future production planning policies, so it is necessary to design an information system that can summarize and process this information so it can provide the information needed by the company.

Based on the problems above, it can be concluded that the current production system at the CNG Tofu Factory is still not good enough. This can be seen in several conditions that exist in the CNG Tofu Factory. CNG Tofu Factory needs to make improvements to the current production system. Therefore, this study aims to design a better production planning and control system for Make to Stock and Make to Order production system at CNG Tofu Factory.

1.2 Problem Formulation

Based on the background of this study, the problem in this study is how the better production planning and control system at CNG Tofu Factory that will minimize overstock, calculate order completion time accurately, and minimize the occurrence of production overload. How to design a facilities that can provide fast and valid information that can help companies determine the right production planning policy.

1.3 Research Objective

The purpose of this study is to determine and design the production planning and control system at CNG Tofu Factory that will minimize overstock, calculate order completion time accurately, and minimize the occurrence of production overload.

1.4 Research Scopes

Research scopes in this study are:

1. The demand data used in this research is the data from July 2022 to September 2022.
2. The application designed is a simple information system based on Microsoft Excel. The selection is based on the consideration of ease of operation (user friendly) and does not require a substantial additional cost.

3. The application designed only up to the fourth stage, namely testing. The fifth stage, namely maintenance is not carried out because this research is only in the form of a proposal for application design, the fifth stage can be carried out if the application has been implemented by the company.

1.5 Outline of Research

The outline of this research consist of six chapters with the system as follows:

CHAPTER 1 INTRODUCTION

This chapter is contains background, problem formulation, research objectives, research scope, and outline of research.

CHAPTER 2 LITERATURE REVIEW

The literature review provides an overview of all the theoretical basis that related to the subject of the research.

CHAPTER 3 RESEARCH METHODOLOGY

This chapter contains the steps or procedures used in conducting research. The research starts from a preliminary study, problem identification, problem formulation, data collection, data processing, analysis and conclusions.

CHAPTER 4 DATA PROCESSING

This chapter describes the data that has been collected. The data is then processed to obtain results in the form of production planning policies for the make to stock and make to order production systems as well as application design.

CHAPTER 5 ANALYSIS

This chapter discusses the analysis related to the results of production planning for the make to stock and make to order production systems as well as the design of applications that have been made.

CHAPTER 6 CLOSING

This chapter contains conclusions based on the objectives to be achieved in the research objectives and suggestions for further research.

