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**Review Article**

# FUNDAMENTAL ANALYSIS VERSUS TECHNICAL ANALYSIS-A COMPARATIVE REVIEW

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**ABSTRACT**

In the equity market, the process of stock selection for the purchase decision is a complex task as there are many stocks available in the market for purchase. The two main decision making tools employed widely in this process are fundamental analysis and technical analysis. This paper discusses the history of each of these tools and also the main components involved in each decision making tool. Fundamental analysis involves economy analysis, industry analysis and company analysis of the stock intended for purchase. Technical analysis involves the employment of several technical indicators like MACD, OBV, Moving average, etc on the past stock market prices. The merits and demerits of each of the tools are also discussed.



## INTRODUCTION

Stock selection process in the equity market is a tedious task because of the wide variety of stocks available for purchase and the numerous external factors influencing the decision making process. Fundamental analysis and technical analysis are the two major tools of decision making used to make stock market decisions. The external factors influencing the stock selection have been studied by various researchers and some literature is mentioned below.

Das (2012) studied the factors influencing the stock selection decision of small investors of Assam and found that the most influential decision variables were financial statements of companies, referral, public information and profitability variables. The least influencing decision variables included government policies, calculation of risk, economic variables and discounted cash flow tools.

Ali and Rehman (2013) examined the stock selection behavior of individual equity investors in Pakistan. The study found that the stock attributes like corporate reputation, firm's visibility in the media, corporate social performance, firm's status in the market, source of recommendation, dividends, price trends and volatility had a significant impact on the behavior. On the other hand, firm's principal place of operation, investor relations management, management team competence and knowledge about company products and services did not have a significant influence on investor behavior. Obamuyi (2013) studied the factors influencing the investment decisions of investors in the Nigerian capital market. The most influencing factors were found to be past performance of the company's stock, expected stock split, dividend policy, expected corporate earnings and get-rich-quick. And, the least influencing factors were found to be loyalty to the company's products/services, religions, opinions of members of the family, rumors and expected losses in other investments. The socio-economic characteristics, which were the demographic factors also, had significant influence on the investment decisions of Nigerian investors. Bennet *et al*. (2011) identified the factors influencing the retail investor's attitude towards investing in equity stocks in Tamil Nadu. The first five influential factors included investors' tolerance for risk, strength of the economy, media focus on the equity market, political stability and government policy towards business. The least four influential factors included stories of successful investors, get rich quick philosophy, information available on internet and cost cutting by companies. Kaur and Rajam (2012) identified the factors which affected the purchase decision of individual investors of equity shares in Mumbai. Out of the 36 variables surveyed it was found that market capitalization of the company followed by past performance of the company were the most influencing. And the least influencing variables were found to be conversation of views with professional colleagues and fluctuations in the indices of major markets. The educational

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qualification of the respondent was also found to be significant in influencing the investment decision.

### *Investors' Decision Making Tools*

The most commonly used analytical models used as decision making tools to make stock market decisions include the fundamental analysis and technical analysis. Fundamental analysis uses the publicly available information about the stock to analyse the stock in three fronts with respect to the economy, its industry and the company. Technical analysis on the other hand employs various technical indicators on the available history of the stock prices, in order to make a decision. The flowchart below explains the two tools of the decision making process in the stock market very systematically.

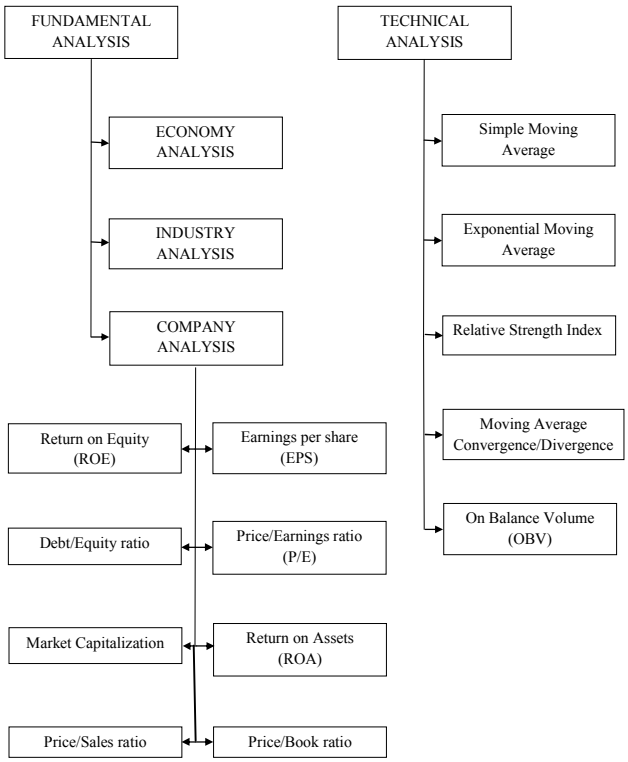


**Figure 1** Components of Fundamental analysis and Technical analysis

### *Fundamental analysis*

The 1930s marked the beginning of the fundamental analysis when the Securities and Exchange Commission was started according to the Securities Exchange Act of 1934. This commission was empowered to regulate the market and any step to manipulate the market was severely penalized. Also in 1934, Graham and Dodd published the book Security Analysis at the Columbia University. This book emphasized that by a complete analysis of the company, good returns could be earned and the worth of the stock could be found. They proposed owning stocks on a long term basis (Suciu, 2013). The fundamental analysis comprised of the economy analysis, industry analysis and company analysis. By evaluating the overall economy conditions, the industry scenario and the fundamentals of the company based on the information which was publicly available and accessible, the stock price was determined. For economy analysis, the economic indicators employed include inflation, interest rates, purchasing power, growth rate, GDP, etc. The main assumption behind studying the economy before purchasing a company's stock was that if the economy was growing and robust then the company would also do well and eventually the share prices would increase (Venkatesh, 2012). Naik and Padhi (2012) and Naik (2013) showed that the in India, macroeconomic variables and the stock market index were co-integrated and they had a long equilibrium relationship. Singh (2010) also showed a causal relation between the macroeconomic variables and the Indian stock market index. Hence the economy analysis did play an important role in determining the share price. The next focus of analysis was the industry analysis as even if the economy prospered certain industries alone would get extra benefits owing to government policies. Hence it becomes important to analyze the industry as well before stock investing. Industry analysis would analyze factors like competition level, foreign entrants, government attitude, threat of potential entrants, cost structure, etc. The last step was the company analysis wherein factors like company financials, future prospects of the company, the quality of top management, competitive advantage, labor relations, market share, etc. The financials of the company were generally available in the balance sheets and income statements. Also several financial ratios of the company should be looked at to estimate the net worth of the company investing in (Venkatesh, 2012). Young (2010) discussed some of the important ratios calculated during company analysis which include:

- ***Earnings per share (EPS):*** This was given by the formula, (Net Income - Dividends on preferred stock) / Number of outstanding shares. This ratio showed how much the value of the share had gone up or down over a given period of time.
- ***Price/ earnings ratio (P/E):*** This was given by the formula, (Market price per share) / EPS. This ratio showed how closely the price of the stock followed the earnings per share. If the P/E ratio was high it implied that the market participants were expecting the stock price to continue to increase. When the P/E ratio began to decline it implied that the stock prices would soon fall.
- ***Return on assets (ROA):*** This was given by the formula, (Net income + Interest expense) / Total assets. This ratio showed how well the company was using its tangible assets. Higher ROA showed that the assets were efficiently used and the company was robust. A declining ROA showed that the company was not earning to its capacity and that the stock prices would eventually decline.
- ***Return on equity (ROE):*** This was given by the formula, (Post-tax earnings) / Shareholder equity. This ratio showed how well the shareholders' money was utilized and how profitably that money was invested. A low ROE indicated that the shareholders' money was not properly utilized.
- ***Debt/Equity ratio:*** This was given by the formula, (Total liabilities) / Shareholders' equity. This was a leverage measure in terms of the available capital versus the capital employed. A low level of this ratio indicated that the credit available was not fully utilized.
- ***Market Capitalization:*** This was given by the formula, (Number of shares) x (Price per share). This was a measure of the amount of shares traded in the market.

Based on the market capitalization, stocks were classified into small-cap, medium-cap and large-cap.

- ***Price/sales ratio:*** This was given by the formula, (Share price) / (Revenue over a 12 month time frame). This measure showed if the share price of the stock represented the value of the stock.
- ***Price/book ratio:*** This was given by the formula, (Stock price) / (Total assets – Intangible assets and liabilities). This measure compared the share price with the stock's intrinsic value. This measure indicated the overvaluation or undervaluation of the stock.

Fundamental analysis assumed that the current share price and the future share price depended on the intrinsic value of the share and the expected return. As and when new information about the company was released, the analysis got updated as the expected return changed. Hence the changes in the share prices were predicted even before the change actually happened. The economy and industry analysis in the background also helped to forecast the growth opportunities for the shares (Sureshkumar & Elango, 2011). Fundamental analysis was more about finding the reasons for changes in stock price movement. Fundamental analysis mainly depended on the power of compounding as over a period of time, the value of the investment increased but provided the returns were reinvested into the investment. Mostly long term investors who were more concerned about the basics of the company investing in employed fundamental analysis. Their strategies would mainly involve buy and hold and other long term investment strategies (Gould, 2016). Value investing was also possible only with fundamental analysis. The drawback of fundamental analysis was the long time consuming and complex process of analysis which would be difficult for the lay man. More importantly, fundamental analysis was unable to forecast the quantum of movement but provided only biased predictions of directions of stock price movements (Venkatesh, 2012).

***Technical analysis***

Charles H. Dow, the founder of the Wall Street Journal was regarded as the Father of Technical Analysis. In 1870s when the equity market was not a popular investment option and the information about the stocks was also limited, Dow started a newsletter called Customers' Afternoon Letter. This opened up the idea that if investors got to know about how the stocks were performing in the market, the growth of the economy could be predicted. This gave rise to the Dow Theory which was the cornerstone of technical analysis. From 9 railroad companies, Dow invented the Dow Jones Transportation Average in 1894. From 12 industrial stocks, Dow also created the Dow Jones Industrial Average in 1896 (Suciu, 2013).

Technical analysis involved employing several technical tools to predict the future changes in the stock prices based on the past pattern of stock prices. The technical analysts solely employed only past prices and volume charts to predict stock price changes unlike the fundamental analysts who determined the intrinsic value of the stock. Based on technical analysis, the investor could decide if the stock was in an uptrend or downtrend. Hence for the technical analyst the overvaluation or undervaluation of stock prices was not a consideration as they looked at only the next change in price based on the past prices. The main theoretical underpinning of technical analysis was that at any given point in time, the stock prices reflected all the known factors influencing the demand and supply for any given market. However, these factors were not analyzed but instead the market prices were analyzed. In technical analysis, a detailed analysis of the monthly, weekly and daily price fluctuations was done to predict the changes in stock prices. Technical strategies employed mathematical calculations which were designed mainly to observe the activity of stock prices. Based on the buy/sell signal generated by the charts, computers and manual calculations, stock decisions were taken. Some of the technical indicators employed included on balance volume (OBV), moving average (MA), moving average convergence-divergence (MACD) and relative strength index (RSI) (Sureshkumar & Elango, 2011; Venkatesh, 2012). Young (2010) discussed some of the important technical indicators employed during technical analysis which include:

***Simple moving average:*** This technical indicator was used to predict trends in the stock prices and the timing of the reversal. The moving average line could be drawn for both short and long time frames. The direction of the line indicated the direction of the current trend. The simple moving average line was projected over the price chart and when the simple moving average line went below (above) the share price line it was an indicator that the share price would rise (fall).

***Exponential moving average:*** This technical indicator was similar to the simple moving average line except that more weightage was given to the most recent days and the previous days were given less importance. This tool was more powerful compared to the simple moving average indicator.

***Relative strength index:*** This index was calculated using the formula, 100 – (100 / (1 + (Average of up closes for the day / Average of down closes for the day))). This calculated value of RSI would lie in the range between 0 and 100. A large value of RSI indicated that the stock was overbought and a small value indicated that the stock was oversold.

***Moving Average Convergence/Divergence (MACD):*** This tool was a momentum indicator. The MACD line was determined by subtracting the 26-day exponential average from the 12-day exponential moving average. The second line called the signal line was the 9-day exponential average line. When the MACD line went above (below) the signal line it indicated the onset of an upward (downward) trend.

***On Balance Volume (OBV):*** This was another momentum indicator which was calculated by adding the volumes on days the stock prices were rising and subtracting the volumes on days the stock prices were falling. A declining OBV line indicated that the stock prices would also fall and a rising OBV line indicated that stock prices would also increase.

The common investment strategies employed by investors who adopted technical analysis included momentum investment strategy and contrarian investment strategy. In the momentum investment strategy, investors believed that the past price trends will continue into the future. Hence investors blindly followed the crowd. In the contrarian investment strategy, investors purchased a stock when most of the other investors were bearish about the stock. Hence they tended to buy at a very low price. And on the other hand, investors sold a stock

when most of the other investors were bullish about the stock and hence they tended to sell at a very high price (Tripathi, 2009). Technical analysis was more about finding the right timing in which the stock prices will move. Technical analysis mainly depended on the volatility in the stock market. Both long term and short term investors tended to employ technical analysis. Mostly these investors would employ the get rich quick strategy and employed technical analysis to mainly time the market for correct entry and exit points (Gould, 2016). Compared to fundamental analysis, technical analysis was the only technique suitable for an individual investor as fundamental analysis demanded the use of extensive information which was too expensive and time consuming, (Mitra, 2002). Technical analysis helped to give a clearer picture of the stock price movement as it was a pictorial representation of the trend using different types of charts. However, this analysis was prone to different interpretations by various technical analysts owing to subjective predictions which were also influenced by personal prejudices. This would lead to completely different forecasts by different technical analysts. The other main drawback of this analysis was that the trend was generally captured only after the trend set in. Hence, there would be a lag between the determination of the trend and the trend actually emerging. This would lead to a lag in determining the entry and exit points in the market (Venkatesh, 2012).

Technical analysis was more useful for shorter time horizons and fundamental analysis for longer horizons (Kumar *et al*., 2013; Lui & Mole, 1998; Taylor & Allen, 1992). Wong and Cheung (1999) found that technical analysis and fundamental analysis were better techniques of stock analysis compared to portfolio analysis among the investors. Venkatesh and Tyagi (2011) found that more than 85% of the surveyed respondents used fundamental and technical analysis for forecasting the prices. The study showed that in a bullish market investors depended on technical analysis and depended on fundamental analysis in a bear market. Lewellen *et al*. (1977) found that the majority of the investors used either fundamental or technical analysis in isolation or in combination as a common stock evaluation procedure. Menkhoff (2010) provided international survey evidence from five countries covering nearly 692 fund managers who mainly employed technical analysis. The technical analysts who employed the technical tools were experienced and educated and also confident in their decisions. They believed that crowd psychology played an important role in determining the stock price movement and hence they relied more on momentum and contrarian investment strategies. Technical analysis was also found to be more prominent in smaller asset management firms. Technical analysis was widely used and more importantly to complement fundamental analysis. Technical analysis was more preferred for shorter time horizons and so up to a time frame of weeks, technical analysis was more important than fundamental analysis. Mitra (2011) analyzed the returns from the technical trading strategies based on moving averages in the Indian stock market using four stock indices. The study showed that the direction of the market was rightly captured by the strategies; but however, the profitability could not be exploited completely owing to transaction costs. Kakani and Sundhar (2006) however showed that the technical trading strategies like displaced moving average yielded profits even after accounting for transaction costs. They applied simple moving average and displaced moving average indicators to BSE Sensex, S&P CNX Nifty and other individual stocks for a period of 15 years.

Sehgal and Gupta (2007) showed that though the technical indicators performed better during the bull phase than the bear phase, they could not beat the simple buy and hold strategy of fundamental analysis owing to the transaction costs. The returns yielded by technical analysis were also not economically feasible for any of the industries. However, when technical analysis was combined with the company's fundamentals, the stock returns were significant mainly for portfolios with value stocks and small stocks when compared to portfolios with growth stocks and big stocks. Kumar *et al*. (2013) surveyed the Indian stock market on the importance of fundamental and technical analysis over seven different forecasting horizons namely: more than 1 year, 1 year, 6 months, 3 months, 1 month, 1 week and intraday. They found that for shorter time periods like 1 month, 1 week and intraday there was more dependence on technical analysis but as the forecasting period increased like for greater than 1 year, 1 year and 6 months, the reliance was more on fundamental analysis. Hayat *et al*. (2010) studied technical analysis in terms of past prices, active trade volume, charts, historic patterns, trends and daily price fluctuations. Among these, daily price fluctuations and active trade volume were given more importance by the investors. They proposed that technical analysis was mostly preferred by investors who were actively involved in the investment process. They studied fundamental analysis in terms of management quality, financial ratios, government regulations and company information. Among these, financial ratios were given more importance by the investors. They also proposed that the attitudes of overconfidence and risk were associated with fundamental analysis. Tripathi (2009) analyzed the investment strategies in the Indian stock market by surveying active equity investors, fund managers and investment analysts. The survey found that the Indian investors had moved from a purely technical analysis approach to a mix of both fundamental and technical analysis. Nearly 74.2% of the sample surveyed employed both fundamental and technical analysis and only 17.2% employed only fundamental analysis and the remaining 8.6% employed only technical analysis.

Technical analysis are a proof against the weak form of efficient market hypothesis as the technical indicators employed, used the past prices of stocks to form trends to beat the market. By comparing the random price distribution to the distribution conditioned using technical indicators, the technical indicators helped to forecast the price changes. This thereby challenged the concept of efficient market where prices cannot be predicted in a rational world.

## CONCLUSION

Fundamental analysis and technical analysis have always been used as the main decision making tools to transact in the stock market. Some investors use either of the two tools depending on the stock market scenario and some also use both the tools in combination. This paper brought to focus the history of the two tools and their main components. The pros and cons of each of the tools were also discussed. The literature reviewing the external factors influencing the stock selection process was also mentioned. Hence this paper would help naïve investors to

employ the right decision making tool in different stock market scenarios. Having known the pros and cons of each of the tools the right decision could be taken.

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