Algorithmic Trading
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In today's highly competitive and cost-conscious trading environment, algorithms have become a must-have for fund-managers and traders. Algorithmic trading refers to the use of algorithms for placing a trades in order to generate profits at a speed and frequency that is not possible for a human trader. The rules built into the model attempt to determine the optimal time for placing an order based on the goals specified by the parameters of the model.

The main benefits of algorithmic trading are :

1. **Algo-trading makes markets more liquid and makes trading more systematic by ruling out emotional human impacts on trading activities.**

   The most significant advantage of algorithmic trading is that it eliminates emotional bias from the process of trading as all trades are executed automatically when the trade rules are met. Most traders and investors lose money due to greed and fear. Algorithmic trading rules out the chances of human emotions induced mistakes as traders will not be able to hesitate or question the trade.

2. **The trading opportunity is automatically identified and hence the trades are executed at the best possible prices.**

   Algorithmic trading helps in constantly examining the changing market conditions and generating orders as soon as the trading criteria in the algorithm are met. Considering the fact that markets might move rapidly, getting in or out of a trade a few seconds earlier can make a big difference in the trade's outcome. Thus, algorithmic trading ensures that trades are executed at the best possible prices.

3. **Trades are timed correctly and instantly, to avoid significant price changes.**

   The algorithm keeps a constant watch on the rapidly moving markets, thus, as soon as the correct opportunity (as specified in the trade rules) is identified, trade orders are generated without any further delay. Hence, trades are executed instantly avoiding significant price changes.

4. **Multiple conditions can be simultaneously checked which is not possible manually.**

   When trading through an algorithm fed into the computer, multiple indicators or conditions can be written into the algorithm. This enables simultaneous conditions to be checked before entering into a trade, a task which is practically impossible to be achieved manually for a large number of stocks.

5. **Wider market coverage is possible as number of securities on which the algorithm can be applied simultaneously is not a constraint for the algorithm.**

   With the help of algorithmic training, any user can trade using multiple accounts or strategies in a matter of milliseconds and this if done manually would not only be challenging but also nearly impossible to accomplish. The computer can efficiently scan for trading opportunities across a range of markets and generate orders and monitor the trades accordingly.

6. **Arbitrage opportunities can be found quickly.**

   Since a computer can efficiently monitor the movement of a large number of securities on multiple markets, arbitrage opportunities can be found quickly and orders can be generated. It is humanly difficult to find an

arbitrage opportunity as the range of markets and stocks we can monitor is limited and order generation and execution is not that quick.

7. **Better risk control as the possibility of manual errors is totally removed.**

   When trading manually, there is a risk that we might enter a wrong trade due to some manual error. This risk is completely removed in algorithmic trading as the computer would do exactly what is mentioned in the algorithm without any mistake.

8. **Scalability and appropriate diversification possible.**

   If a particular strategy works well for some security it can be easily extended to some other securities or markets. Two or more strategies can also be combined easily and hence algorithmic trading provides possibilities for scalability and diversification.

9. **Provides the possibility of Risk Budgeting, which is a powerful tool to maximize portfolio performance.**

   Depending on profits and losses made so far, a trader can alter the amount of risk he can take on the subsequent trades. The algorithm can be programmed to take different actions depending upon the risk factor.

10. **Rapid advancement of technology and open source availability of various Machine Learning and AI tools has aided the growth of algorithmic trading.**

    With the rapid advancement in Machine Learning and AI, a lot of open source libraries are available for users. This has made writing algorithms and optimizing trading strategy parameters a relatively easier task. This has contributed to the rapid growth of algorithmic trading.

11. **With the help of algorithmic trading the complex problem of analyzing financial markets is reduced to a data analytics problem.**

    With the help of algorithmic trading, the task of keeping a watch on the rapid movement of markets and identifying trading opportunities, generating orders and monitoring trades is achieved by the computer only. So, a trader can focus on formulating and back testing new strategies on historical data which can be paralleled with a data analytics problem.