



Stock Trends & Insights: A 2023–2024 Look into the Nairobi Securities Exchange

A Data Diggers Production.

Table of contents

1. Introduction
2. Project objectives
3. Prices and volumes of NSE-listed stocks
4. Sector-wise activity and performance
5. Top-performing and most-traded stocks
6. Market trends over time
7. Key technical signals like moving averages and RSI
8. Forecasting future stock prices using models

Introduction

This project focuses on analyzing stock price movements across all publicly listed companies on the Nairobi Securities Exchange (NSE) over the years 2023 and 2024.

We will uncover patterns and trends in Kenya's stock market using actual trading data with the aim of providing actionable insights into market trends, stock performance, sector dynamics, and trading patterns.

The analysis aims to help investors, analysts, and researchers better understand market behavior and identify opportunities within the Kenyan stock market.

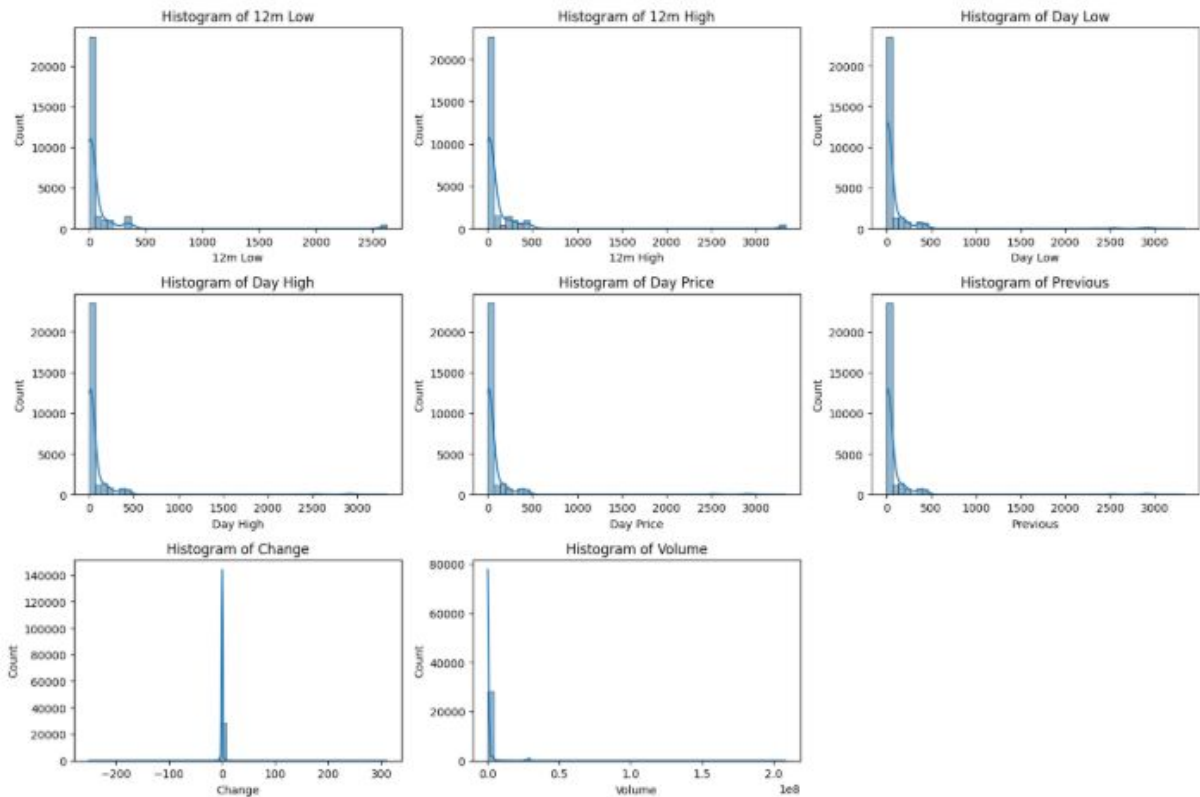
Project Objectives



1. To explore and understand the performance of stocks listed on the Nairobi Securities Exchange (NSE) in 2023 and 2024.
2. To offer short-term predictions of stock prices or trends, supporting timely buy/sell decisions and potentially improving profitability.
3. To democratize access to NSE analytics.



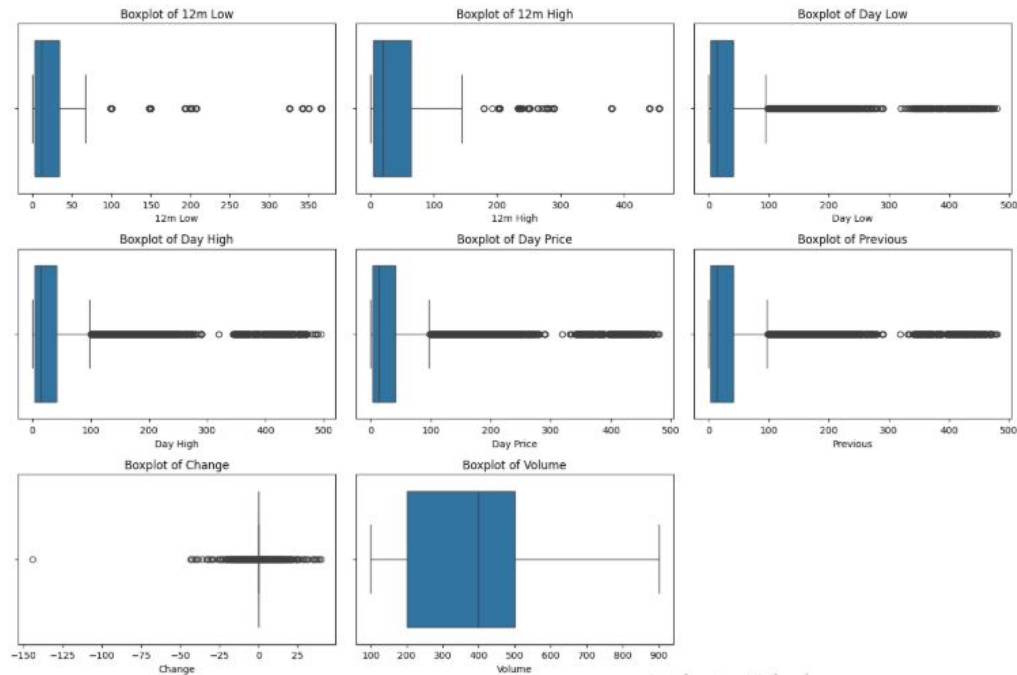




As seen from the plots, majority of the values are concentrated at the lower end.

There are fewer observations with significantly higher prices, creating the right-skewed distribution.

The distribution for change is heavily concentrated around zero, indicating that the most frequent price change is no change.



It is evident that there are a lot of outliers, which is expected in the stock market.

2. Top 10 performing stocks

Based on the total volume traded, the most active stocks in the market are Laptrust Imara Income- REIT and Safaricom.

Top 10 stocks by total volume:

Code	
LAPR	1.252750e+10
SCOM	3.885936e+09
HBE	1.658820e+09
KNRE	5.744832e+08
EQTY	5.672798e+08
KCB	4.772461e+08
KEGN	4.193516e+08
KPLC	4.010562e+08
COOP	2.979090e+08
ABSA	2.354774e+08

Homeboyz Entertainment Plc, Kenya
Re-Insurance Corporation Ltd, Equity
Group Holdings Plc, KCB bank, Kenya
Electricity Generating Company Plc, KPLC,
COOP bank and ABSA bank.



Eveready East Africa Limited and Nairobi Business Ventures Ltd showed the highest positive gains as per the price change findings.

Sammer Africa Plc,, Home Africa Ltd, East African Portland Cement Ltd, East African Cables Plc, Lliberty Kenya Holdings Ltd and WPP ScanGroup Plc complete the top ten, all demonstrating substantial positive percentage price changes

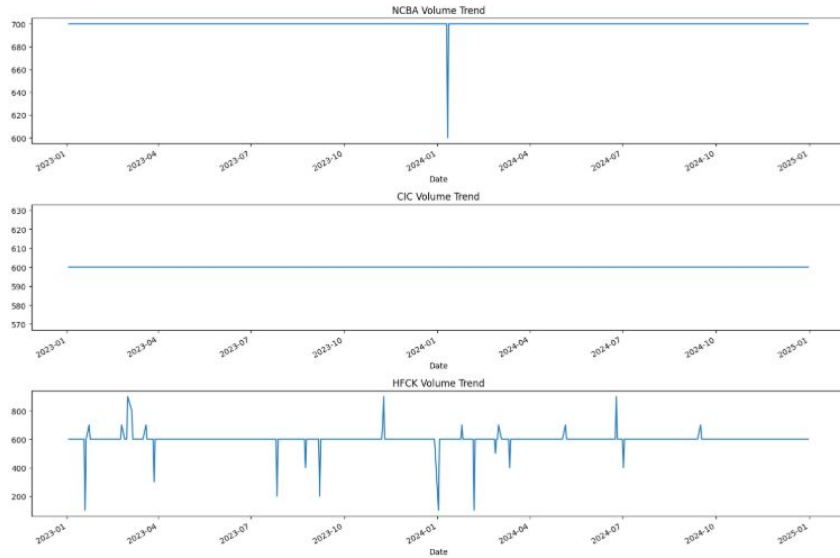
Top 10 stocks by total price change:

Code	
EVRD	1655.54
NBV	1558.02
TCL	1552.45
SMER	1511.99
HAFR	1493.94
UCHM	1423.78
PORT	1354.84
CABL	1349.68
LBTY	1342.77
SCAN	1272.30

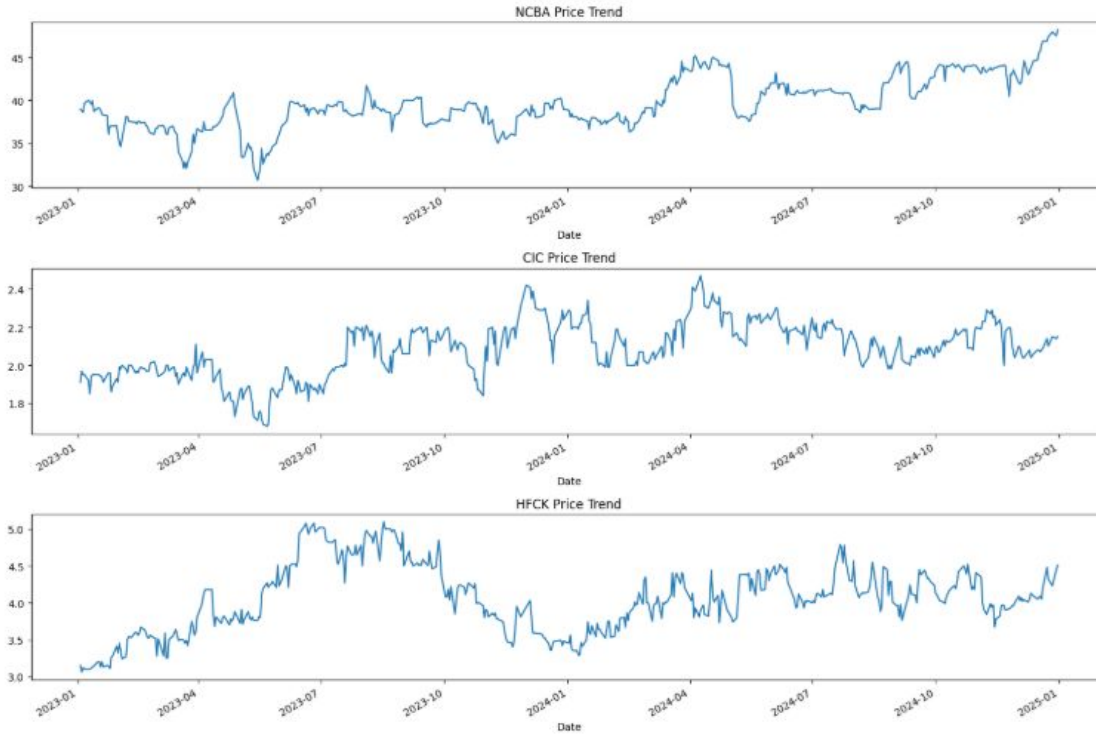


3. Trends over time for the top 3 stocks.

These plots show us the volatility of the different stocks.

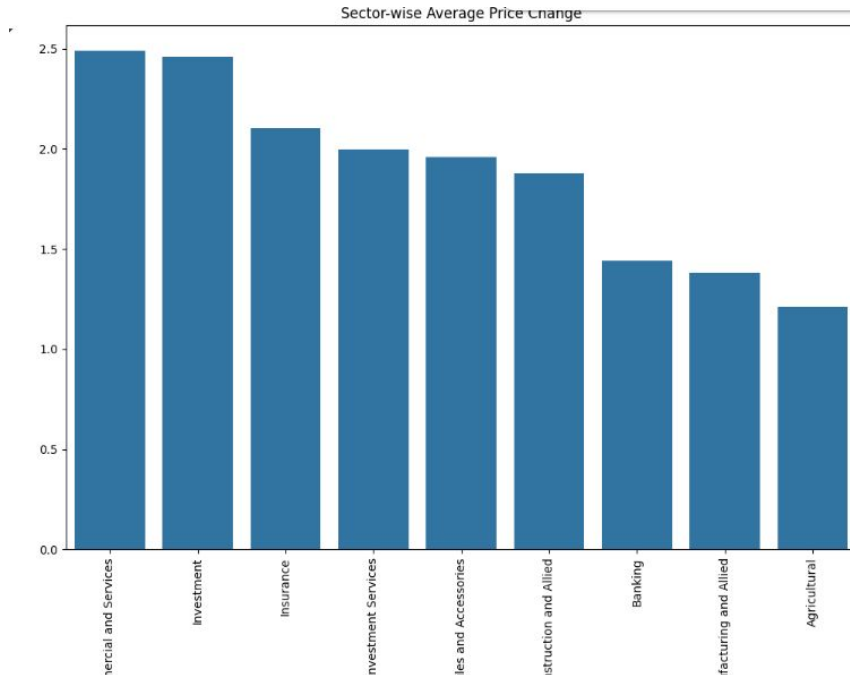


For volume, NCBA and CIC show relatively stable trading volumes, with NCBA exhibiting one notable, short-lived volume spike in January 2024.

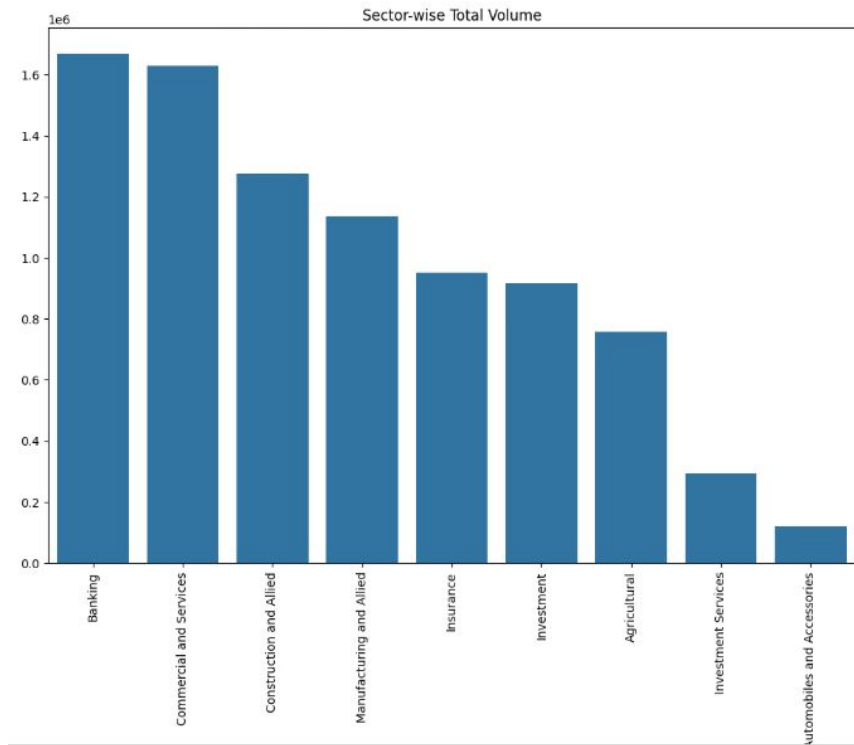


For price, NCBA and HFCK are showing a stronger upward momentum towards the end compared to CIC.

4. Sector Performance Analysis



The Commercial and Services and Investment sectors have experienced higher average price changes compared to others, proving they are the best performing.



The Banking and Commercial and Services sectors are dominating the trading activity, each exceeding 1.6 million units traded. These sectors have highly liquid stocks that investors trade frequently.

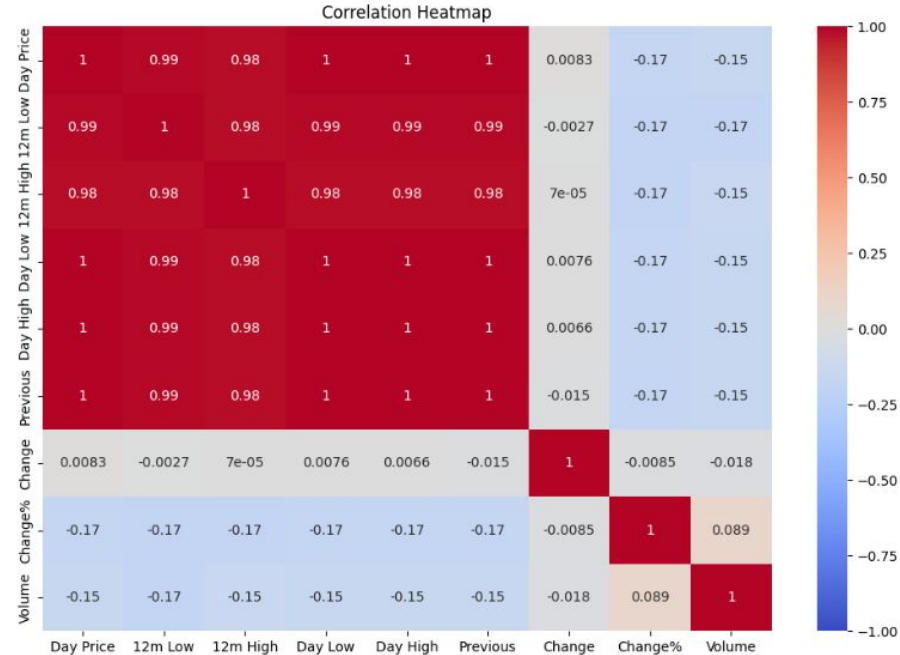
5. Correlation Analysis

The heatmap and pairplot show a strong positive correlation between Day Price, Day High, and 12m High.

This indicates that these price-related features move very closely together.

When one of these prices is high, the others are also likely to be high, and vice versa.

Volume is weakly correlated with prices and changes in prices.

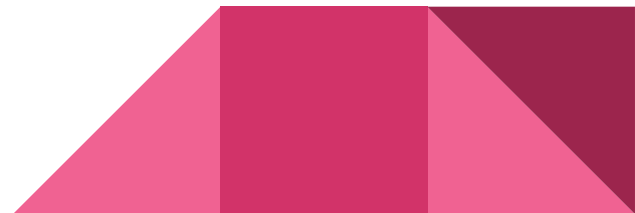


The technical indicators we used are

1. Simple Moving Average (SMA)
2. Exponential Moving Average (SMA)
3. Relative Strength Index (RSI)

The moving averages help in smoothing out the fluctuations in price, making it easy to identify the overall direction of the market.

RSI help in determining how strong recent price changes are, determining whether a stock is gaining or losing momentum.



Forecasting Price Trends

The models we built to predict future stock prices are

1. ARIMA - A traditional time series approach
2. XG boost - Handles complex relationships better than ARIMA
3. LSTM model - Learns sequential patterns from features over time.

Using our models, we are able to predict the general trend of stocks in the market.

XGBoost was best able to capture the underlying patterns and dynamics of the NSE time series data in this specific comparison.



Recommendations

1. Focus on high volume stocks as they have better liquidity and represent strong investor interest.

This makes them suitable for short-term trading strategies due to the frequent price movement.

2. Monitor model performance continuously
3. Establish a retraining strategy for the XGBoost model the most recent data to ensure its predictions remain relevant and accurate.
4. Integrate the model's output into a broader trading or investment strategy that includes risk management



Recommendations

- Establish a system for continuously monitoring its performance on live data using the chosen evaluation metrics.
- Incorporate technical indicators into decision making, like the RSI which are essential for determining market entry and exit times.
- Incorporate real-time events enhance to predictions.





Thank you!