Algorithmic Trading

(Automated Trading)

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People are depending more on technology in their everyday activities as technology is constantly improving. Before technology was used extensively, trading was done manually by the dealer, mainly using papers. However, with the improvement of technology and most things becoming computerized, investors started trading using computers. Moreover, as computers became more available to all traders, some started to think of a way to differentiate themselves from others, from that point the algorithmic trading (automated trading) emerged as traders wanted to beat the system, be quicker than other traders and have their trades executed first and faster. So, what is Algorithmic trading, who uses it, why they use it, the strategies that they use and, finally, do the pros outnumber the cons?

Algorithmic trading:-

Algorithmic trading also called automated trading, is a computer that is automated to follow instructions for placing trade in order to generate profit. These computer are programmed to follow price, quantity, timing or mathematical model, but mainly price. Algorithmic trading is extremely complex that uses large sets of data or uses behavioral finance approaches and also they utilize advanced and complex mathematical models and formulas, but sometimes it’s simply just about a buy or sell at certain price. One important thing to understand, algorithmic trading is different from human trade not only that it works at speed that the human being cannot compete with, but also these machines don’t look at value, these machines look at the PRICE only.

In simplest way, you can imagine Algorithmic trading as a dealer who job just to look at millions and millions of deals per second and find the best one based on statistics

Who uses algorithmic trading and why?

Algorithmic trading is mainly used by hedge funds, pension funds, mutual funds, investment banks and some individual traders. These entities use algorithmic trading because of the huge amount of shares purchase every day and with the help of automated trading, they can acquire the best possible price without significantly affecting the stock's price and increasing purchasing costs.

Algorithmic trading advantages:-

- One of the biggest advantages for algorithmic trading that its removes the emotional side that traders have.
- The speed that it executes orders which human can't compete with as algorithmic trading analyze and react to the news faster before a human trader.
- Because entering or exiting rules are predefined, algorithmic trading maintains discipline.
- The ability to back-test using historical market data.
- Provide diversification for the user as it uses various strategies at one time and spread the risk over many instruments all this happens in matter of milliseconds.
- Reduces transaction cost and manual error.
- Works for 24 hours six days week non-stop.

Algorithmic trading disadvantages:-

- It requires constant monitory due to possible mechanical failures.
- It's not 100% accurate as any mistake in the program can trigger tons of unwilling orders.
- It can be done only by people who have the knowledge and expertise.
- It's not universal, as investors cannot depend on one algorithm and apply it on many situations.

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As we said before, algorithmic trading analyze and react to news faster before a human trader can which led to many flash crash in the market.

- On May 6th 2010, American shares and futures indices dropped by 10% in minutes. The main reason for this, as the Commodity Future Trading Commission explained, a trader from UK used computer algorithm to manipulate the market by placing orders to buy or sell without the intention of completing the deal and then cancelling them all. The instrument that was being manipulated was the E-mini S&P500 contract. The trader executed the sell program in just 20 minutes which caused large net change. The E-mini dropped by 3% in 4 minutes.

- In 23rd of April 2013, the Dow Jones dropped 1% in 3 minutes because automated trading dictated a false tweet sent by the Associate Press (AP) account stated that the White House was hit by two explosions.

So with these two Flash clashes, we can add two more algorithmic trading disadvantages. First, any trader with algorithm programming expertise can manipulate the market for their own benefits. Second, as we can see that algorithmic trading analyze even the social media, it reacts from and on tweets even if it's false.

Algorithmic Trading Strategies Examples:-

Here in Ingot Brokers with the help of our trading platform, the trader can use algorithmic trading and using different strategies like:-

- Follow trends:- This is the simplest to implement, its related to technical indicators like; following moving average, price level movements and channel breakouts
- Arbitrage: - Finding price difference and a way to profit without risk (risk-free). Algorithmic trading can buy stock at a lower price in one market and simultaneously selling it at a higher price in another market.
- Mean Reversion: - algorithmic trading calculates the mean price for the stock and buys (sells) the stock when it's attractive; average price of the stock is higher (lower) than the current price.
- Use, Time Weighted Average price, Percentage of Volume and Volume Weighted Average Price.

- Time Weighted Average Price (TWAP): - It's the average price of the underline asset (security) over a period of time. Here the algorithmic trading divides the large order to smaller ones and sends it to the market by using specific time intervals between the start and end time.
- Volume Weighted Average Price (VWAP): - Here it's almost the same strategy as (TWAP), but when it sends the order to the market it uses the 3-day, 5-day, 2-weeks, a month or even longer periods historical average volume for the assets.
- Percentage of Volume: - A Percentage of Volume algorithm is a participation algorithm designed to target a defined fraction of the overall volume on a stock for the period in question. As its intention is to keep its trading activity in line with total volume, its market impact is less than a VWAP for instance, which would continue to aim for its price target regardless of market volume.

Kinds of Automated trading programs:-

Programs that support algorithmic trading can be divided to two categories, Semi-Automatic and fully-Automatic.

- Semi-Automatic:- The system will find the best trade that fits the trader criteria, but it requires the trader to place the order manually or approve it.
- Fully-Automatic: - This system will find the best trade that fits the trader's criteria and will automatically place the order without the trader's approval.

Algorithmic Trading Regulation:-

As Algorithmic trading is widely used nowadays, they are regulated by CFTC (Commodity futures Trading commission). The regulations goals to reduce risk and to enhance oversight of automated trading. The regulations include risk management and compliance standards on traders, where traders take place DCMs (Designated contract market) and on intermediaries. However, they do not impose firms to change their strategies or impose new requirements. CFTC reduces the risk by controlling the maximum orders messages and the order size parameters and other rules.

Conclusion:-

Algorithmic trading can be defined as an art and science in the same time. Art of combining or pairing more than one strategy at once and the science of programming these strategies. In this report, we revised some of the Algorithmic trading users, strategies, pros and cons and few of its impact on the market. After that, it is the trader's decision to use it or not. The trader should ask the question "is algorithmic trading consistent with my investment strategy?" after answering this question the trader can identify his opportunities.