

# CHAPTER 1

## INTRODUCTION

### 1.1. Background

Stocks are one of the favorite investment methods of Indonesian people. This is because stocks are "high risk high return" investments. That is an investment that provides high returns even though it has a high risk as well. To find a good stock, we can do fundamental analysis and technical analysis. Fundamental analysis is an analysis of the condition of the company whose shares are traded. The way of analysis we can see the total amount of company income, the amount of expenses, the amount of company debt, and the amount of profit distributed to shareholders. We can see all of that on the Indonesia Stock Exchange website. In addition we can also perform technical analysis. Technical analysis aimed at observing patterns in stock prices. The use of technical analysis is that we can find the best momentum when to buy or sell. But doing technical analysis is not easy because it takes time and enough experience to be able to do the right technical analysis.

To overcome difficulties in conducting technical analysis, therefore the research is conducted. The research will predict future stock prices using the Weighted Moving Average algorithm and the Prophet. Weighted Moving Average is one part of the Moving Average method. This method was chosen because the Weighted Moving Average method is more responsive to price changes compared to similar methods, namely the Simple Moving Average and the Exponential Moving Average. The Weighted Moving Average works by giving weight to each existing data, but the weight given to the latest data is greater than the old data. Other methods used to predict stocks are RSI, Bollinger Band, and Prophet. Prophet is an open source library created by Facebook's Core Data Science team. The advantage of Prophet is in its accuracy and speed in processing existing data. In addition, the Prophet is also prepared to handle missing data and outliers. Prophet predicts stock prices by studying trends from historical stock price data. For this reason, the Prophet needs to be "trained" by entering the historical stock price data.

This research will explain the performance comparison between the Weighted Moving Average and the Prophet. In addition, readers will understand how to use the Weighted Moving Average and Prophet in predicting. This research can also be used as a reference to determine the most effective algorithm in predicting stock prices. Programs that have been created can also be used to predict future stock prices.

## **1.2. Problem Formulation**

Formulation of the problem to be discussed in this research is:

1. Can the Weighted Moving Average and Prophet be used to predict stocks?
2. How does the accuracy compare between the Weighted Moving Average algorithm and the Prophet?

## **1.3. Scope**

The data to be used is taken from yahoo.finance.com. The data is historical data on stock prices. Later the data will be used to make predictions using Weighted Moving Average and Prophet models. The accuracy of the two models will be compared to find the most effective model in predicting stock prices.

## **1.4. Objective**

The purpose of this study is to predict stock prices using the WMA and Prophet methods. Another goal is to know the accuracy of WMA and Prophet in predicting stock prices. The prediction accuracy values of these two methods will be compared later. So it can be found which method has the best accuracy in predicting stock prices.