

CHAPTER I

INTRODUCTION

1.1 Background of the study

Food waste refers to food that is discarded or wasted throughout the food supply chain, from production to consumption. In this case, food waste is one of the issues in Indonesia that is currently concerning. According to Food and Agriculture Organization (2019), food waste means food that is lost, in both quantity and quality. Countries that food wastage may result from the food supply chain, compared to manufacturing procedures, as well as the appearance of food waste is affected by many variables over the processing of food such as cutting, peeling, or packaging, there is opportunity for waste as scraps or unused parts are discarded (Wahyono, 2019). Food waste is a problem that can be seen from any perspective, especially in terms of types of food and the food crop sector.

According to records, wasted food in Indonesia averages 300 kg per person per year. With this dismal record, Indonesia is ranked second in the entire globe in terms of the waste of food (Hidayat et al., 2020). This is also supported by the research of Tamara (2020) which states that food conditions that resulted in food waste and not being utilized properly should be able to meet the food consumption of more than 28 million people whose food conditions are not yet adequate.

Addressing the problem of fish bone and discards waste is one of them. Most of the time during fish processing process, parts such as bones, skin, and heads are discarded or not optimally utilized. In fish processing plants, production leftovers such as bones, heads, and small pieces of meat are often discarded because they are difficult to economically utilize. The waste generated from fishing activities is still quite high, around 20-30 percent of the total production material. One of the commonly consumed fish in Indonesia yet produced quite an amount of waste is *Kembung* fish as Indian Mackerel. Indian mackerel is a species that is caught throughout the year in

relatively large numbers in most Indonesian waters (M Andesba Arifin et al., 2012). The potential for Indian mackerel in Indonesia is very large. According to the Ministry of Maritime Affairs and Fisheries (2012) the total catch of Indian mackerel in Indonesia reached 214,387-291,863 tons (2001-2011). In Indonesia, especially the North Coast of Java, this mackerel is processed into a fermented product in the form of Peda fish which has a distinctive taste and aroma and is long-lasting. Mackerel fish production from 2001-2011 reached 13,424-3,848 tons According to the Ministry of Fisheries and Maritime Affairs (2012). Fish is a very versatile ingredient, Indian Mackerel included, not only that it can be grilled, fried, or steam but it can also be processed into varieties of other dishes, to name some is Dim sum.

Dim sum is a popular Chinese food in Indonesia. Dim sum is served in small snack-sized portions, either steamed or fried, and is usually served with tea (Kah, 2014). Shumai is a popular form for dim sum which is recognized across all over the globe. The very first step in producing shumai is making the skin dough by mixing the flour from tapioca or whole wheat flour with the water until it becomes elastic. This dough is moulded into little cups, preparing to have it filled with the seasoned meat ingredients. Using Indian mackerel fish bones and fish head to make shumai skin and mackerel fish meat for the filling is a concept that can help reduce food waste and add value to dim sum products.

The bones and heads are usually thrown away in fish processing as they are thought to have minimal commercial value. When preparing items or meals generated from fish, just the flesh is typically used, hence the fish the bones are discarded. The bones of fish have a hard component, thus decomposers cannot easily break them down, and the bones become garbage. By using Indian mackerel fish bones and head to make shumai skin, previously discarded parts can be fully utilized, reducing waste and food waste. *Kembung* fish or also known as a Indian mackerel (*Rastrelliger kanagurta*) is an economically fish and its potential catch increases every

year. It's potential catch increases every year. Unfortunately the only part of this fish that is consumed is the flesh resulting on the head, bones, and tails to be discarded. To further prevent the waste of this fish, the bones and heads are processed into powder to be incorporated into the shumai skin. By first boiling the discarded parts and then drying them in the oven, which will then be ground into powder. Drying with an oven can create a consistent weight faster, but depending on the temperature employed, it may increase the production cost (Winangsih et al., 2013).

The nutritional value of fish bones is high because the main elements of fish bones are calcium, phosphorus, and carbonate (Astrina, 2010). Thus, this concept not only helps reduce food waste in the fisheries industry but also adds value to shumai products by utilizing previously unused materials optimally. This is a positive step towards creating more sustainable and efficient food products.

1.2 Objectives of the Study

The objectives of the research are as follows:

1. To utilize fish parts that are usually thrown away, such as bones and heads, thereby reducing food waste resulting from the fish processing process.
2. Creating innovative and sustainable food products, which can attract consumer interest and support the sustainability of the food industry.