
TECHNICAL ANALYSIS PROVIDES INPUTS FOR INVESTMENT: EVIDENCE FROM GOLD

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ABSTRACT

Technical analysis is a method of appraising securities by analysing the data generated by market activity, such as past prices and volume. Technical analysts do not try to measure a security's intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity. It's an exploratory research where the gold prices of one year are studied by the way of technical analysis to find out future trend of gold prices and its impact on the investment decisions. As the gold prices are highly volatile so technical analysis has been applied and it provided inputs for investment in gold. This paper has concluded that gold prices are showing downtrend from the last one year and indicated the buy signal.

Keywords: Technical analysis, intrinsic value ,downtrend, buy signal, investment.

I. INTRODUCTION

Technical Analysis is the forecasting of future stock price movements based on an analysis of past price movements. technical analysts believe that share prices are based on demand and supply forces operating in the market. It does not result in absolute forecasts about the future. Instead, technical analysis can help investors anticipate what is "likely" to happen to prices over time.

Technical analysis uses a wide variety of charts that show price over time.

A. Basics of Technical Analysis

1. Uptrend: The formation of higher tops and bottoms is called as uptrend (Bullish trend). Prices are moving upwards.
2. Downtend: The formation of lower tops and lower bottoms

indicated downtrend (bearish trend). Prices are moving downwards.

3. Buy Signal: The conversion of downtrend to uptrend indicates buy signal. Investor should buy the stock
4. Sell Signal: The reversal of uptrend to downtrend indicates sell signal i.e. investor should sell the underlying stock.

B. Tools of Technical Analysis

1. Head and Shoulder formation

Head and shoulders is a reversal chart pattern that when formed, signs that the security is likely to reverse its previous trend. In Figure 1, there are two forms of the head and shoulders chart pattern. Head and shoulders top (shown on the left) is a chart pattern that is formed at the end of an upward movement and signals that the prices are falling down. Head and shoulders bottom, also known as inverse head and shoulders (shown on the right) is formed at the end of a downtrend and signs a reversal in a downtrend.

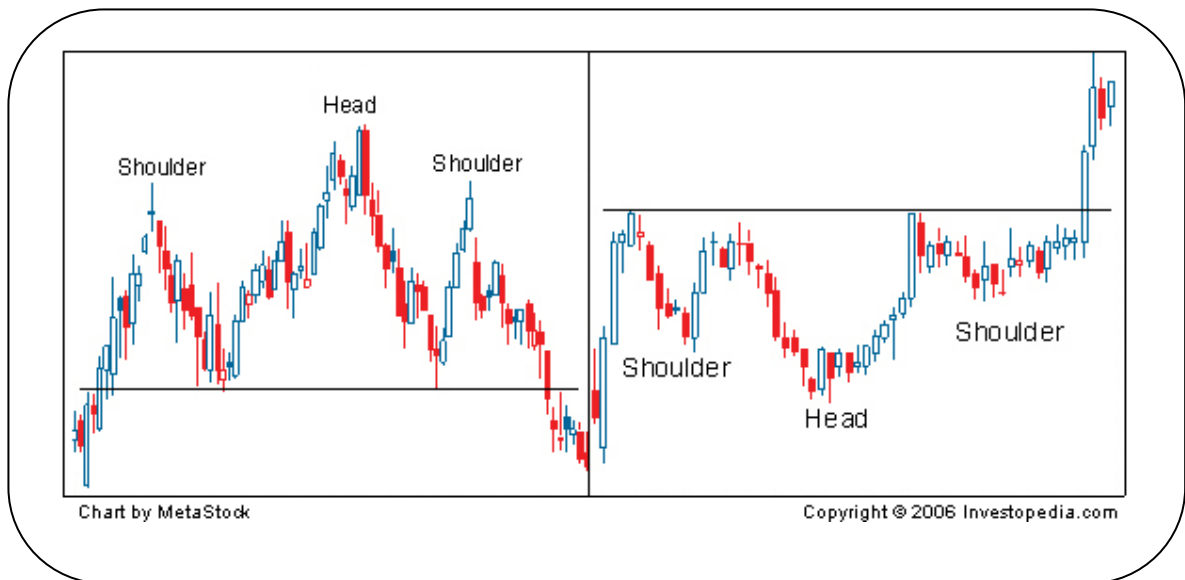


Figure 1: Head and shoulders top is shown on the left. Head and shoulders bottom, or inverse head and shoulders, is on the right.

2. Moving Averages

A moving average is the average price of a security over a set amount of time. It tones down the variations in stock prices and converts into a smoother curve. Once the day-to-day fluctuations are removed, investors can easily recognise the true trend and increase the probability that it will work in their support.

Types of Moving Averages

There are a number of different types of moving averages that vary in the way they are calculated, but their interpretation remains the same. The calculations only differ in regards to the weights that they place on the price data, shifting from equal weighting of each price point to more weight being placed on recent data. The three most common types of moving averages are simple, linear and exponential.

a. Simple Moving Average (SMA)

This is the most common method used to calculate the moving average of prices. It only takes the sum of all of the past closing prices over a given period of time and divides the result by the number of prices used in the calculation. Usually 200 days are taken for long-term trend and 50 days for medium term trend.

b. Exponential Moving Average (EMA)

This moving average calculation uses a smoothing factor to place a higher weight on recent data points and is regarded as much more effective than the SMA. It is more receptive to new information relative to the simple moving average.

Major Uses of Moving Averages

Moving averages are used to recognise current trends and trend reversals. When a short-term average is above a longer-term average, the trend is up. On the other hand, a long-term average above a shorter-term average signals a downward movement in the trend.

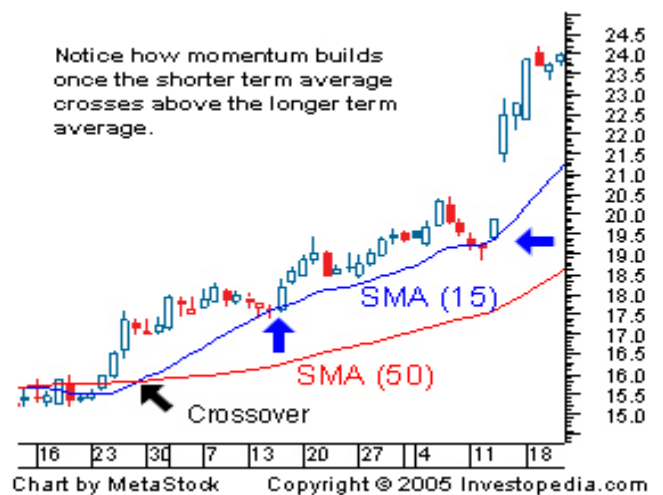


Figure.2 MOVING AVERAGES

On the other hand, when two averages with relatively long time frames cross over (50 and 200, for example), this is used to suggest a long-term shift in trend.

The most common time frames that are used when constructing moving averages are the 200-day, 100-day, 50-day, 20-day and 10-day. The 200-day average is thought to be a good measure of a trading year, a 100-day average of a half a year, a 50-day average of a quarter of a year, a 20-day average of a month and 10-day average of two weeks.

3. Relative Strength Index

The relative strength index (RSI) given by Wells Wilder is a well-known mathematical indicator used in technical analysis. RSI helps to

signal overbought and oversold conditions in a security. The values are plotted in a range between zero and 100 (fig 3). A RSI value above 70 means that a security is overbought, while below 30 means that it is oversold. It is calculated as:

$$RSI = 100 - (100 / (1 + RS))$$

Where RS = Average gain per day / Average loss per day



Figure 3. RSI

4. Rate of Change Indicator: (ROC)

Rate of change indicates the increase or decrease of price movements. It is calculated for specified number of days

i.e. 10, 50, 200 days depending upon the objective of investor. It is calculated as:
 $ROC = (\text{current price} / \text{price prevailed n period ago}) - 1$

Then ROC values are plotted on chart oscillating above and below zero line. Above zero line is overbought region indicates selling while below zero line is a oversold region indicates buying.

5. **Volume Indicator:**

Volume means no. of shares traded in the secondary market during a specified period of time.

When the volume increases with increase in share price, it indicates bullish trend. While increasing volume with decreasing price indicates bearish trend. When volume behaves contrary to price it indicates trend reversal.

6. **Price Charts:**

A chart is a graphical representation of sequences of prices over a set time period. For example, a chart may show a stock's price movement over a one-year period, where each point on the graph represents the closing price of stock traded.

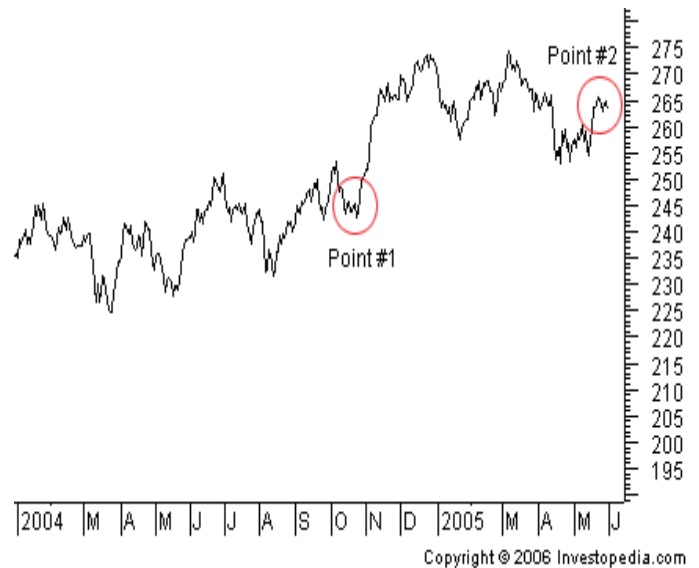


Fig 4. Price chart

Figure 4. provides an example of a basic chart. It is a representation of the price movements of a stock over a 1.5 year period.

II. REVIEW OF LITERATURE

Various studies have been conducted in favour of technical analysis:

Mark P. Taylor and Helen Allen (1988) had conducted a survey of chief foreign exchange dealers, it was revealed that at a very high proportion of chief dealers view technical and fundamental analysis as corresponding forms of analysis and a considerable proportion suggest that technical advice may be useful.

BLUME, L., EASLEY, D. and O'HARA, M. (1994) had investigated the analytical role of volume and its applicability for technical analysis and concluded that sequences of volume and prices can be informative for traders who use information contained in market statistics .

It had validated that rational investors use historical prices in forming their demands and demonstrated the sensitivity of the value of technical analysis to changes in the values of the exogenous parameters.

Lo, A. W., Mamaysky, H. and Wang, J. (2000) had applied this method to a large number of U.S. stocks from 1962 to 1996 to evaluate the usefulness of technical analysis by some specific technical indicators such as head-and-shoulders or double bottoms and concluded that several technical indicators do provide considerable information and may have some applied value.

Park, C.-H. and Irwin, S. H. (2007) had reviewed the evidence on the profitability of technical analysis by categorising empirical literature into two groups, 'early' and 'modern' studies. Early studies indicated that technical trading strategies are profitable in foreign exchange markets and futures markets, but not in stock markets while Modern studies specified that technical trading strategies constantly generate economic profits in a variety of speculative markets at least until the early 1990s.

TREYNOR, J. L. and FERGUSON, R. (1985) has studied the probability distribution of the period on which the market receives information previously in the hands of the investor through a simple model of information spread and concluded that this probability distribution can be used in the management of a portfolio.

Terence C. Mills had studied the analytical ability of various simple technical trading rules by investigating daily data on the London Stock Exchange FT30 index for the period 1935 to 1994 and it was concluded that the trading rules worked, in the sense of producing a return greater than a buy-and-hold strategy.

Oberlechner, T. (2001) had presented the importance of technical and fundamental analysis among foreign exchange traders and financial journalists in Frankfurt, London, Vienna, and Zurich and concluded that that most traders use both forecasting approaches as well as the shorter the forecasting horizon, the more important the technical analysis is.

Wing-Keung Wong^a, MeherManzur^b & Boon-KiatChew^c examined the role of charts in indicating the timing of stock market entry and exit through Moving Average, and the Relative Strength Index and suggested that the indicators can be used to produce significantly positive return.

Antoniou, N. Ergul, P. Holmes, R. Priestley (1997) has examined the extent to which technical analysis can be used in weak form of market efficiency by conditioning the past sequence of prices on the past sequence and it was revealed that returns seemed to conform to the weak-form type of the efficient markets hypothesis.

Lukas Menkhof had studied The use of technical analysis by financial market professionals by conducting survey of 692 fund managers in five countries and concluded that the vast majority of whom rely on technical analysis for short term forecasting and it was more popular in smaller asset management firms.

Gap: All these studies were based on one or two indicators. This study would analyse investment decision on the basis of more than 5 technical indicators.

III. RESEARCH METHODOLOGY

Gold prices and volume of trade for previous one year(from 1st April 2013 to 31st March 2014) have been taken from the website of multi commodity exchange (MCX).

These historical gold price and volume data are then plotted and

Various chart patterns were formed.

Mathematical Indicators like Moving average, Relative Strength Index and Rate of change are plotted to find out trend reversals. These charts are then analysed by the way of technical analysis rules to find buy and sell signal.

A. Scope of study

- a. There technical analysis has been used for investment decisions i.e. whether investor should buy a stock or sell it.
- b. This study has taken data for one year only i.e from 1st April 2013 to 31st March 2014.
- c. the investment decision are be based on the tools of technical analysis.
- d. The stock studied is a commodity (gold).

B. Need of Study

- India, world's largest market for gold jewellery and a key driver of the global gold demand.
- The domestic drivers of gold demand are largely independent of outside forces. Indian

households hold the largest stock of gold in the world.

- Two thirds of the Indian demand for gold comes from the rural parts of the country.
- In 2012, gold's role as an inflation hedge bolstered its appeal in India. India imported around 850 metric tonne (MT) of gold in 2012.

C. Objective of the study

- To analyse the investment decision regarding gold on the basis of gold prices for previous one year by applying tools of technical analysis.
- Analysing the trend in the price of gold for the last one year (2013-14).

D. Data Analysis

The data has been analysed by the way of technical analysis. The tools of technical analysis are:

1. Price Charts: Price charts are plotted to find out the chart patterns and the indications therein.
2. Head and shoulder formation
3. Rate of change (ROC)
4. Relative strength indicator (RSI)
5. volume of trade
6. Moving averages
7. Wedge formation
8. Channel formation

1. Channel formation:

This pattern is formed of parallel resistance and support levels.

It indicates continuation of the pattern i.e. investors should wait for the correct timings. Channel is formed in Fig a.

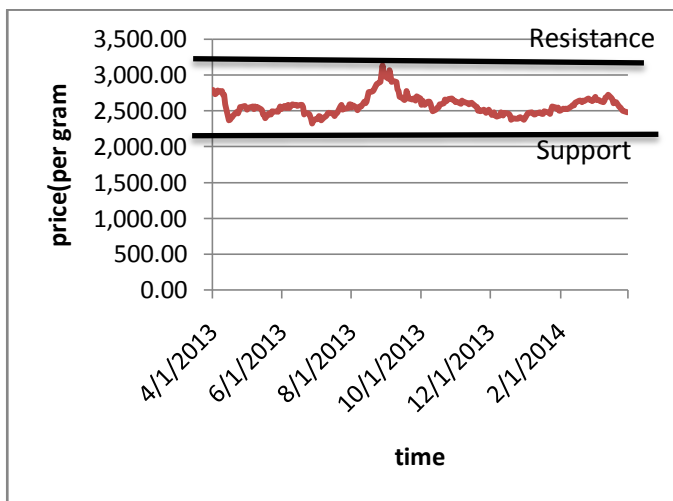


Fig a.(Channel formation)

2. Head and Shoulder formation.

Its a reversal pattern formed at the end of a uptrend. It indicates the reversal of bullish to bearish trend but it is confirmed by the penetration of neckline by right shoulder line as shown in fig b.

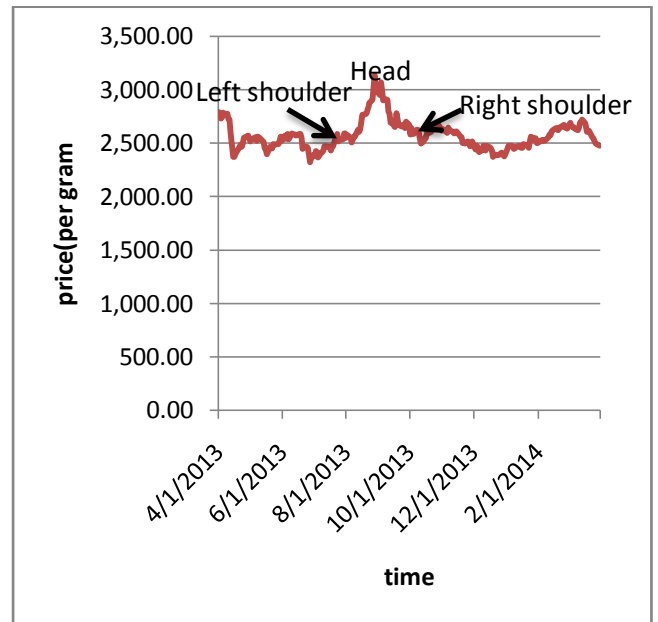


Fig b. Head and shoulder formation

3. Wedge Formation:

is formed when the changes in support and resistance levels are not constant over time, though the direction of change is similar.

Falling wedge is formed in fig c. which indicates that trend is rising but it would fall as the wedge would complete.

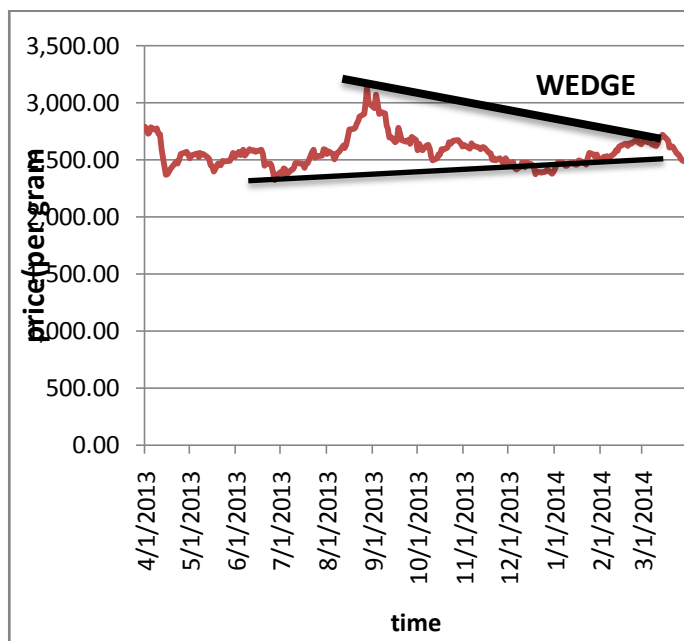


Fig c. falling wedge is denoted by thicker lines

4. **Moving Average:**

SMA (short term moving average) is being calculated for 50 days

LMA (long Term Moving average) is being calculated for 200 days . Both SMA And LMA are potted on a chart in fig d.

where SMA is crossing LMA from below and both are decreasing. It indicates sell signal.

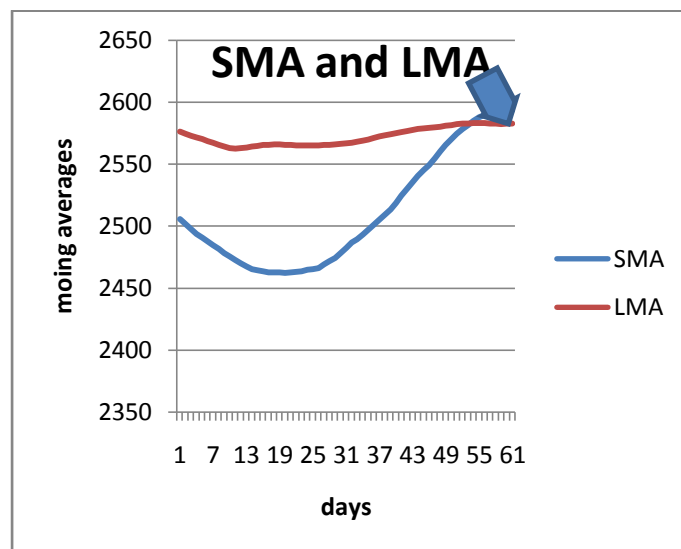


Fig d. Crossing over of LMA by SMA

5. **ROC Chart (Rate of Change Indicators)**

ROC values are calculated for 50 days and are plotted on a chart as shown in fig e.

ROC values are oscillating above and below zero line. Point B In fig e. indicates that investor should Wait or buy or stock as it is moving downward from overbought region to oversold region.

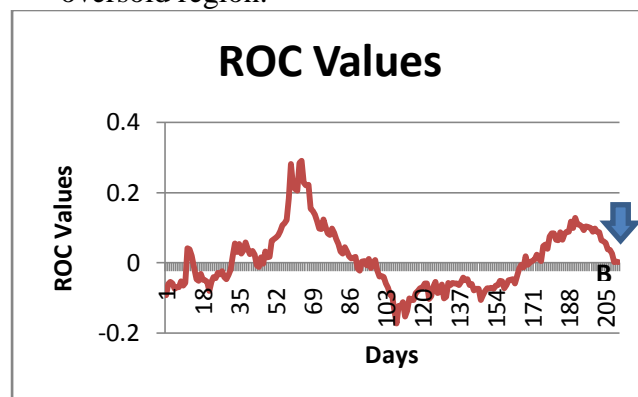


Fig e. ROC Values

6. **RSI Chart (Relative Strength Index)**

RSI values are calculated for 50 days and then plotted on a chart as shown in fig f. As RSI values are oscillating between 30 and 70, it indicates that investor should wait for the correct market timings.

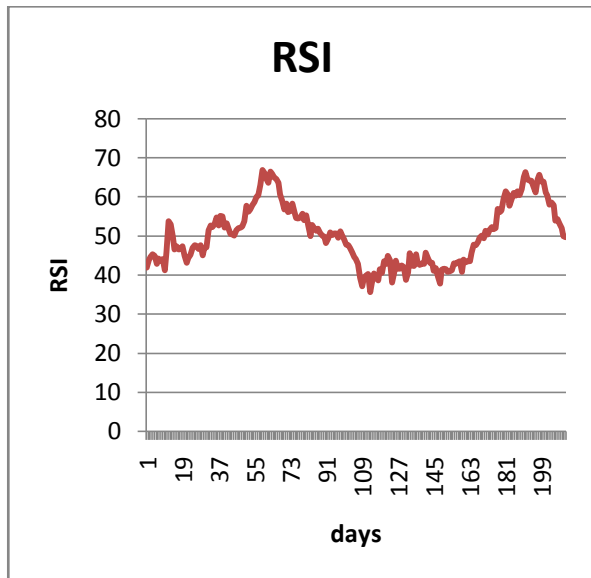


Fig e. RSI Chart

7. **Volume of trade**

Volume of trade i.e. quantity traded for last one year is taken which is then plotted on a graph as shown in fig g. It is falling down ,it means either buying or selling has been decreasing. People are waiting for the right timings to buy or to sell.

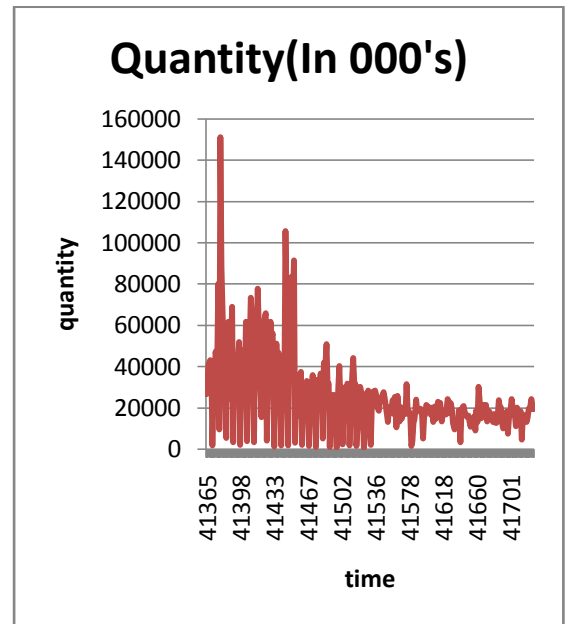


Fig. g Volume chart

8. **Price chart:**

As Shown in fig h. the prices are falling down slightly over a long period of time. It indicates flat trend which means trend would reverse in a short course of time.

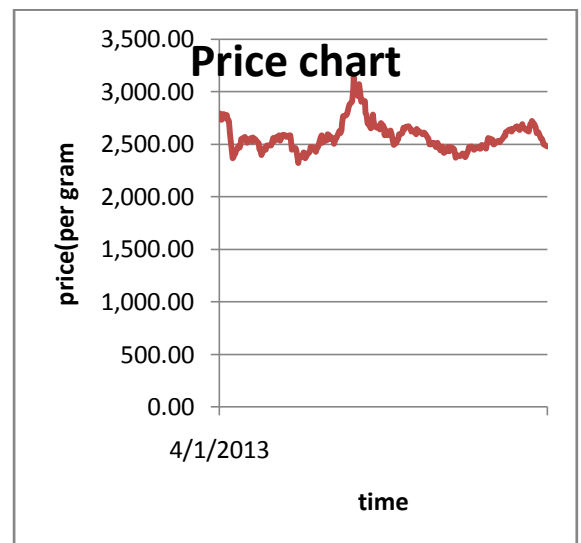


Fig h. Price chart

E. INTERPRETATION:

TOOLS OR INDICATORS	RESULT	IMPLICATIONS
Head and shoulder formation	Reversal pattern	Indicates conversion of uptrend to downtrend
Channel formation	Continuation pattern	Indicates conversion of uptrend to downtrend
Wedge formation	Falling wedge	Indicates conversion of uptrend to downtrend
Moving Average	SMA is crossing LMA from below	Indicates sell signal.
RSI	Oscillates between 30 and 70	Trend would reverse after sometime
ROC	Values are moving from overbought to oversold region	Investor should wait for correct timings
Volume of trade	Falling downwards	Investor should wait for correct timings
Price chart	Prices are slightly decreasing	Investor should wait for correct timings

IV. CONCLUSION

This study has concluded that technical analysis can provide inputs for investment decisions as evidenced by the case of gold. All the technical Indicators have suggested that as the trend is going to reverse after a period of time, investors should either hold the stock they have or they should sell it.

Because, due to trend reversal from bullish to bearish in case of gold, prices would be falling down and the investors can suffer losses.

This investment decision can be further studied by way of fundamental analysis to confirm it.

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