CHAPTER 3
RESEARCH METHODOLOGY

Some steps that must be done in this project are :

1. Studying the journal

There are several journals used in this project with the purpose of learning how the algorithm works, understanding the flow of the data management process and selecting the right method in the mechanism. From the journal "Sistem Peramalan Jumlah Penjualan Menggunakan Metode Moving Average Pada Rumah Jilbab Zaky" (Alfian Nurlifa, Sri Kusumadewi, 2017), The author understands that the Moving Average Method can be used for data that has no seasonal elements and data must have stationary properties. And then from the journal "Sistem Pendukung Keputusan Untuk Forcasting Penjualan di Toko Sumber Saudara" (Heldi Diana, Cahyo Dwi Raharjo, 2015) the author understands that the Moving Average Method is very sensitive to the data testing frequency, if the data frequency is short the probability of a prediction error will be greater than the data with a longer frequency. From journals that have been studied this project has been determined using the Weighted Moving Average method as the core of the information system created.The Weighted Moving Average itself is a method used to determine a trend from the average value of the data combined with a certain weight value.

2. Formatting Data

The data source used in this project comes from bookkeeping sales written out by management Gajah Bintang Company. But the data the author gets is in the form of a manual book written by the company secretary, because of that the writer needs to do data management change it into E-data so that it can be processed by a system that has been developed.

3. Making a system

The process of building a system begins with database management, this project uses a csv format base text data because the first step is to save each data into an array with procedural methods. After that the next process is to manage sales data that previously contained sales every day to become sales data every month by adding up each data with the same product every month. The next step is to group data with the same product name from each month, this process aims to facilitate the management of data in the next step because of the data in the form of arrays. After the data is ready, the calculation process with the Weighting Moving Average method can be done.

4. Weighting data training

In this project the author has determined to use 10 periods (months) of sales to be used as training data and the last 1 period (months) as data testing. Weighting is done by giving the greatest weight to the period (month) that is closest to the period (month) that will be predicted. Because the data closest to the future according to the journal of Gofur, A, A & Widanti, U, D 2013, 'Sistem Peramalan Untuk Pengadaan Material Unit Injection di PT. XYZ' the value will be closest to the latest data available. For example, the value of rice prices from 2008 and 2018 will be compared to the price of rice in 2019. It is certain that the price of rice in 2018 will be closer to the current price of rice compared to data from 2008.

5. Testing System

The last step is checking the prediction and accuracy of the system, from the results of predictions using the Weigthed Moving Average method on each product, and then the authors check the results of the predictions using the Mean Absolute Deviation method to see the percentage error rate of these predictions.