# CHAPTER 3 RESEARCH METHODOLOGY

The research steps in this project, is :

#### 3.1 Literature Study

There could be found 10 journals used as literature studies in this step. These journals contain problem, solution and analysis result as is explained in the last chapter. From these journals, there is a research gap that gave birth as the new topic of this research.

## 3.2 Collecting data

There will be taken the pictures of 30 fish, in this step within 5 days periods of research that can produce 150 photos sample to be used as training data and also pictures that taken from 45 randomly purchased fish will be used as data testing.

## 3.3 **Design Program**

After getting several data for research, the next step is to design the application which will become a benchmark for the implementation process. Making the design in this step is done manually by using Adobe XD before it will be develop again at the time of implementation.

## **3.4** Coding (Implementation)

Implementing the application of classifying the level of freshness of ikan bandeng using Naive Bayes Algorithm is the next step to do. First thing that should be done is to create a Graphic User Interface that is useful for making it easier for users to try this program and make sure that the application is ready for training and testing. This application of ikan bandeng freshness level is made by using java programming language within help of Netbeans software

## 3.5 Training Program

After the design and implementation have been completed, next step to do is to conduct a training program. The first step in the training program is inputting 150 samples of fish eye image, gill color and skin color of ikan bandeng. If it has done, do the convert image into grayscale and convert grayscale to binary. Then calculate mean R,G,B of each Image after this save the mean of each image into the variable. The mean will be used as reference data in testing data.

## 3.6 Testing Program

Basically, there are the same stages both in the process of testing data and training data, namely input data testing. The data used for the testing process are 48 random images of eyes, gills, and skin color. After that, the next process is convert image into grayscale and convert grayscale to binary. Thereafter calculate mean R,G,B of each Image. When everything has done, the final step is to classify using the Naive Bayes Classifier method. The results of the classification are saved as material for analysis.

## 3.7 Analysis

In this step, the outcome of Naïve Bayes Algorithm can be seen as a determination of whether the fish are still fresh or not. There can also be known the success percentage in the application of ikan bandeng's freshness classification by using Naïve Bayes Algorithm.

## 3.8 Report

The last step is writing report about the research steps from the beginning until end. The aim of this step is to have a summarization that can be made as a reference for next study.