

AI-Driven Stock Market Forecasting Using Financial Statement Analysis

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Abstract

Traditional stock market prediction methods primarily rely on historical price movements, often neglecting fundamental financial indicators. This research aims to enhance stock trend forecasting by leveraging financial statement analysis and machine learning techniques. The study incorporates key financial metrics, including earnings per share (EPS), price-to-earnings (P/E) ratio, book value per share (BVPS), price-to-book (P/B) ratio, revenue growth, and debt-to-equity ratio, to develop a predictive model. The proposed approach seeks to assist investors in making more informed decisions by integrating fundamental financial analysis with AI-driven forecasting models.

Introduction

Background and Motivation

Stock market prediction is a critical area of financial research, influencing investment strategies, risk management, and economic planning. Traditional forecasting methods heavily rely on technical analysis, which uses historical stock prices and trading volumes to predict future trends. However, these methods often overlook fundamental financial indicators, which are crucial in assessing a company's true value.

Incorporating financial statement analysis into stock prediction can provide deeper insights into corporate performance, financial stability, and market trends. With advancements in Artificial Intelligence (AI) and machine learning, there is an opportunity to develop more accurate models that utilize key financial ratios and fundamental indicators. This approach can help investors, financial analysts, and policymakers make more informed decisions, reducing risks and improving market efficiency.

Problem Statement

Despite the growing application of AI in financial markets, most stock prediction models focus on technical analysis, ignoring valuable financial data found in company statements. Traditional machine learning models often struggle to incorporate non-linear relationships between financial indicators and stock prices.

This research addresses the gap by developing a machine learning-based model that forecasts stock market trends using fundamental financial data. The study explores how key financial ratios such as EPS, P/E ratio, BVPS, P/B ratio, revenue growth, and debt-to-equity ratio impact stock price movement. By integrating AI-driven models, this research aims to improve the accuracy and reliability of stock predictions.

Research Objectives

- Develop an AI-driven model to forecast stock prices using financial statement data.
- Identify key financial indicators that influence stock price movements.