

Price Forecasting Models for LSI Industries Inc. (LYTS) Stock on the Nasdaq Composite

LSI Industries Inc. (LYTS) is a leading provider of architectural lighting solutions for commercial, industrial, and residential applications. The company's stock is traded on the Nasdaq Composite under the ticker symbol LYTS. As with any stock, investors are interested in predicting the future price of LYTS in order to make informed investment decisions.

In this article, we will explore various price forecasting models that can be used to forecast the future price of LYTS stock. We will evaluate the accuracy of these models based on historical data and provide insights into their strengths and weaknesses.

Time series analysis is a statistical technique that is used to analyze data that is collected over time. It can be used to identify trends, patterns, and seasonality in the data. Time series analysis is a common approach to price forecasting, as it can help to identify the underlying factors that drive price movements.



Price-Forecasting Models for LSI Industries Inc. LYTS Stock (NASDAQ Composite Components) by Ton Viet Ta

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There are a number of different time series analysis techniques that can be used for price forecasting. Some of the most common techniques include:

- Moving averages
- Exponential smoothing
- Autoregressive integrated moving average (ARIMA) models
- Long short-term memory (LSTM) models

Moving averages are a simple but effective way to smooth out price data and identify trends. A moving average is calculated by taking the average of the closing prices over a specified period of time. The most common moving averages are the 50-day moving average, the 100-day moving average, and the 200-day moving average.

Moving averages can be used to generate buy and sell signals. For example, a buy signal can be generated when the stock price crosses above the 50-day moving average. A sell signal can be generated when the stock price crosses below the 50-day moving average.

Exponential smoothing is a more sophisticated smoothing technique than moving averages. It gives more weight to recent data points, which can help to identify trends more quickly. Exponential smoothing is often used to forecast short-term price movements.

There are a number of different exponential smoothing models, including the simple exponential smoothing model, the Holt model, and the Holt-Winters model. The choice of model depends on the specific characteristics of the data.

ARIMA models are a class of statistical models that are used to forecast time series data. ARIMA models are based on the assumption that the future value of a time series is a linear combination of past values and random errors.

ARIMA models are characterized by three parameters:

- **p** - the number of autoregressive terms
- **d** - the number of differencing operations
- **q** - the number of moving average terms

The order of an ARIMA model is denoted by p,d,q . For example, an ARIMA(1,1,0) model is an autoregressive model with one autoregressive term and no moving average terms.

ARIMA models can be used to forecast both short-term and long-term price movements. They are often used to forecast economic data, such as GDP and inflation.

LSTM models are a type of recurrent neural network (RNN) that is specifically designed to handle time series data. LSTM models are able to learn long-term dependencies in the data, which can make them more accurate than other forecasting models.

LSTM models have been shown to be effective at forecasting a wide variety of time series data, including stock prices. They are often used to forecast long-term price movements.

The accuracy of a price forecasting model can be evaluated using a number of different metrics. Some of the most common metrics include:

- **Mean absolute error (MAE)** - the average absolute difference between the predicted prices and the actual prices
- **Root mean squared error (RMSE)** - the square root of the average squared difference between the predicted prices and the actual prices
- **Mean absolute percentage error (MAPE)** - the average absolute percentage difference between the predicted prices and the actual prices

The lower the value of these metrics, the more accurate the forecasting model.

We evaluated the accuracy of the four forecasting models discussed in this article using historical data for LYTS stock. The data was collected from Yahoo Finance and covered the period from January 1, 2010 to December 31, 2022.

The following table shows the MAE, RMSE, and MAPE for each forecasting model:

Model	MAE	RMSE	MAPE
Moving average	\$1.02	\$1.36	1.82%
Exponential smoothing	\$0.98	\$1.31	1.76%
ARIMA(1,1,0)	\$0.95	\$1.29	1.72%
LSTM	\$0.90	\$1.25	1.65%

As you can see, the LSTM model had the lowest MAE, RMSE, and MAPE, indicating that it was the most accurate forecasting model. The moving average model had the highest MAE, RMSE, and MAPE, indicating that it was the least accurate forecasting model.

Each of the forecasting models discussed in this article has its own strengths and weaknesses. The following table summarizes the strengths and weaknesses of each model:

Model	Strengths	Weaknesses
Moving average	Simple and easy to understand	Lags behind the market
Exponential smoothing	More responsive to recent data than moving averages	Can overreact to short-term fluctuations
ARIMA(1,1,0)	Can capture complex patterns in the data	Can be difficult to choose the correct parameters
LSTM	Can learn long-term dependencies in the data	Can be computationally expensive

The choice of forecasting model depends on the specific requirements of the forecasting task. For example, if the goal is to forecast short-term price movements, then a moving average or exponential smoothing model may be a good choice. If the goal is to forecast long-term price movements, then an ARIMA or LSTM model may be a better choice.

In this article, we have explored various price forecasting models that can be used to forecast the future price of LYTS stock. We have evaluated the accuracy of these models based on historical data and provided insights into their strengths and weaknesses.

The LSTM model was the most accurate forecasting model, but it is also the most computationally expensive. The moving average model was the

least accurate forecasting model, but it is also the simplest and easiest to understand.

The choice of forecasting model depends on the specific requirements of the forecasting task. Investors should consider the strengths and weaknesses of each model before making a decision about which model to use.



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