

# Intelligent Stock Trading Technique using Technical Analysis

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## Abstract

Financial engineering such as trading decision is an emerging research area and also has great commercial potentials. A successful stock buying/ selling generally occurs near price trend turning points. Technical analysis can be used to predict turning points of the stock. This paper presents intelligent trading setup which can be used by any investor to pick stock for buying at right time to get handsome profits.

## Keywords

Technical Indicator, Stock ethics, Trendline, Moving Averages, Volume, Stock price Forecasting

## I. Introduction

Trading in stock market is very complex and confusing task. Investors use different strategies to succeed like buying stocks at a certain point of time & simply hold them over a period of time, buying hot stocks, investing in blue chip stocks etc. Sometimes they follow the crowd by buying popular stocks that are recommended by friends and financial media. This approach of selecting stock is not mostly profitable. One needs a flexible approach to understand what drives up or down the stock prices. If an investor can understand these forces, he/she can increase his/her chances of taking right actions like selling or buying the stock at the right time with a greater degree of confidence [2,3].

## II. Concept of Technical Analysis

Technical analysis is the forecasting of future financial price moment based on an examination of past price moments. Technical analysis helps the investor to anticipate the future price of stock. Technical analysis uses the chart that show price over time.

For intelligent stock buying, the focus should be on bullish situations. The first step is to identify the overall trend. This can be attained by using trend lines, moving averages or technical indicators. As long as the price remains above its uptrend line, selected moving average and is accordance with technical indicators, the trend is considered bullish [1].

### A. Price Charts

A price chart is a sequence of prices plotted over a specific time frame. The high, low & closing price are required to form the price plot for each period of chart. The high & low are represented by the top & bottom of the vertical bar and the close is the short horizontal line crossing the vertical bar. On daily chart, each bar represents the high, low and close for a particular day (see Fig. 1) [4].



Fig.1: Price Chart

### B. Trend Lines

Trend lines are an important tool in technical analysis for both trend identification and confirmation. A trend line is a straight line that connects two or more price points and then extends into the future to act as a line of support or resistance. Support is the price level at which demand is strong enough to prevent the price from declining further. Resistance is the price level at which selling is strong enough to prevent the price from rising further.

1. Uptrend line: An uptrend line has a positive slope and is formed by connecting two or more low points. The second low must be higher than the first for the line to have a positive slope (see Fig.2) [4].



Fig.2: Uptrend Line

2. Downtrend line: A downtrend line has a negative slope and is formed by connecting two or more high points. The second high must be lower than the first for the line to have a negative slope (see Fig.3) [4].



Fig.3: Downtrend Line

**C. Volume**

Volume is simply the number of shares traded during a day. The analysis of volume is a basic element of technical analysis. Volume of stock during a day provides the strength of the price. When the price is in uptrend, the volume usually increases. When price is in downtrend, the volume of trading will be usually low.

**III. Concept of Technical Indicator**

A technical indicator is a series of data points that are derived by applying a formula to the price data of the stock. Technical indicators provide unique perspective on the strength and direction of the price action of the stock. Indicators serve three main functions: to alert, to confirm and to predict. There are hundred of indicators in use today. We are focusing on only few selected indicators.

**1. Simple Moving Averages(SMA)**

It is most popular and easy to use tool available to the technical analyst. They smooth a data series and make it easier to spot trends, especially helpful in volatile markets. Moving averages are also used by many other technical indicators. A simple moving average is formed by computing the average (mean) price of the stock over a specified number of periods. For example: a 20 day SMA is calculated by adding the closing prices for the last 20 days and dividing the total by 20 (see Fig. 4) [4].



Fig. 4. Simple Moving Averages

**2. Moving Average Convergence/Divergence (MACD)**

MACD is a trend following indicator that shows the relationship between two SMA of prices. It is a difference between a 26-day SMA and 12-day SMA. A 9-day SMA called the “signal line” is

plotted on the top of MACD to show buy/sell opportunities. The basic MACD trading rule is to sell when the MACD falls below its signal line. Similarly, a buy signal occurs when the MACD rises above its signal line. A bearish divergence occurs when the MACD is making new lows while prices fail to reach new low. A bullish divergence occurs when the MACD is making new highs while prices fail to reach new highs (see Fig. 5) [4].



Fig. 5. Moving Average Convergence/Divergence

**3. Stochastic Oscillator(SO)**

Stochastic oscillator shows the location of the current closing price of the stock relative to the high/low range over a set number of periods. Closing prices that are consistently near the top of the range indicate accumulation (buying pressure) and those near the bottom of the range indicate distribution (selling pressure). Buy the stock when the SO falls below a oversold level (20) and then rises above that level. Sell the stock when SO rises above over brought level (80) and then falls below that level (see Fig. 6) [4].

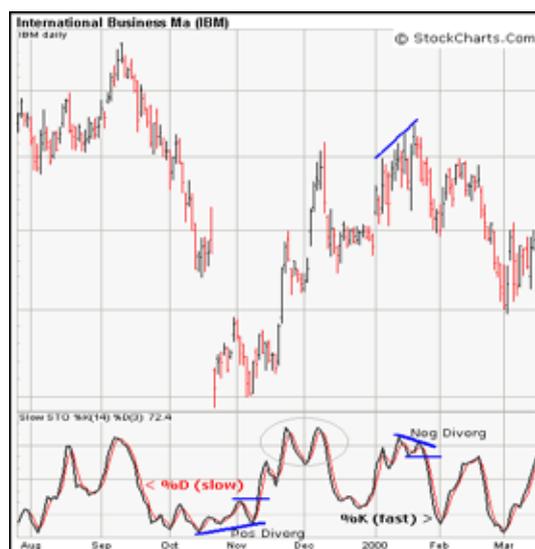


Fig.6: Stochastic Oscillator

**4. Relative Strength Index (RSI)**

RSI is an extremely useful and popular oscillator. The RSI compares the magnitude of stock’s recent gains to the magnitude of its recent losses and turns that information into a number that ranges from 0 to 100.

If the RSI rises above 30, it is considered bullish for the stock while if it falls below 70, it is considered bearish signal. Buy/sell signals can also be generated by looking for positive and negative divergences between RSI and the underlying stock (see Fig. 7) [4].



Fig. 7: Relative Strength Index

### 5. Rate Of Change Oscillator (ROC)

The ROC is very simple yet effective oscillator that measures the percent change in the price from one period to the next. The ROC calculation compares the current price with the price n periods ago (see Fig. 8) [4].

ROC =  $\left( \frac{\text{Today's Close} - \text{Close } n \text{ periods ago}}{\text{Close } n \text{ periods ago}} \right) * 100$



Fig. 8: Rate of Change Oscillator

### IV. Stock Screening Technique for Selecting Bullish Stock

Let us introduce the powerful stock picking setup. A setup here refers to a combination of price pattern and technical indicators that, together, give us the right conditions for predicting with reasonable confidence the future direction of the stock's price. There are thousands of stocks listed with stock exchanges. We are to screen out all that are not suitable for profitable trading. You are recommended to follow the following points for selecting bullish stock.

(1) Identify the stocks which are uptrending. Uptrending

stocks means stocks that are making higher lows over at least the past three months.

- (2) The 20-day SMA is above the 50-day SMA and both SMA's are rising.
- (3) The price pullback coincides with, or lies near, an upsloping trendline drawn under the lows of the uptrend.
- (4) Along with price pullback, there must be a sharp dip in the stochastic oscillator to or below the oversold 20 line.
- (5) There is no close during the dip under 50 SMA.
- (6) Volume on the dip to support is lower than average.
- (7) Prices has not put in a double top formation (two equal price highs) on the daily chart.
- (8) There is no bearish divergence seen in any of the indicators (MACD, ROC, RSI etc).

If you find a stock that satisfy all the requirements of above mentioned setup, then buy that stock with 2% stop loss.

### References

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