

# CHAPTER I

## INTRODUCTION

This chapter outlines the research background, problem formulation, objectives, scope, limitations, and the overall structure of the study.

### 1.1 Background

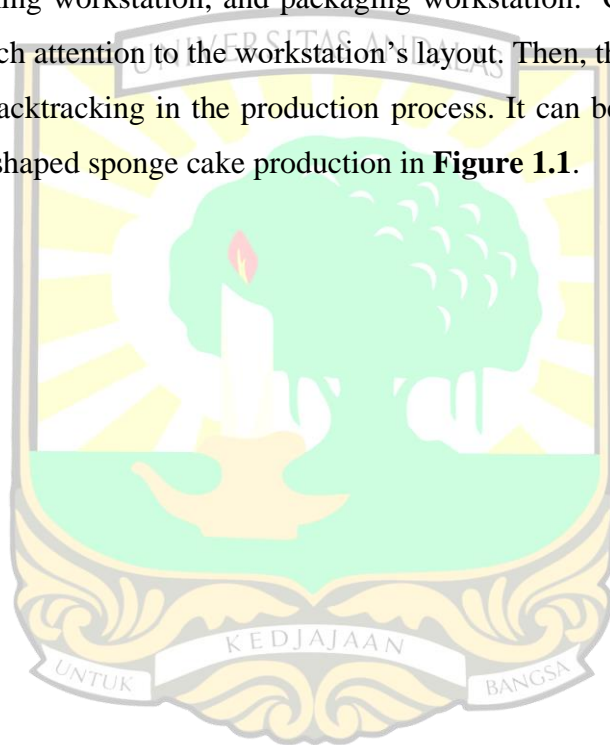
The development of manufacturing companies is currently experiencing intense competition. The ability of each company to meet customer needs must be continuously improved to be sustained. However, an increase in production not accompanied by efficiency can lead to activities that do not provide added value. Activities in non-value added manufacturing companies will result in inefficient use of resources and cause waste activities (Ristyowati et al., 2017). That activity needs to be considered to reduce the occurrence of waste in the production process. So that, the output produced can meet consumer demand (Pujotomo & Rusanti, 2015).

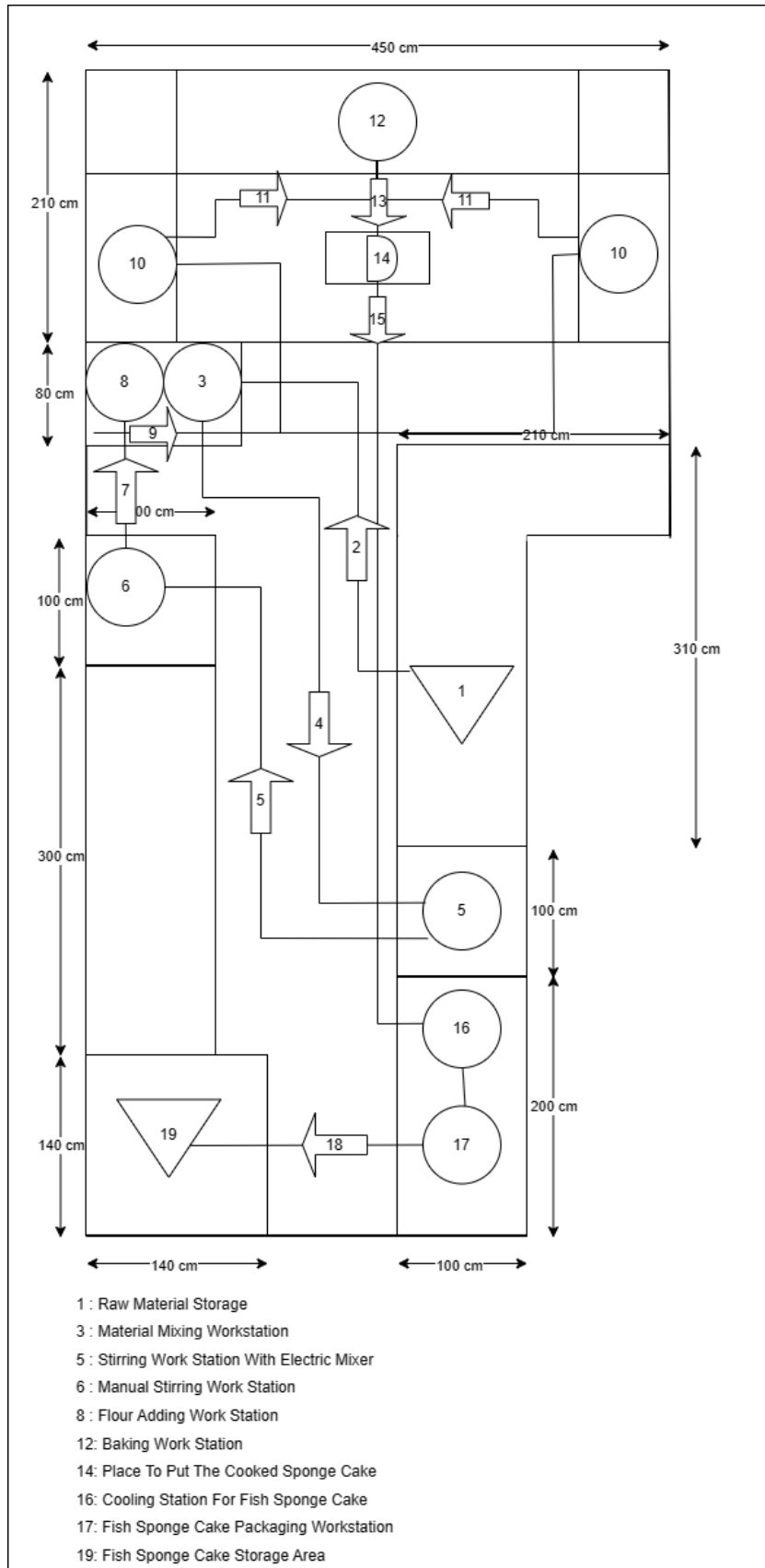
Waste is an activity that consumes resources without adding any value such as additional costs or time to the activity (Andiyanto et al., 2017). In the context of the production process, wastage not only leads to increased production costs without commensurate benefits, but can also negatively impact the quality, quantity, and overall cost of the products produced (Rohani & Zahraee, 2015). Particularly in the food industry, waste is a serious problem that requires special attention. Therefore, it is very important for food companies to pay attention and identify areas in their production process that are prone to waste.

CV Putra Tanjung is one of the MSMEs located on Jalan Andalas Kecana Utara, Padang. CV Putra Tanjung produces one type of product, which is fish-shaped sponge cake. This business was established more than 30 years ago. CV Putra Tanjung carries out the production process at 06.00-13.00 WIB every Monday- Saturday. The company has 6 workers in the production department and

1 worker in the marketing department. CV Putra Tanjung can produce 300 packs of fish-shaped sponge cake every day. One pack consists of 10 pieces of fish-shaped sponge cake. Production is done in 6 batches every day. The fish-shaped sponge cake production process requires several machines and tools such as a mixer, oven, and stealer.

CV Putra Tanjung still applies traditional processes in its production activities. There are several workstations in the production process, namely the electric stirring workstation, manual stirring workstation, flour addition workstation, baking workstation, and packaging workstation. CV Putra Tanjung does not pay much attention to the workstation's layout. Then, there is still a lot of bypassing and backtracking in the production process. It can be seen in the flow diagram of fish-shaped sponge cake production in **Figure 1.1**.















**Figure 1.1** Flow Diagram of Fish-shaped Sponge Cake Production Process

**Figure 1.1** shows that after preparing raw materials, workers will pass through the manual stirring workstation to reach the stirring workstation with an electric mixer. In addition, after baking, the operator must pass through all the other workstations to reach the fish-shaped sponge cake packaging area. The ineffectiveness of this material flow can cause production to take longer. In addition, there is also a delay after the sponge cake is baked or before proceeding to the packaging workstation. Details about the process flow in fish-shaped sponge cake production can be seen in **Table 1.1** and **Table 1.2**.

**Table 1.1** Flow Process Chart of Fish-shaped Sponge Cake Production

FLOW PROCESS CHART																	
SUMMARY																	
ACTIVITIES	NOW		PROPOSED		DIFFERENT		ACTIVITIES : Fish sponge cake production										
	Total	Time	Total	Time	Total	Time	MAP NUMBER : 1	PERSON <input type="checkbox"/>	MATERIAL <input type="checkbox"/>	NOW <input type="checkbox"/>	PROPOSED <input type="checkbox"/>						
 OPERATION	27	154.6					PERSON <input type="checkbox"/>	MATERIAL <input type="checkbox"/>									
 INSPECTION	6	25.14					NOW <input type="checkbox"/>	PROPOSED <input type="checkbox"/>									
 TRANSPORTATION	7	4.83					MAPPED BY : Anindia Okta Dewi										
 DELAY	5	78.69					MAPPED DATE : 9 January 2024										
 STORAGE	1																
Total Distance	52.98																
DESCRIPTION OF ACTIVITIES	SYMBOL					DISTANCE (M)	TIME (min)	ANALYSIS				ACTION					
								WHAT	WHERE	WHEN	HOW	NOTE	ROOM	MERGE	ORDER	PLACE	PERSON
Taking utilities							0.48										
Moving raw materials to the initial work station						3.00	0.33										
Cracking the egg into containers							3.33										
Weighing the sugar according to the measurement							0.67										
Materials waiting to be moved to automatic stirring area							3.42										
Material is transferred to the electric mixer						2.94	0.30										
Set up the electric mixer machine							0.52										
Placing the bucket of weighed sugar into the electric mixer							0.45										
Putting the cracked eggs into a bucket of sugar							0.25										
Mix the material using a mixer until it thickens							19.42										
Materials waiting to be moved to manual stirring area							2.39										
Batter is transferred to the manual stirring work station						1.47	0.30										
Adding water to the batter							0.18										
Stir the batter manually until the batter rises							12										
Checking the rise level of the batter							0.23										
Materials waiting to be moved to flour adding							13.26										
Move the batter to the flour adding area						2.94	0.40										
Prepare flour by operator							0.72										
Taking basin to add flour							0.62										
The batter is divided into several basins							2.33										



One of the wastes that exist in production activities is waste of motion. For example, workers must check the fish-shaped sponge cake during baking to see the level of doneness of the fish-shaped sponge cake. The sponge cake is often undercooked when the worker removes it from the oven, requiring the worker to return it to the oven for further baking. This activity does not add value to fish-shaped sponge cake products but only wastes workers' time and energy without producing additional benefits. Additionally, the oven's temperature is uneven, with the interior being hotter than the outer area due to the absence of doors. This causes workers to work extra to rotate the fish-shaped sponge cake pan so that each side is cooked evenly. It is also common for fish-shaped sponge cakes baked in the same pan to cook unevenly, with some pieces remaining undercooked when removed from the oven. As a result, some sponge cakes are fully cooked while others remain undercooked. The fully cooked sponge cakes can be transferred to a basket, while the undercooked ones are returned to the oven for further baking. In addition, some cases also cause some sponge cakes to be overcooked/burnt.



**Figure 1.2** Baking Process of Fish-shaped sponge cake

An overcooked or burnt sponge cake signifies another type of waste in production of fish-shaped sponge cakes at CV Putra Tanjung, specifically the waste associated with defects. Defects in the production of fish-shaped sponge cakes are primarily caused by overbaking, leading to burnt cakes. These defects can be classified into two categories: mild defects and severe defects.

Defective products cause material loss due to the reduced selling price of the product. Mild defective products can still be sold but there is a price reduction of 25%, the selling price which was originally worth Rp8,000 turns into Rp6,000.



Meanwhile, products damaged by severe defective products cannot be sold at all, resulting in a loss to the business. Records of defective products on October 18-28 2024 can be seen in **Table 1.3**, and a comparison of good and defective product images can be seen in **Figure 1.4**.



**Figure 1.3** (a) Good Product (b) Midly Defective Product

**Table 1.3** Number of Defect Products

Date	Good Product (Packs)		Mild defective Product (Packs)		Severe defective Product (Packs)	
	Number of product	Percentage	Number of product	Percentage	Number of product	Percentage
18/10/2023	289	96.33%	14	4.67%	1	0.33%
19/10/2023	286	95.33%	18	6.00%	2	0.67%
20/10/2023	290	96.67%	13	4.33%	1	0.33%
21/10/2023	284	94.67%	19	6.33%	2	0.67%
23/10/2023	291	97.00%	14	4.67%	1	0.33%
24/10/2023	291	97.00%	14	4.67%	1	0.33%
25/10/2023	290	96.67%	13	4.33%	1	0.33%
26/10/2023	286	95.33%	18	6.00%	2	0.67%
27/10/2023	290	96.67%	15	5.00%	1	0.33%
28/10/2023	284	94.67%	19	6.33%	2	0.67%

**Table 1.3** and **Figure 1.4** show the number and picture of products produced in a day, the number and percentage of conforming products, mildly damaged or burnt products, and severe damaged or burnt products in packs. One pack can contain 10 pieces of fish-shaped sponge cake. Based on the data, hundreds of fish-shaped sponge cakes cannot be sold at the normal price (Rp8,000).

Based on the problems experienced by CV Putra Tanjung, it can be concluded that there are several types of waste in the fish-shaped sponge cake production process based on preliminary observations. As a result, the company

incurs losses in both material and resources. Therefore, a method is required to identify and reduce waste in the production process, as well as to ascertain whether other types of waste exist beyond those initially identified. This approach aims to help the company conserve resources and reduce costs, leading to increased efficiency and effectiveness in the existing processes.

## **1.2 Problem Formulation**

Based on the background of the research, the formulation of the problem of this study is how to improve production efficiency at CV Putra Tanjung.

## **1.3 Research Objective**

Based on the problem formulation above, the objectives of this study are as follows:

1. Identify the types of waste that have a significant impact on the fish-shaped sponge cake production process at CV Putra Tanjung.
2. Identify the causes of waste in the fish-shaped sponge cake production process at CV Putra Tanjung.
3. Determine improvement suggestions can reduce waste and increase efficiency in the fish-shaped sponge cake production process at CV Putra Tanjung.

## **1.4 Research Scope**

The limitations of problems in this research are:

- 1, Analysis of the source of the problem and proposed improvements focused on the three largest wastes obtained in the calculation results of the waste assessment questionnaire.



## **1.5 Outline of Research**

The outline of research that will be used in writing this final project report are as follows.

### **CHAPTER I INTRODUCTION**

This chapter contains explanations related to the background of the research, research formulation, research objectives, research scope, and outline of research.

### **CHAPTER II LITERATURE REVIEW**

This chapter outlines supporting theories and references obtained from various literature, such as books and scientific journals. This reference becomes an important foundation in solving problems and achieving predetermined goals.

### **CHAPTER III RESEARCH METODOLOGY**

This chapter contains an explanation of the steps and flows used in completing the final report systematically along with an explanation of the methods used.

### **CHAPTER IV DATA COLLECTING AND DATA PROCESSING**

This chapter contains the results of data collection obtained from interviews, questionnaires, and direct observations. Then, data processing is carried out using a predetermined method.

### **CHAPTER V ANALYSIS**

This chapter contains the results of analysis of data processing that has been carried out in the previous chapter which will be a guideline in providing improvement recommendation.

## CHAPTER VI CLOSING

This concluding chapter consists of conclusions and suggestions from the results of the research that has been done. The conclusion contains an explanation related to the summary of the results that have been obtained from the results of the study and suggestions containing proposals for further research improvement.

