

Headline: <a href="#">5 Little-Known Facts About Algorithmic Trading</a>	
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# 5 Little-Known Facts About Algorithmic Trading

*Let's try to understand some little-known facts about algorithmic trading in India*

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In 2008, SEBI permitted automated trading in India. Since then, the number of firms using algorithmic trading has been on the rise, with current estimates putting the figure at 50% of the total volume.

This figure is still low when compared to developed markets such as the US where the trading volume is more than that in India, 70-80% of trades are done through algorithmic trading. This makes a career in algorithmic trading in India all the more exciting, where the concept is still relatively new as compared to the developed markets.

Let's try to understand some little-known facts about algorithmic trading in India.

## **Prerequisites before you start algorithmic trading**

The two stock exchanges, National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) have different prerequisites before you can get an approval to start algorithmic trading. Technically speaking, one can become a trading member and trade directly through the exchange by fulfilling certain criteria. The members of the exchange(s) can apply for the approval directly with the exchange. On the other hand, non-members can apply for approval through their brokers.

Approval is a multi-step process right from participating with the relevant algorithmic trading strategy in the mock trading environment, getting it approved by the auditor to giving a demonstration to the exchange for the approval of the strategy.

One should note that any change in the algorithms should go through the exchange approval process before it can be implemented.

## **Role of Co-location in the market**

It is known that the first one to react to the news can use it to their advantage. In the race to be the fastest to respond, most of the high-frequency trading (HFT) firms rent space on the server racks on the same network right in the stock exchange premises itself. This is called as 'Co-location'.

The advantages of co-location are reduced latency, i.e. the time your system takes to respond to any trigger, as the firms can respond quickly when compared to those who house their servers away from the exchange. The idea being, your data has to travel a lot less distance, resulting in a faster response.

Co-location is generally required only for HFT strategies like arbitrage, market making, etc. which need a high degree of technology & infrastructure expenditure and hence deployed primarily by institutions & proprietary trading houses. Interestingly, India has one of the lowest co-location charges among the peer exchanges across the globe.

From a retail or individual trader perspective, Co-location has led to a more efficient market due to the decrease in the bid-ask spread, as the market makers can respond much faster to new updates and can afford to quote much tighter prices. One study by Aite Group a few years back in the US had pegged the saving for an individual/retail trader at nearly \$250 per year!

## **Types of Algorithmic strategies**

Contrary to popular opinion, not all algorithms are designed for high-frequency trading. There are a variety of algorithms apart from arbitrage & market making algorithms that are designed by institutional investors as well as retail traders to trade in the markets using algorithms. Some of the popular algorithms include:

- Momentum/Trend Following - This algorithm seeks to find a trend in the company's stock price by using different technical and/or quantitative indicators to analyze the available information. Once these are identified, the trader can place a trade depending on the perceived profitability of the strategy.
- Statistical Arbitrage - One of the examples of Statistical Arbitrage is pair trading where we look at a ratio/spread between the pair of stocks' prices, which are cointegrated. If the value of spread goes beyond the expected range, then you buy the stock which has gone down and sell the stock which has outperformed in the expectation that the spread will go back to its normal level. Statistical arbitrage can work with a hundred or more stocks in its portfolio which are classified according to a number of factors and can be fully automated from both analysis & execution perspective.
- Machine Learning based algorithms - In simple terms, one uses historical data of the markets and feed this to the machine learning algorithm that they have designed. The data is divided into training data and testing data. The machine learning algorithm learns the patterns and features from the training data and trains itself to take decisions like identifying, classifying or predicting new data or outcomes. The algorithm continues to learn from the positive/negative outcomes, to improve on accuracy & performance.

#### **Order-to-trade ratio helps monitor the market**

The order-to-trade ratio is the ratio of the total number of orders that were sent to the exchange, to the number of orders that get traded. A ratio of 2:1 would indicate that only half of the total orders got traded and the rest remained pending or got cancelled/rejected.

The significance of this ratio is the fact that exchanges penalise firms with high order to trade ratio as one might be burdening the exchange infrastructure by sending out orders that are not expected, or worse, not intended to be traded. Indian exchanges enforce penalties to the firms that have a high order-to-trade ratio for the orders that are priced beyond the mentioned trade price range.

#### **Strategy development and research tools**

With the advent of online research tools, many traders are increasingly looking out for online resources and backtesting platforms in an attempt to improve their trading models and strategies. Recent web platforms like Quantra Blueshift have given traders access to market data, and also a platform to build and evaluate their algorithmic trading strategies using the power of statistics & computing.

Algorithmic trading has ushered in a new era for the market whose benefits are yet to be fully realised. With the right set of skills & tools, the retail traders are coming of age into this new era of trading & investing.

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