



Chapter 9

Diving Into the Performance of Supervised Learning Models for Forecasting the Indian Stock Market: A Case Study


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ABSTRACT

Stock markets are lucrative for individuals and institutions to invest their money. Specific risks are involved when entering any stock market trade; to avoid this, different methods can be adopted, such as fundamental and technical analysis. This

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paper talks about the machine-learning approach to the stated problem. However, even this method does not guarantee only profits, and there are certain conditions where the predictions made by the algorithms can be highly inaccurate. This research discusses the efficacy of different models during different time frames and the effects of a highly volatile market can affect the prediction abilities of the models. For the study, twelve datasets were collected, transformed, and employed. This study includes comparisons of 6 regression models, compared based on errors and coefficient of determination. At the end of the study, linear regression was found to be a better-performing and adaptable algorithm than the other models.

INTRODUCTION

Stock Market and Indices

The stock market functions as a dynamic platform where participants such as individual investors, stockbrokers, and financial institutions purchase and sell instruments, mainly equity stocks, resulting in an intricate structure of financial transactions that reflects the ups and downs of economic activity. This marketplace serves as a critical facilitator for companies seeking finance to drive their growth and innovation while also providing investors with a way to participate in the success of these businesses. The complicated relation between supply and demand, suited by investor sentiment, determines stock prices and shapes the ever-changing environment of the stock market (Teweles, & Bradley, 1998).

Stocks, equities, or shares indicate actual ownership in a company or entity. Investors can become part-owners of the company's resources and profits by purchasing stocks. There are two major categories of stocks: ordinary and preferred. Ordinary stocks give that class of shareholders the power to vote on corporate decisions and also earn dividends, which are a share of the company's profits given to shareholders. Preferred stocks, however, have substantially less or no voting rights but may pay more dividends. Apart from stocks, traders can speculate on derivatives of stocks and indices. These instruments are called Futures and Options (F&O). F&O makes a significant percentage of the trades in exchanges and can be highly volatile, turning investing into a speculation game that needs regularization from higher authorities (Gahlot et al., 2010).

Stock markets tend to be highly technical in many respects. In abstraction, a participant would only be familiar with the current market price or last traded price of scrip. Still, in the back, things such as bid-ask spreads, order flows, circuits, etc., play a significant role in market dynamics. Organizations acting as the marketplaces

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