

Utilising technical analysis to generate buy-and-sell signals to trade binary options

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ABSTRACT

The stock market records incorporate many attributes, a long way greater than traders can effortlessly comprehend. Investors have to consider lots of facts to try to decide on various relationships between the information attributes at their disposal, which can lead to profitable buying and selling of financial devices. Traders practice various forms of complementary analysis to change positions on the stock market with technical analysis.

In essential evaluation, traders examine the underlying factors that decide the rate of a monetary instrument. For instance, factors of corporation's earnings, marketplace region, or capacity boom can affect the share price. Investors consider these factors against extra global concerns which include the overall monetary fashion.

Investors have traditionally used fundamental analysis to alternate the marketplace. Technical analysis is "the examination of conduct of marketplace members, as meditated in rate, extent, and open interest for a financial market, with a view to identify tiers inside the development of charge trends.

This study used the quantitative research method. Questionnaires were distributed to relevant people that are involved in the stock market. Quantitative data was used because it uses numbers, which can be analysed by statistical techniques since the data is drawn from a wide sample. The data was collected and from test results that could be analysed.

The study used 20 participants for the quantitative. The participants were presented with the statements that sought to qualify technical analysis in trading binary options. 90% of the respondents were in agreement that technical analysis in trading binary options involves the sole use of price and related summary statistics, such as volume, to inform trading decisions". Also the results show that the respondent agreed (80%) that "Forecasting future price changes of financial assets is the feature of Technical analysis". These results proved that technical analysis is mainly concerned with looking at simple trading rules that do not accurately capture the activity of professional traders.

KEYWORDS

Binary option trading, technical analysis and buy - and - sell signals

LIST OF ACRONYMS

SMA - Simple Moving Average

TA - Technical Analysis

OSEBX - Oslo Benchmark Index

EMH - Effective Markets Speculation

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1 BACKGROUND AND OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Investors and traders typically employ two classes of tools to decide what stocks to buy and sell; fundamental and technical analysis, both of which aim at analysing and predicting shifts in supply and demand (Turner, 2007). Shifts in supply and demand is the basis of most economic and fundamental forecasting. If there are more sellers than buyers for a stock, for example increased supply, the theory states that the price should fall, and similarly, if there are more buyers than sellers, (for instance the increased demand) the price should rise. Given the ability to foresee these shifts in supply and demand thus gives the trader the ability to establish profitable entry and exit positions, which is the ultimate goal of stock analysis. While fundamental analysis involves the study of company fundamentals such as revenues and expenses, market position, annual growth rates, and so on, technical analysis is solely concerned with price and volume data, particularly price patterns and volume spikes (Turner, 2007).

In order to provide accurate buy/sell signals, visual software tools called indicators have been developed and are used in technical analysis. The most basic indicator used in financial applications could be the Simple Moving Average (SMA), simply being the mean of the previous data points, usually bars. Different types of indicators exist and are used for measuring trends, momentum, volume, volatility and other aspects of price. Indicators are normally used by traders to assist in making trading decisions, but indicators can also be used in automated trading strategies.

Trading stocks is the process of buying and selling shares of a company on a stock exchange with the aim of generating profitable returns. The stock exchange operates like any other economic market; when a buyer wants to buy some quantity of a particular stock at a certain price, there needs to be a seller willing to sell the stock at the offered price. Transactions in the stock market are processed by brokers who mediate sales between buyers and sellers. Brokers typically charge a commission fee for completed transactions; a good example is that of a fixed amount for each transaction or a small percentage of the order total. Naturally, buyers want to minimize the price paid for the stock and sellers want to maximize the selling price for the stock. The stock market is thus governed by the same fundamental economic principles as any other economic market, namely supply and demand.

1.2 PROBLEM STATEMENT

Scholarly interest in technical analysis can be traced as far back as Cowles (1933:312), who undertook an examination of stock price forecasting methods. This included looking at technical trading and, in particular, the activities of William Hamilton in employing Dow Theory (Brown, S. J, Goetzmann, W. N and Kumar, A. 1998:1315). Dow Theory was developed by Charles Dow, the editor of the Wall Street Journal in the late 1800s. Underpinning his ideas was the concept that the market moved in trends, with minor and medium trends being able to occur in the opposite direction to the main trend. The most interesting proposition was that of an 'accumulation phase', where informed investors traded against the market at the start of the movement, and sold towards the end of the trend in a 'distribution phase'. In the distribution phase, informed investors were thus taking profits as new and less informed individuals belatedly bought.

Research on the use of technical analysis in making decisions about equity trades is scarcer, although Arnsward (2001) also finds evidence of technical analysis use in making short-term investment decisions of up to eight weeks among German mutual funds.

Stock traders in general refer to binary option trading as gamble trading, since you have only two possible outcomes in trading binaries: gain some fixed monetary amount or get nothing at all. This leaves me with the question: Could binary option trading be considered a financial markets instrument, or does it fall into the category of online gaming? McLeod (2013)

In the search for decent literature on the topic of Binary Option Trading, There were not a lot of literature to be found. The trading in binary options seems to be the ideal platform to utilize technical analysis (TA) to generate buy-and-sell signals. This gave the researcher the incentive to investigate this topic for his own better understanding thereof.

The following set of questions were used to guide the study of aligning technical analysis to trading strategy:

- What are the important areas of technical analysis?
- What are the different techniques and strategies that are utilised for price data?
- Too what extent does head and shoulders patterns lead to a profitable trading strategy?

1.3 RESEARCH OBJECTIVES

1.3.1 PRIMARY OBJECTIVE

The study aims at establishing a better understanding of how investors utilise technical analysis to generate buy-and-sell signals to trade binary options.

1.3.2 SECONDARY OBJECTIVE

- To obtain insight into the utilisation of technical analysis to generate buy-and-sell signals to trade binary options by means of a literature review.
- To examine several important areas of technical analysis.
- To establish the different techniques and strategies to utilise price data.
- To examine the extent of how head and shoulders patterns lead to a profitable trading strategy.

1.4 RESEARCH DESIGN

The research approach that was used in this study is a quantitative design. It is relevant and defined in simple terms as the social or behavioural science research that explores the process that underline market trend using literature review and the response from the questionnaire (Salkind, 2012). Quantitative research has the advantage of deeply exploring, understanding and interpreting the phenomenon within its natural setting. By using a quantitative research methodology, researchers want to collect richer information and get a more detailed picture of issues, cases or events (Arora and Stoner, 2009:274).

1.5 DELIMITATIONS

The research focused on the technical analysis of trading strategy. Further, the study sought only to cover trends and professional experience by the stock expert.

1.6 OUTLINE OF THE MINI DISSERTATION

Chapter 1 Introduction

The chapter consisted of the following: the Problem Statement, the Research Questions, Rationale for the study, the Objectives of the study and the Scope and Limitations of the study.

Chapter 2 Literature Review

Chapter two of the study consisted of the literature review. The literature review, seeks to examine the available literature on the impact of trading frequency on profitability of intraday technical analysis. Literature review gives the readers knowledge and ideas that have been established by other researchers on the topic. Hence this chapter gives the readers an understanding why investors use technical analysis.

Chapter 3 Research Methodology

This chapter showed the methods and plans that the researcher used to obtain participants and further collect information from the participants. In this study, the researcher focuses on literature review and the questionnaire survey targeted at the stock expert in Johannesburg.

Chapter 4 Data presentation

Statistical methods that were used to analyse the data collected from the questionnaire survey are described in this chapter. It therefore contains the presentation and the analysis of the data collected.

Chapter 5 Discussion of Findings

This chapter is about the discussions of the findings.

Chapter 6 Conclusion and Recommendations

This chapter consists of the conclusion and the recommendations of the study.

1.7 CHAPTER CONCLUSION

This chapter addressed the introduction of the research topic. The introduction gave details of the extent of the study that is necessary to understand the research topic and background of the study. A problem statement, research questions and research objectives were addressed. In the next chapter, the researcher focused on the literature review importance of technical analysis and the different techniques and strategies that are utilised for price data.

2 LITERATURE REVIEW

2.1 INTRODUCTION

Technical analysis covers a multitude of different techniques and strategies to utilise price data. For example, moving averages, relative strength, trend indicators and price patterns. There are also innumerable chart styles, such as bar charts, candlestick charts and point and figure charts (Park and Irwin, 2007). However, previous academic research in this area has largely concentrated on what can be termed 'basic' technical analysis, such as moving averages. This is partly because it is relatively easy to construct algorithms to evaluate the profitability of basic technical trading strategies.

The utilisation of technical evaluation in trade binary alternatives includes the sole use of price and associated precise facts, which includes volume, to tell buying and selling choices. Given its lengthy-status use in financial markets, technical analysis has evidently come to be a focal point of academic study. The component, that is due to the fact income accruing from an approach constructed absolutely across the evaluation of beyond charges runs counter to the least restrictive form of marketplace performance (Malkiel, 1999).

Malkiel (1999) expresses this opinion, primarily based on a perception in efficient markets. This observation examines several vital regions of technical evaluation and reveals that there is robust empirical proof that opposes this factor of view.

Forecasting future rate adjustments of monetary assets with the useful resource of charts of beyond prices has a protracted history of use with the aid of buyers and investors as an instance. Nison (1994) describes the improvement of candlestick charts, which offer a visible illustration of the opening, last, high and occasional charges for a discrete length. It has shown that such charts may had been used as early as the 1700s by traders in what was, in effect, the primary rice futures marketplace in Japan. Furthermore, it is positive that buyers plotted candlestick charts and used them to tell trading selections by using the overdue 1800s. The so-called "e book method", which was an early model of point and parent charting, become popular in 1900. Indeed, Charles Dow published a Wall road magazine editorial at the difficulty in 1901 (Murphy, 1999). Hundreds of books on technical evaluation and analysis aimed toward traders have considered the facts that had been posted, with many exclusive forms of technical trading techniques proposed, to be used throughout the whole scale of economic markets, along with equities, forexes and futures. Indeed, all stock expert buying and selling systems have some sort of connection to technical analysis, inclusive of Reuters and Bloomberg.

Technical analysis covers a large number of various techniques and strategies to utilise rate information. For instance, moving averages, relative strength, fashion indicators and rate styles. There also are innumerable chart styles, which include bar charts, candlestick charts and point and determine charts (Nison, 1994). But, preceding educational studies in this place has in large part targeting what can be termed as 'basic' technical analysis, inclusive of shifting averages. That is partly because its merges fantastically clean to construct algorithms to assess the profitability of simple technical buying and selling techniques.

2.2 TECHNICAL ANALYSIS ASPECT

The prevailing body of studies in technical evaluation and analysis is especially involved with searching the easy trading guidelines that do not appropriately seize the pastime of professional investors. Buyers frequently use visually complicated chart styles in fee records to take their decisions in location of, or in aggregate with, simple signs together with transferring averages. Experts call this 'superior technical analyses, and advice this definition for the flow beyond simple techniques inclusive of shifting averages, towards a popularity of these predominantly 'visual' patterns in price facts. This is the main lookout as this rigorously examines the profitability of the trading approach based on superior technical analysis, therefore resulting in the use of the head and shoulders sample. In this regard several innovations give rise to a prime contribution to the existing literature of technical analysis. Considerably, by way of growing the absolutely new concept of a 'trade lag', it is possible to evaluate how quick any profits from head and shoulders patterns are arbitrated away. Moreover, assessment of head and shoulders profitability over a number of distinct time horizons ranging from 1 to 60 days was conducted and permitted the patience of income to be mounted resulting in profitable results.

Though little is known regarding the cutting-edge studies on technical analysis in trading binary options, there are a number of studies that have been developed and are supported by a huge dataset for UK shares running from January 1, 1980 to December 31, 2003. This set of information has contributed to the understanding of the technical analysis of predicating the right prices.

The central research question addressed in this investigation is: "What quantity head and shoulders patterns results in a worthwhile trading method?" within the context of the massive pattern of market stocks.

Technical analysis and evaluation has considerable pedigree within the economic markets. Brock et al. (1992:1731) that if taken into consideration by using many of the original forms of investment analysis, courting back to the 1800's, technical analysis and evaluation still retains a vital role in the

financial markets with all principal investment banks using dedicated staff, if not complete departments, to observe patterns and tendencies in past prices. The lengthy-mounted use of past charge history in making investment decisions, together with any availability of odd profits from technical buying and selling techniques resulted in counter vulnerable-shape marketplace performance, which seemingly was hard to reconcile with research displaying that profits from technical buying and selling technique appear to persist (Park and Irwin, 2007). This gives clear motivation to have a look at technical analysis, for instance: “Why does the usage of technical evaluation persist?, and : “Is the shortage of an answer to this query due to the fact that existing studies has in large part ignored the type of technical analysis truly practised by expert stock members?

The head and shoulders sample is one of the most prominent and long-standing chart styles and seemed to be one of the most informative to the aid of investors. For example, Achelis (2001:233) describes it as “the maximum dependable and famous chart pattern,” and Murphy (1999:103) determines that the pinnacle and shoulders as “probably the nicest recognised and most dependable of all essential reversal styles”. The head and shoulders pattern can therefore be taken into consideration to be the best instance of superior technical analysis. Therefore, it's selected as the idea for these analysis.

There may be extended records of the head and shoulders sample being utilized by technical analysts; as an example, Edwards and Magee (2001) diagnosed the significance of head and shoulders styles in inventory price charts. Any such long record of lively use of the sample negates claims of data mining.

The relevant motivating issue of these analysis is based totally upon inspecting the hit ratio below-investigated concern of advanced technical evaluation. Even as investors have been the using techniques employing sample reputation for a long term, this has not been a prominent characteristic of educational research. The plain loss of interest in technical evaluation inside the literature is partially right down to the computational strength required to systematically examine complicated technical evaluations, replicating what investors use the human eye for.

2.3 TECHNICAL ANALYSIS APPLICATION

Technical analysis (or Chartism as it is often referred to by investment professionals) is an “attempt to forecast prices by the study of past prices and a few other related summary statistics about security trading” (Brock et al., 1992:1731). This indicates the reason that it has often been held in such disdain by academics; in focusing on past prices alone, technical analysis directly contradicts

weak-form market efficiency, which states that it should not be possible to earn excess returns from studying past price movements. Technical analysts (technicians or chartists) have created many ways to use historical prices in an attempt to extrapolate future movements, ranging from basic averaging indicators to visually oriented chart patterns which are considerably more difficult to express algebraically in the context of academic study. Achelis (2001) and Bulkowski (2005) show just how many technical indicators, patterns and strategies have been created and employed by technical analysts.

Earlier studies of technical analysis generally provided support for weak-form market efficiency and determined that a range of basic indicators did not generate abnormal returns (Jensen and Benington, 1970). However, there has recently been renewed interest in examining a broad range of technical indicators and strategies, which has developed largely in tandem with the discovery of various anomalies, such as day of the week effects. In addition, fundamental investment strategies have produced more evidence against semi-strong form market efficiency, for example: contrarian value investment (Lakonishok et al., 1994; Fama and French, 1998). It should, however, be made clear that in the strictest sense technical analysts are only concerned with past prices and related summary statistics. Related summary statistics essentially only refers to volume and open interest. Several points should be considered when reviewing the body of literature. First, until relatively recently, the lack of available computational power imposed a restriction on the study of technical analysis. When scholars first became interested in technical analysis it was too 'computationally expensive' to test even basic technical trading rules (such as the moving average) on large datasets. Of course, this problem is particularly acute for high-frequency intraday data (Verdier, Hilgert and Vila, 2008). Thus, much early work focuses upon the past values of market indices and, in particular, the Dow Jones Industrial Average. It was also impossible to investigate advanced technical analysis strategies. Recognition of patterns in price data is very computationally intensive.

2.4 TECHNICAL ANALYSIS IN THE MARKETS

It is vital to set up that buyer's activity, in reality, the use of technical analysis to pick their selections. A number of surveys of traders had been exhibited in the literature of which indicates simply how early technical analysis changed into in famous use. From Moody's investors' provider, Schultz described several techniques of forecasting inventory charges but determined that "the most popular approach of forecasting is chart analysing" (Schultz, 1925:245). Despite the author being sceptical of its blessings, it is similarly testimony to the vast use of technical analysis over a protracted period.

Using technical analysis in US commodity futures become first recorded inside the educational literature of Smidt (1965). Even earlier than this, Stewart (1949) statistics using strategies corresponding to technical evaluation in Chicago futures trading.

The organization of (1985) carried out a huge-ranging early observe concerning the functioning of forex markets. Unfold over 12 international locations, forty banks and 15 securities houses were queried. Technical evaluation appeared to be nearly universally famous, with 97 in line with cent of banks and 87 in keeping with cent of securities homes reporting its use.

In addressing the query of the use of technical evaluation among investors, one of the most useful and interesting surveys is provided by using Taylor and Allen (1992). The authors composed a questionnaire that became dispatched to forex sellers in London with this difficulty in thoughts. The survey designed to elicit responses as to each how technical evaluation became employed and how sellers regarded its usefulness.

2.5 MARKETS AND MOMENTUM

Momentum brokers wagering on an adjustment in energy need to know precisely when their wager turns out badly. In the event that it is an adjustment in momentum that the broker is relying on, and that adjustment in force does not happen, then the dealer needs to escape the path as fast as would be prudent keeping in mind that she or she keep running over by the change that never happened (Luo, Li and Wang, 2009).

In the meantime, if a merchant is in an exchange and the momentum that he was depending on turns out to be truly debilitated, the force broker needs to book benefits first and make inquiries (or second-figure) later. Reasonably, there are three distinct sorts of force openings that market professionals concentrate on: breakouts, swings, and inversions.

2.5.1 *BREAKOUT TRADING*

Breakout trading is probably the most familiar form of momentum trading. Breakout trading involves waiting for a market to gain sufficient momentum to power through an established resistance or support level (Fama and Blume, 1966).

Breaks beyond resistance are called breakouts and lead prices higher.

Breaks beyond support are called breakdowns and lead prices lower.

Support and resistance are important concepts for all traders, but they are critical concepts for momentum trading in general and especially for breakout trading. Think of support as an area in the price chart where downside momentum is weak and, resistance as an area in the price chart where upside momentum is weak.

Breakout trading can be as exciting as it can be profitable. Traders can use tools like the “Swing Rule” to determine profit points, or rely on a set percentage goal for each breakout trade they take (Porta et al., 1997).

For the momentum technician, any time prices are able to push beyond support or resistance, a breakout is taking place. Support or resistance may take the appearance of a consolidation range, a chart pattern like a triangle, or simply the evidence of failed rally attempts as reflected by the shadows of Japanese candlestick lines (Kidd and Brorsen, 2004). Understanding breakouts in this way reveals that there are breakouts occurring all the time as markets move to new relative highs and lows. This means that there are constantly fresh opportunities for momentum technicians to ply their trade. The downside of breakout trading, of course, is the false breakout (Hansen, 2004).

There is simply little that anyone can do when the side that appeared to have the upper hand is suddenly revealed to be weaker than previously thought. False breakouts are the bane of momentum and trend trader alike. Fortunately, momentum technicians are focused on evidence of waning momentum above all else (Gehrig and Menkhoff, 2004:573). This means a false breakout that might mean a missed opportunity, or worse, for a trend trader might simply mean an opportunity in the opposite direction for the shorter term momentum trader.

2.5.2 SWING TRADING

Swing trading rose to prominence in the late 1990s. In his Swing Trading presentation, Velez and Capra (2000) suggested that swing trading was a sweet spot between the more cumbersome, slow-moving institutional trading desks, and the frenetic, top-speed approach of day-traders. Combined with the dramatic increase in margin requirements for day traders in the wake of the dot. com bubble collapse, swing trading only became more popular in the early 2000s. Swing trading can be defined as a short-term speculative strategy that involves buying dips and selling rallies in uptrends, and shorting bounces and covering lows in downtrends. For swing traders, the idea of buying low and selling high (or, in a bear market, buying high and selling low) is both a mantra and a mission. Velez and Capra (2000) instructs aspiring swing traders that it is their duty not just to buy “some” of the dips, not just to buy “most” of the dips, but to buy every single dip.

There are some downsides to swing trading. Perhaps the worst scenario for a swing trader is a sideways market in which the swings are too small to be exploited (Alexander, 1961). If you consider the pattern of signal, confirmation, and entry, those three successive closes might represent all a market will move in a given direction before reversing and doing exactly the same thing in the other direction. To combat situations like this, one option is to change the time frame from daily to hourly in stocks and futures, and from daily to four-hour in spot currency trading or forex and lower the expectations. Of course, another option is standing aside and either waiting for the market to make larger swings (or breakout) or change focus to a different market to trade (Alexander, 1961).

2.6 TRADING BASICS

Trading stocks is the process of buying and selling shares of a company on a stock exchange with the aim of generating profitable returns. The stock exchange operates like any other economic market; when a buyer wants to buy some quantity of a particular stock at a certain price, there needs to be a seller willing to sell the stock at the offered price (Gehrig and Menkhoff, 2004:592). Transactions in the stock market are processed by brokers who mediate sales between buyers and sellers. Brokers typically charge a commission fee for completed transactions for example a fixed amount for each transaction or a small percentage of the order total. Naturally, buyers want to minimize the price paid for the stock and sellers want to maximize the selling price for the stock. The stock market is thus governed by the same fundamental economic principles as any other economic market, namely supply and demand.

2.6.1 *SUPPLY AND DEMAND*

Supply and demand is one of the most fundamental concepts in economic theory and the backbone of economic and fundamental forecasting (Murphy, 1999). Normally the supply and demand curve does have a relationship between supply (provided by the sellers) and demand (provided by the buyers). At price equilibrium when the supply curve intersects with the demand curve, the seller and buyer agree on a price and a transaction can occur. In our case, this would involve a buyer of some quantity of shares Q_* of a stock at price P_* as provided by some seller. This increase in demand for instance is an increase in the number of buyers resulting in a situation with more buyers than sellers, creates an increase in price from p_1 to p_2 which becomes the new price equilibrium. Traders essentially want to recognize this shift in demand before it happens so that

the stock can be purchased at a price close to p_1 and sold at a price close to p_2 , making a profit of $p_2 - p_1$.

2.6.2 *SHORT SELLING*

The process of short selling a stock is done to profit from a price decline and involves selling a stock with the intention of buying it back later at a lower price (Turner, 2007). Essentially, this involves a broker lending the trader a fixed number of shares of a stock which are then sold and the profits are credited the trader. Eventually, the trader will have to cover the position by returning the same number of shares to the broker, profiting if the stock can be repurchased at a lower price. For example, 100 shares of some stock are sold short at 5 USD and the trader is credited with 500 USD. If the same number of shares can be repurchased later at 3 USD, the loan can be returned with a cost of 300 USD, making a profit of 200 USD.

2.6.3 *TRADING TIME FRAMES*

Turner (2007) describes four basic trading time frames that are commonly used by traders:

- i. **Position trades:** stocks may be held from weeks to months.
- ii. **Swing trades:** stocks may be held for two to five days.
- iii. **Day trades:** stocks are bought and sold within the same day.
- iv. **Momentum trades:** stocks are bought and sold within seconds, minutes or hours.

Each time frame has its own risk-reward ratio where shorter time frames are typically associated with greater risk (Turner, 2007). Due to the computational capacity of a computer system we would ideally like to focus on the two shorter time frames, day and momentum trades (hypothesizing that a computer system would give us an edge over the other market players as it would have the ability to harvest and analyse information much quicker than a human trader). However, due to the availability of data sets consisting of daily stock prices, our primary focus in this thesis will be on swing trades. The techniques used and the prediction model implemented will be built to be extended with little effort to support day trading and momentum trades.

2.6.4 CHARTING TECHNIQUES

Figure 2.1 Closing Price Plot



Source: www.oslobors.no

A price chart shows how a stock's price has evolved over a given period of time, typically presented as in Figure 1 which plots the closing price of the Oslo Benchmark Index (OSEBX) over the beginning of 2009. Closing price plots provide a good perspective on the trending direction of the price, but hides some potentially useful information. Within any time frame, stock prices reach four different levels, namely open, close, high and low. The opening price is the price at which the stock was traded for at the start of the period, and similarly the closing price is the price at the end of the period. The high and low price refers to the highest and lowest price obtained for the stock during the period.

The price levels thus reveal more about how the stock has been traded during the period, and consequently provides a greater basis for analysing where the stock will go in the next period.

Figure 2.2 Example of a Candlestick Chart



Source: Google pics

Candlestick charts are designed to give the trader a quicker and more complete picture of price movements in a given time frame. The candlestick entity (named so for its resemblance to a candle with a wick in both ends), as shown in Figure 2, is drawn with a rectangular "real body" that represents the range between the opening and closing price, and lower and upper "shadows" that represent the lowest and highest price obtained for the stock in the period. The real body is coloured white if the closing price is above the opening price, and black if the closing price is below the opening price. Thus, white candlesticks represent positive price movements and black candlesticks represent negative price movements. In this way, the candlestick charts provides a more visual and immediate impression of price movements. Candlestick charts can be used on any time scale, from intraday 15-minute charts to daily or yearly charts. According to preference and scope of analysis, traders use different time scales when analysing a stock.

2.7 TECHNICAL ANALYSIS

Movements in supply and demand is the premise of most monetary movements in price oscillation and key for anticipating future movements. In the event that there are a larger number of dealers than purchasers for a stock (expanded supply), the hypothesis expresses that the price ought to fall, and correspondingly, if there are a bigger number of purchasers than venders (expanded demand) the price ought to rise. Given the capacity to predict these movements in supply and demand in this

way gives the merchant the capacity to set up beneficial passage and leave positions, which is a definitive objective of stock analysis.

While essential analysis includes the investigation of organization basics, for example, incomes and costs, advertise position, yearly development rates, and so on, technical analysis is exclusively (Turner, 2007). Price and volume data is promptly accessible progressively, which makes technical analysis in a perfect world suited for fleeting swing exchanges. The hidden supposition in technical analysis is that stock prices advance with certain normality, framing dependable and unsurprising price and volume designs that uncover showcase brain science which can be utilized to decide moves in supply and demand (Turner, 2007). This suspicion may appear to be excessively pretentious, and subsequently, the following few segments will be committed to the start and mental discerning on which the technical way to deal with stock analysis is based.

2.8 THE THREE PREMISES ON WHICH TECHNICAL ANALYSIS IS BASED

Murphy (1999) describes three premises on which technical analysis is based:

1. Market action discounts everything.
2. Prices move in trends.
3. History repeats itself.

1. Market action discounts everything

Market action is defined by Murphy (1999) as the sources of information available to the trader for instance the price and volume data. By assuming that market action discounts everything we are essentially assuming that everything that could influence the price that is, fundamentals, politics, psychology is integrated and reflected in the price and volume data. Price thus indirectly provides a perspective of the fundamentals and a study of price action is therefore all that is required to predict shifts in supply and demand.

For example, if prices are rising, the technician assumes that, for whatever specific reason, demand must exceed supply and the fundamentals must be positive. Practitioners of technical analysis thus believe that there is an inherent correlation between market action and company that can be used to forecast the direction of future prices.

2. Prices move in trends

A price trend is the prevailing direction of a stock's price over some period of time. The concept of trend is perhaps the quintessential idea in technical analysis and as we'll see in Chapter 3 most technical indicators are designed to identify and follow existing trends (Turner, 2007). What we are basically looking for when doing technical analysis is patterns in the price data that signal continuations or reversals in trend. We want to recognize situations that signal a continuation in trend so that we can ride the trend as long as possible. We also want to look for situations that signal a reversal in trend so we can a) sell the stock before the trend turns, or b) buy the stock at the moment it reverses.

For example, if we hold a particular stock in an uptrend, we look for continuations in the uptrend to confirm our position, and reversals so that we can exit the position before the stock goes into a downtrend, thereby maximizing potential profits. When analysing and picking stocks we thus look for stocks that are trending, try to analyse the strength of the trend and either buy or sell depending on our current position. Thus, for the methods in technical analysis to have any value, we have to assume that a price does form in trends.

3. Behavioural Finance

Early money related hypothesis was transcendentally in view of the effective markets speculation (EMH). The proficient markets speculation was initially expressed in (Fama, 1965) and says that the price of exchanged resources (for example stocks) are educationally productive, which means prices dependably completely mirror all known data and in a split second change to new data, and all operators in the market are utility amplifying and have objective desires. Given this suspicion, any endeavour at examining past price and exchanging stocks would be an exercise in futility as it is difficult to reliably outflank the market since all known data is incorporated in the price and all specialists esteem the data similarly (Shleifer, 2000). The hypothesis was bolstered by effective hypothetical and experimental work, and was broadly thought to be demonstrated. Be that as it may, from its tallness of strength around the 1970s to the 1990s, it has been tested by and centre has moved towards behavioural back (Shiller, 2003).

Behavioural fund takes a gander at back from a more extensive sociology point of view, including hypothesis from brain science and human science. Human yearnings, objectives, inspirations, blunders and carelessness are in this way included as components that influence back (Shefrin, 2002). It takes after henceforth that speculators can't be seen as utility boosting specialists with discerning desires.

Or maybe, when two speculators are stood up to with similar price data, their responses will be distinctive, and they will esteem the data in various ways. As pointed out by Turner (2007), when a broker purchases a stock at a specific price p it is absolutely with desires that it will rise. Similarly, the vender at price p is most likely anticipating that the price should drop. One and only of them can win and make a benefit. This distinction in valuation is the thing that drives showcase changes, trends, and productive circumstances. Turner (2007) in this manner characterizes covetousness and dread as essential feelings that drive the market.

2.9 CRITIQUE

Technical analysis is regularly condemned by scholastics for its absence of logical and factual approval (Murphy, 1999). Accordingly, technical investigators regularly contend that technical analysis is a down to earth tech, to a great extent inspired by what works instead of existing hypothesis. The reality remains, however, that various strategies in technical analysis are exceedingly subjective in nature, and pundits regularly assert that price examples and markers utilized by experts of technical analysis is more in the psyche and eye of the viewer.

By and by, professionals distinctively depict the utility of technical analysis, and its fame has become fundamentally amid the previous 10 years. This is most strikingly observed by the way that most significant daily papers are currently posting stock guidance in light of technical analysis, and some business firms (for instance Christiania Securities in Norway) have some expertise in the utilization of technical analysis. Besides, investigate on the benefit of technical analysis has expanded in volume and measurable critical amid the previous years. Park and Irwin (2007) as of late did a survey of research papers that attempt to investigate potential benefits created by technical analysis. They find that present day examines show that technical analysis reliably creates beneficial returns in an assortment of theoretical markets for example, the share trading system, remote trade advertise, and so on.

For our situation, technical analysis appears like a perfect way to deal with mechanize with a PC since stock prices are promptly accessible. Besides, the same number of the markers in technical analysis are dubious and hard to decipher with absolutely logical strategies, it appears like a field in a perfect world suited for computerized reasoning and machine learning. Be that as it may, despite the fact that this study have constrains in this postulation to strategies in technical analysis, other stock analysis systems will be incorporated as an essential point for future work.

2.10 LITERATURE REVIEW CONCLUSIONS

The above sections have sought to evaluate the opinions that academic literature takes on technical analysis strategies. First, it is useful to draw some general conclusions. Most importantly, the literature is characterised by fragmentation with little commonality in methodology or approach. It has been shown that the early literature largely focuses on basic technical analysis strategies and, once risk is taken into account in slightly later studies, it is not supportive of the generation of economic profits. More recently, there has been something of a renaissance in interest in technical analysis, accompanied by the application of more advanced statistical techniques and methods, and the investigation of complex patterns such as the head and shoulders.

Having highlighted the fragmented nature of the literature and the large number of gaps in markets examined, it is interesting to take the body of research further with an investigation into the head and shoulders pattern in the context of the UK. The following section describes the methodology that is used to achieve this.

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

The purpose of this chapter was to describe the rationale for the research methodology used for this study. This includes an overview of the research design, research method, the population, sampling and sampling procedures, validity and reliability. The purpose behind using the quantitative approach is to provide a broader view and to familiarise the writer with the required depth of knowledge and understanding of the subject matter. This was derived from the views on the questionnaires and the literature review.

3.2 THE RESEARCH DESIGN

From the research objectives, the following were the questions that needed to be answered by this study:

- What are the several important areas of technical analysis?
- What are the different techniques and strategies that are utilised for price data?
- What extent head and shoulders patterns lead to a profitable trading strategy?

The purpose of these research questions was for the researcher to make sure that the study achieved the goals and objectives discussed at the beginning of the process. The researcher generated primary data through questionnaires, analysed the responses to the various questions and compared the results with the literature to get to the conclusion of the study.

3.3 RESEARCH APPROACH

The research method approach was quantitative. The methodology helped the researcher to get a better idea about the research and can also see all aspects of a phenomenon if they measure it in more than one way.

In summary, the main rationale for using the quantitative research method is that sometimes, as in the case of this research project, a complete picture cannot be generated by using only qualitative

method (Bryman, 2008:264). Therefore, the objective of using quantitative research approach in this study was to utilise the advantages and benefits of this approach (Mayekiso, 2013).

3.4 THE RESEARCH PHILOSOPHY

According to Msweli (2011:58) and Mouton (2001:55), the research design takes into consideration the questions, aims and goals that are outlined in the research objectives.

This approach maps out a clear plan for dealing with research questions as well as indicating the sources from where the data was collected. As discussed in Chapter one, the study was designed to use questionnaire to establish the several important areas of technical analysis in trade binary option. This study therefore used the quantitative method approach.

3.4.1 *QUANTITATIVE RESEARCH*

According to Mark and Caputi (2001:1), quantitative research is 'Explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics). Roberts (2010:142) equates quantitative research to 'logical positivism'. Denscombe (2007:332), in turn, states that positivism is a social research approach that seeks to define social phenomena using the natural science approach to research.

Therefore, quantitative research is essentially about collecting numerical data to explain a particular phenomenon - particular questions seem immediately suited to being answered using quantitative methods (Mark & Caputi, 2001:1). According to Msweli (2011:64), quantitative data can be collected using research instruments such as questionnaires, interviews, and observation. Msweli further asserts that the quantitative research approach employs deductive reasoning in that the questions asked usually require explanation of incidences that can be quantified. The questions have to do with the 'what', 'where', 'how many' and 'how much' aspects of the research problem (Msweli, 2011:60; Roberts, 2010:145).

The factors listed above were important for the researcher in deciding the approach to adopt as one of the methods was the collection of data from the sample of different stakeholders.

3.4.2 QUALITATIVE RESEARCH

“Qualitative research is characterized by its aims, which relate to understanding some aspect of social life, and its methods which (in general) generate words, rather than numbers, as data for analysis” (Bricki 2007:2). Therefore Patton (2002:15) states that the qualitative approach involves studying issues in depth and in detail without the constraints of having pre-determined categories. This encourages openness and depth in the data and it aims to understand the experiences and attitudes from a number of stakeholders. Neuman (2006:328) states that qualitative research is non-positivist in that it is not concerned with trying to convert data into a quantifiable form. This approach emphasises that it is closely allied with interviews, survey design, among other things, and this is a way of reinforcing and evaluating findings.

Neuman (2006:499) elaborates on the essential characteristics of qualitative research as follows:

- the data in a qualitative report are more difficult to condense as they are usually in the form of words, pictures or sentences and can include quotes and examples; the researchers may want to create a subjective sense of empathy and understanding among readers in addition to presenting factual evidence and analytic interpretations;
- the less standardised techniques used for gathering data, creating analytic categories and organising evidence may be particular to individual research projects the goal is usually to construct new theories from the evidence (Neuman, 2006:499).

Neuman (2006:160) argues that the interpretation of quantitative data is where variables are slotted into pre-determined response categories, but with qualitative research, data is expressed in the form of words, including quotes and the descriptions of events.

The researcher conducted interviews with a sample of different stakeholders to obtain their qualitative responses. The objective was to establish their in-depth views on challenges, cost and successes within their work context and which related to their experiences. The responses from the interviewees assisted the researcher with developing themes.

In summary, the researcher is of the opinion that both qualitative and quantitative research approaches have positive attributes and that the nature of this research project suggested that a mixed research design should be used for the study.

Table 3.1 Quantitative versus Qualitative Paradigm

Quantitative Paradigm	Qualitative Paradigm
Tends to produce quantitative data	Tends to produce qualitative data
Uses large samples	Uses small samples
Concerned with hypothesis testing	Concerned with generating theories
Data is specific and precise	Data is rich and subjective
Location is artificial	The location is neutral
Reliability is high	Reliability is low
Validity is low	Validity is high
Generalises from a sample population	Generalises from one setting to another

Source: Saunders *et al.* (2009:145)

3.5 SAMPLING

Welman, *et al.* (1999:56) defines sampling “as the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population.” Welman, *et al.* (1999:58) further states that to draw conclusions about the population from the sample, it is best to use inferential statistics which enables the researcher to determine a population’s characteristics by directly observing a sample of the population.

3.5.1 SAMPLING POPULATION

The sample population of the research gave rise to a specific mixture of stock and commodity experts.

Saunders *et al.* (2009:394) states that a pilot test should be done to collect actual data. A pilot study is a smaller version of the greater study. Banuelas (2006:528) observed that pilot studies are characterised by initial or small-scale effort designed to test the applicability. The population for the quantitative study was 20 participants.

3.5.2 *SAMPLE SIZE*

The sample size for this study population was determined based on the non-probability purposive or judgement sampling and was based on the research project requirements. The researcher ensured that the information obtained from the sample size was accurate to minimise errors, by achieving a certain level of accuracy of a population consisting of categories that included engineers and financial experts. Factors such as position, department and business sector, profession were considered when choosing the sample for the quantitative research approach. With regard to the sample for the quantitative approach, the researcher focused on the sample of people of professionals who are directly involved in the stock market.

3.6 DATA COLLECTION TOOLS

The data collection instruments that were used for this study were questionnaires. The survey questionnaire was distributed to the participants using email and this was followed by telephone calls, to remind the respondent of the due date. Survey questionnaires included a covering letter which described the purpose of the research project. The questionnaires were structured in order to elicit data in the following areas of the research:

- Knowledge, current status and financial implications
- Stakeholder involvement and communication
- Interventions
- Institutional arrangements and governance structures

To ensure that respondents were free to participate in the survey questionnaire, the researcher adopted a neutrality in cases where sensitivity could arise with issues concerning ethical and political views. According to Maxwell (2008:234), it is necessary to maintain the desired relationship with participants, because it has different implications for the rest of the research design and therefore it is important to think about the kinds of relationships you want with the people who you study.

Data was collected by means of a web survey with the help of an assistant researcher. E-mail cover letters was sent to members of the database asking for their voluntary participation in the research. Permission was obtained from the branch manager.

3.7 QUANTITATIVE DATA

The data was collected using questionnaires. The data that was collected, based on the information obtained from the questionnaire, the researcher conducted statistical procedures using Statistical Program for Social Sciences (SPSS) where the researcher captured all the data collected into Microsoft Excel and then imported this into the SPSS system by performing a descriptive analysis to find general trends.

3.8 IDENTIFYING AND SUMMARIZING THEMES

Once the coding process was completed, data was organised into similar categories. Themes, recurring ideas and patterns that were unfolding were identified. Ideas and patterns that emerged were further analysed by classifying the information into groups reflecting various meanings of the phenomena. The themes that emerged were summarised, drawing on contextual data and other information that could help to better understand the findings. During the summary, frequencies of each pattern or theme were made in order to add rigour to the analysis. The overall summary clearly showed which participants had particular opinions on the several important areas of technical analysis.

3.9 INTERPRETING FINDINGS

The final step involved attempting to put the data into perspective. The results were compared with the objectives and research questions. Main findings were then summarized under broad headings. These findings were interpreted in order to attach significance to what the data was telling us, making sense of the findings, offering explanations, drawing conclusions and illustrating lessons learned.

3.10 VALIDITY AND RELIABILITY

The reliability and validity of the survey is critical to the researcher to establish the quality of the research. Wren and Phelan (2005:1) explain that, "Reliability is the degree that the assessment tool produces stable and consistent results." Zikmund (2003) states that although reliability is necessary for validity, it is not sufficient by itself, because for a test to be reliable, it also needs to be valid.

Determining that the group of individuals' performance remains consistent across repeated measures on a specific characteristic is critical and it is important to measure the member data management process and its significance over the whole administration process. Therefore in order to ensure reliability, the researcher selected a measure that demonstrated a high reliability, however a concern remains in establishing whether the information is accurate and reliable taking into account limitations in the way the data was collected.

According to Golafshani (2003:599), "Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are". Therefore the validity and reliability of the outcome of this study, even though it is dependent on the researcher, it was also dependent on the data gathering instrument, responses from the participants and the analysis and interpretation of the data gathered. The researcher believes that the process that was followed was more than appropriate in serving its intended purpose.

The reliability and trustworthiness of the data, and integrity is crucial in managing bias, especially during the process of collecting and analysing data as well as in conducting quality research that employs quantitative methods. Trustworthiness is also referred to as credibility.

Abstracted from the thesis of Dlukulu (2010:39), "Credibility is similar to internal validity. It relates to the way the researcher co-constructs the generated knowledge and the views the Participants express in the process of the inquiry. Credibility involves a correspondence between the way in which the Participants perceive certain issues, and the way in which the researcher portrays their viewpoints. Trustworthy and credible knowledge is initiated during the establishment of the relationship between the researcher and the Participants." Therefore in an effort to establish trustworthiness, the researcher has used substantial engagements and progressive subjectivity. Lastly, for data collected from the survey questionnaire, the researcher has conducted a reliability measure to assess consistency and credibility of the data using Chronbach's alpha formula.

3.11 ETHICAL CONSIDERATIONS

According to ethical issues, Welman, *et al*, (1999:181) every researcher has the responsibility to protect the participants in an investigation and it has become the cornerstone for conducting effective and meaningful research. In this study, the participants who were interviewed hold senior positions in their professional fields and, due to the fact that this topic has gained much media attention, it was essential that the participants be asked for their direct consent to participate in the study and to record the interview before continuing with the interview process. Welman, *et al*, (1999:182) defines, "Direct consent as the most preferred because agreement is obtained directly from the person to be involved in the study".

Confidentiality and anonymity when conducting research are crucial especially with sensitive information like that of Supply Chain Management. Therefore the confidentiality of participants has been maintained for the questionnaires because responses were sent to the researcher using a private email address, and the names of the participants were not required in the questionnaire. The data was analysed and stored icloud and gmail in both word and excel format.

Singh (2006:219) states that data collection involves a range of ethical issues. The list with which this research will abide is as follows:

3.11.1 A MULTITUDE OF DIFFERENT TECHNIQUES AND STRATEGIES TO UTILIZE PRICE DATA

A large number of respondents agreed that technical analysis covers a multitude of different techniques and strategies to utilise price data. The different techniques and strategies to utilise the price data are numerous. It's important to point that analysis is the study of the market in action, through the use of charts and historical data, to predict future trends in the prices of currency pairs. Technical analysis does not attempt to measure the actual, or intrinsic, value of a particular asset. Instead, it provides a way for analysts to identify patterns and trends, and use that information to extrapolate future pricing activity (Park and Irwin, 2007). Prices are studied through graphs that have a combination of opening, high, low, and closing prices for a particular instrument. The timing for the graphs depends on the platform being used and the preference of the trader, but usually shows intervals of minutes, to daily, weekly, monthly, and in some instances, even yearly.

3.11.2 ENSURING PARTICIPANTS HAVE GIVEN INFORMED CONSENT

All participants were made aware of the nature and details of the research being conducted. Participants were made aware of their right to discontinue their participation in the research study and were in no way coerced into participating in the study. Participants made an autonomous decision to participate in the study.

3.11.3 ENSURING NO HARM COMES TO PARTICIPANTS

No physical or psychological stress, feeling of dignity, self-esteem or self-efficacy was compromised in this research. Other types of potential harm such as economic damage or financial costs, or harm to family and social groups did not occur.

3.11.4 ENSURING CONFIDENTIALITY AND ANONYMITY

As much as the participants were assured of anonymity and confidentiality, the risk of the participants being identified was discussed with them. The researcher accordingly considered a more nuanced view of consent. This suggested moving away from the assumption that every respondent desired 'complete confidentiality', and instead recognised that a participant in the research might want to receive recognition for some of or all of what he or she contributed. Participants were also fully informed about who the audience of the research project would possibly be, so that they could make informed choices about what to share. The researcher was, however, careful to ensure that the names of the participants were not identifiable in print. Instead, pseudonyms were used and the descriptions of areas were disguised. The participants were also assured that the raw data that had been collected would be kept in a safe place where it would be accessible to the researcher only.

The identities of all participants were protected, as no names were mentioned in the research or the questionnaires. Reporting on the findings of this study does not mention the identification of any participant.

3.11.5 ENSURING THAT PERMISSION IS OBTAINED

A memorandum was written to the branch managers in order to obtain permission to conduct the study and a confidentiality agreement was signed. In this study, information is obtained directly from officials and employees who are located within the branch. The questionnaire script will be ensured of confidentiality and anonymity by keeping their identification confidential and they will be assured that no harm is anticipated to be caused upon the participants.

3.12 CONCLUSION

This chapter described the research methodology that was followed during the research process. A quantitative method approach was the main data collection techniques. The aim was to obtain an extensive degree of validity, reliability and trustworthiness of the data because the validity of the study is determined by the appropriate and systematic way in which data was collected to ensure that the researcher was able to measure its intended purpose. The limited number of responses for the questionnaire must be taken into consideration during the analysis processes because it has a bearing on the results of the study.

Results of the study are covered in Chapter four.

4 PRESENTATION OF RESULTS/FINDINGS

4.1 INTRODUCTION

In this chapter, the results are presented and discussed. These results are covered in two sections. The first section reports the results in a demographic. The second section is based on the presentation of certain aspects related to technical analysis (TA) in trading binary options.

The information from the questionnaire was used to compile the themes and categories that are presented later in this chapter. It serves to provide relevant information on profiles of participants. Participants were referred to under code names of the industry represented in order to meet the need for privacy and confidentiality (Pedroni & Pimple, 2001).

4.2 BIOGRAPHICAL CHARACTERISTICS OF RESPONDENTS - PORTION OF QUESTIONNAIRE

In total, twenty (20) respondents participated in the survey and they are taken to be more broadly representative of managerial perspectives within the stock industry. The demographic information presented here are firstly presented as frequencies and then the statistical information for these frequencies are presented.

4.2.1 FREQUENCIES FOR BIOGRAPHICAL CHARACTERISTICS

Table 4.1 Age distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
21-30	12	60.0	60.0	60.0
31-40	6	30.0	30.0	90.0
41-50	2	10.0	10.0	100.0
Total	20	100.0	100.0	

Table 4.1 indicates the age distribution of the different respondents who participated in the survey. The age group with the largest proportion of respondents was the 21-30 years category, representing 60% of all respondents. In descending order, the 31-40 years category was represented by 30% of respondents meanwhile the 41-50 years group was represented by 10%. This shows that most of those who participated in the study are younger than 40 years, whilst age brackets such as 51-60 years had no representation. Younger employees may not have the necessary institutional experience or knowledge to understand all the ramifications involved in trade binary option.

Competence and work experience are related and are valued by both employees and employers (Kuhlthau and Tama 2001); a worker with more experience is most likely to be older. Argote *et al.* (2003) argued that the transfer of knowledge in an organization, especially from one person to another, is the key to productivity and success. An experienced individual is in a better position to understand and tackle complex situations more effectively. Moreover, information dissemination and acquisition in companies can be ill-structured and multi-dimensional (Kuhlthau and Tama 2001). Thus, experience may be playing a vital role in the understanding and conceptualizing of binary option drivers that can be used by the trader to achieve a competitive advantage.

Table 4.2 Positions occupied by different respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Personal financial managers	2	10.0	10.0	10.0
Stock brokers stood	4	20.0	20.0	30.0
Project financial analysts	9	45.0	45.0	75.0
Securities sales agent	5	25.0	25.0	100.0
Total	20	100.0	100.0	

As seen in Table 4.2 of the 20 respondents who participated in the survey, 10% were recorded as personal financial managers, stock brokers stood at 20%. Twenty five percent of respondents stipulated their positions as securities sales agent, 45% were project financial analysts.

Table 4.3 Education profile

	Frequency	Percent	Valid Percent	Cumulative Percent
National Diploma	2	10.0	10.0	10.0
University Degree	13	65.0	65.0	75.0
Postgraduate Degree	5	25.0	25.0	100.0
Total	20	100.0	100.0	

The educational profile of the respondents is depicted in Table 4.3. Those who obtained a national diploma accounted for 10%. The proportion of those who had a Bachelor's degree was 65% and those with a postgraduate qualification at 25%. The respondents with the highest percentage were those with a Bachelors' degree. All the respondents had some form of experiential learning. This shows some organizational strengths in terms of qualified and skilled human resources, with appropriate qualifications in finances. Gould-Williams (2010) noted that overall performance at a company could be enhanced by re-evaluating current human resources strategically. Relevant qualification and experience are essential for employee effectiveness and performance in any job situation.

Table 4.4 Industrial experience of those who participated in the study

	Frequency	Percent	Valid Percent	Cumulative Percent
1-5 years	5	25.0	25.0	25.0
6- 10 years	8	40.0	40.0	65.0
11-15 years	3	15.0	15.0	80.0
16-20 years	4	20.0	20.0	100.0
Total	20	100.0	100.0	

The working experience of respondents varied across age groups as shown in Table 4.4. None of the respondents had been employed for more than twenty years. Respondents with working experience of less than 10 years but more than 5 years accounted for 40% of all respondents who participated in the study. The 16-20 years category was represented by 20% of respondents while the 11-15 years group was represented by 15%, respondents falling in this category and those with 1-5 years of experience were at 25%. This can also be interpreted in terms of high vacancy and turnover rates.

4.2.2 FREQUENCY STATISTICS

Table 4.5 Frequency Statistics

	Age	Gender	Position	Highest Qualification	Experience
N Valid	20	20	20	20	20
Missing	0	0	0	0	0
Std. Deviation	.68825	.47016	.93330	.58714	1.08094
Variance	.474	.221	.871	.345	1.168

Table 4.5 gives the standard deviation as well as the variance for all five demographical measurements acquired for this study. The participants had the highest variance for Experience in the workplace. The second highest variance for demographical information was observed for Position Occupied by the participants.

4.3 TECHNICAL ANALYSIS IN TRADING BINARY OPTIONS - PORTION OF QUESTIONNAIRE

The questions for this portion of the questionnaire were presented as Likert scales with four possibilities (1 = Strongly disagree, 2 = Disagree, 3 = Agree and 4 = Strongly Agree) of the scale for each question asked.

Although there were no numbers on the questionnaire, the 13 questions for this portion of the questionnaire were structured into 3 constructs, which each addressed one of the research questions.

Questions 1, 2, 7, 10 and 12 (Construct 1) all had relation to the research question: What are the important areas of technical analysis?

Questions 3, 8, 9, 11 and 13 (Construct 2) all had relation to the research question: What are the different techniques and strategies that are utilised for price data?

Lastly questions 4, 5 and 6 (Construct 3) had relation to the research question: Too what extent does head and shoulders patterns lead to a profitable trading strategy?

4.3.1 FREQUENCIES FOR LIKERT SCALE QUESTIONS

Table 4.6 Technical analysis in trade binary options involves the sole use of price and related summary statistics, such as volume, to inform trading decisions

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	3	15.0	15.0	15.0
Agree	14	70.0	70.0	85.0
Strongly Agree	3	15.0	15.0	100.0
Total	20	100.0	100.0	

Table 4.6 depicts respondents' level of agreement with the proposition, "Technical analysis in trading binary options involves the sole use of price and related summary statistics, such as volume, to inform trading decisions". The majority of the respondents were in agreement. Seventy percent strongly agreed. A further 15% agreed, and 15% disagreed.

Table 4.7 Forecasting future price changes of financial assets is the feature of Technical analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	10.0	10.0	10.0
Agree	13	65.0	65.0	75.0
Strongly Agree	5	25.0	25.0	100.0
Total	20	100.0	100.0	

Table 4.7 shows the level of agreement with the proposition that "Forecasting future price changes of financial assets is the feature of technical analysis". Sixty five percent agreed with the statement, while 25% Strongly agreed and 10% Disagreed. The above result shows that technical analysis is mainly concerned with looking at simple trading rules that do not accurately capture the activity of professional traders.

Table 4.8 Technical analysis covers a multitude of different techniques and strategies to utilize price data

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	10.0	10.0	10.0
Strongly Agree	18	90.0	90.0	100.0
Total	20	100.0	100.0	

Table 4.8 illustrates the agreement level that of technical analysis covers a multitude of different techniques and strategies to utilise price data; 90% of the respondent strongly agreed, while 10% disagreed.

Table 4.9 Traders often use visually complex chart patterns in price data to inform their decisions

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	5.0	5.0	5.0
Agree	11	55.0	55.0	60.0
Strongly Agree	8	40.0	40.0	100.0
Total	20	100.0	100.0	

Table 4.9 above demonstrates the response rate to the question “Traders often use visually complex chart patterns in price data to inform their decisions”; Fifty five percent agreed, forty percent strongly agreed and five percent Disagreed. The response ratio reveals that the respondents fully understand the patterns in price data to inform their decisions.

Table 4.10 The head and shoulders patterns lead to a profitable trading strategy

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	3	15.0	15.0	15.0
Strongly Agree	17	85.0	85.0	100.0
Total	20	100.0	100.0	

Table 4.10 shows the number of the respondents with regards to the head and shoulders patterns lead to a profitable trading strategy. This result in figure 12 indicates that 85% percent strongly agreed, and 15% agreed. This indicates that the head and shoulders patterns are a leading profitable trading strategy.

Table 4.11 The head and shoulders pattern is regarded as one of the most informative by traders

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	4	20.0	20.0	20.0
Agree	4	20.0	20.0	40.0
Strongly Agree	12	60.0	60.0	100.0
Total	20	100.0	100.0	

Based on Table 4.11, it appears that the head and shoulders pattern is regarded as one of the most informative by traders. Overall eighty percent agreed (60% strongly agreeable, 20% agreeable) to the statement, and the other 20% were disagreeable.

Table 4.12 Technical analysts have created many ways to use historical prices in an attempt to extrapolate future movements

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	5.0	5.0	5.0
Agree	2	10.0	10.0	15.0
Strongly Agree	17	85.0	85.0	100.0
Total	20	100.0	100.0	

Table 4.12 show that a majority of the respondents strongly agreed that technical analysts have created many ways to use historical prices in an attempt to extrapolate future movements. Eighty five percent strongly agreed and 10% agreed. The response confirms that a number of ways have been created to help predict future prices.

Table 4.13 For the momentum technician, any time prices are able to push beyond support or resistance

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	3	15.0	15.0	15.0
Strongly Agree	17	85.0	85.0	100.0
Total	20	100.0	100.0	

From Table 4.13 you could see that out of the total respondents who participated in the study, one hundred percent agreed (eighty five percent strongly agreed and fifteen percent agreed) that the momentum technician, any time prices are able to push beyond support or resistance.

Table 4.14 The process of short selling a stock is done to profit from a price decline and involves selling a stock with the intention of buying it back later at a lower price

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	16	80.0	80.0	80.0
Strongly Agree	4	20.0	20.0	100.0
Total	20	100.0	100.0	

Table 4.14 depicts the response rate from the respondents. The majority of the participants agreed that the process of short selling a stock is done to profit from a price decline and involves selling a stock with the intention of buying it back later at a lower price (eighty percent agreed, and twenty percent strongly agreed).

Table 4.15 Investors and traders typically employ two classes of tools to decide what stocks to buy and sell

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	5.0	5.0	5.0
Agree	8	40.0	40.0	45.0
Strongly Agree	11	55.0	55.0	100.0
Total	20	100.0	100.0	

Table 4.15 presented the total response for “Investors and traders typically employ two classes of tools to decide what stocks to buy and sell”. Fifty five percent strongly agreed, forty percent agreed and five percent disagreed.

Table 4.16 Price and volume data is readily available in real time, which makes technical analysis ideally suited for short-term swing trades

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	5.0	5.0	5.0
Agree	15	75.0	75.0	80.0
Strongly Agree	4	20.0	20.0	100.0
Total	20	100.0	100.0	

Table 4.16 depicts the response rate from the respondents. A majority of the participants agreed that Price and volume data is readily available in real time, which makes technical analysis ideally suited for short-term swing trades (seventy five percent agreed, twenty percent strongly agreed and 5 percent disagreed).

Table 4.17 The difference in valuation is what drives market changes, trends, and profitable situations

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	10.0	10.0	10.0
Agree	1	5.0	5.0	15.0
Strongly Agree	17	85.0	85.0	100.0
Total	20	100.0	100.0	

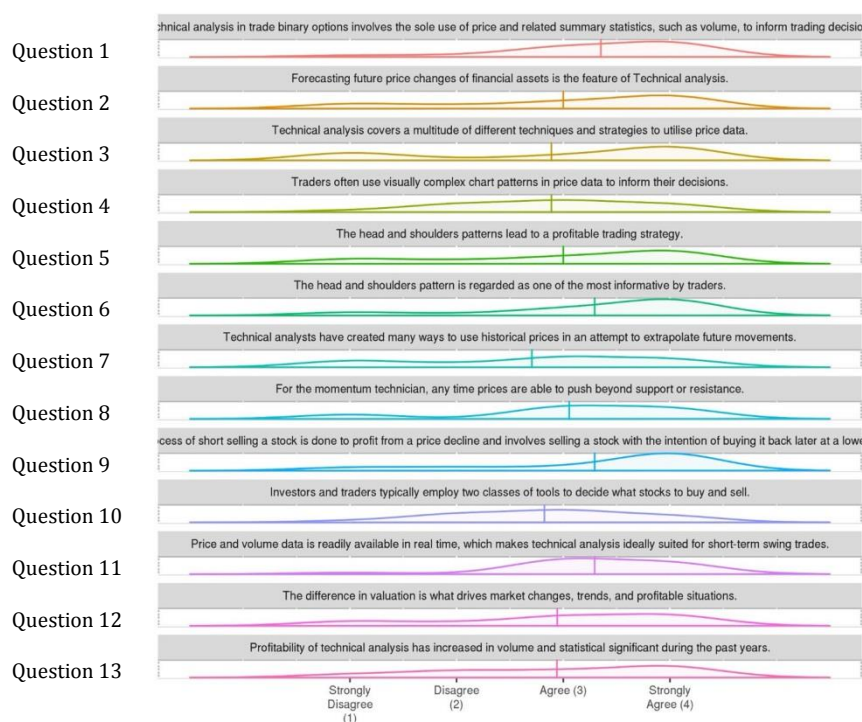
Table 4.17 shows the number of the respondent's response on "The difference in valuation is what drives market changes, trends, and profitable situations". The results in Table 4.17 depict that eighty five percent strongly agreed, 5 percent agreed and ten percent disagreed.

Table 4.18 Profitability of technical analysis has increased in volume and statistical significant during the past years

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	13	65.0	65.0	65.0
Agree	1	5.0	5.0	70.0
Strongly Agree	6	30.0	30.0	100.0
Total	20	100.0	100.0	

Table 4.18 presents the agreement level “Profitability of technical analysis has increased in volume and statistical significant during the past years”. The statement attracted mixed response as thirty percent strongly agreed, seventy percent strongly disagreed and five percent agreed.

Figure 4.1 Visual presentation of the distribution of Likert Scale questions



4.3.2 STATISTICAL ANALYSIS OF THREE CONSTRUCTS OF QUESTIONS

4.3.2.1 Construct 1

Tables below shows the item-analysis output from SPSS for the multi-item scale of construct 1. A description of the sections and related terms are as follows:

Table 4.19 Item Means and Standard Deviation—These are summary statistics for the five individual item variances.

Table 4.20 Inter-Item Correlations Matrix—This is descriptive information about the correlation of each item with the sum of all remaining items. In construct 1 there are 5 correlations computed: the correlation between the first item and the sum of the other five items, the correlation between the second item and the sum of the other five items, and so forth.

Table 4.21 Item-total Statistics—This is the section where one needs to direct primary attention. The items in this section are as follows: Statistical analysis of the three constructs were ran to establish what the means for each

Table 4.22 Alpha—The Cronbach's alpha coefficient of internal consistency. This is the most frequently used Cronbach's alpha coefficient. And—Standardized Item Alpha—The Cronbach's alpha coefficient of internal consistency when all scale items have been standardized. This coefficient is used only when the individual scale items are not scaled the same.

Table 4.23 Statistics for Scale—These are summary statistics for the 5 items comprising the scale. The summated scores can range from a low of 5 to a high of 20.

Table 4.19 Item Statistics

	Mean	Std. Deviation	N
Const. 1 Q 01	3.0000	.56195	20
Const. 1 Q 02	3.1500	.58714	20
Const. 1 Q 07	3.8000	.52315	20
Const. 1 Q 10	3.5000	.60698	20
Const. 1 Q 12	3.7500	.63867	20

Table 4.20 Inter-Item Correlation Matrix

	Const. 1 Q 01	Const. 1 Q 02	Const. 1 Q 07	Const. 1 Q 10	Const. 1 Q 12
Const. 1 Q 01	1.000	-.319	.179	-.154	.147
Const. 1 Q 02	-.319	1.000	-.069	.369	.105
Const. 1 Q 07	.179	-.069	1.000	.166	-.158
Const. 1 Q 10	-.154	.369	.166	1.000	-.204
Const. 1 Q 12	.147	.105	-.158	-.204	1.000

Table 4.21 Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.440	3.000	3.800	.800	1.267	.127	5
Item Variances	.342	.274	.408	.134	1.490	.003	5

Table 4.22 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.026	.031	5

Table 4.23 Scale Statistics

Mean	Variance	Std. Deviation	N of Items
17.2000	1.747	1.32188	5

4.3.2.2 Construct 2

Tables below shows the item-analysis output from SPSS for the multi-item scale of construct 1. A description of the sections and related terms are as follows:

Table 4.24 Item Means and Standard Deviation—These are summary statistics for the five individual item variances.

Table 4.25 Inter-Item Correlations Matrix—This is descriptive information about the correlation of each item with the sum of all remaining items. In construct 1 there are 5 correlations computed: the correlation between the first item and the sum of the other five items, the correlation between the second item and the sum of the other five items, and so forth.

Table 4.26 Item-total Statistics—This is the section where one needs to direct primary attention. The items in this section are as follows: Statistical analysis of the three constructs were ran to establish what the means for each

Table 4.27 Alpha—The Cronbach's alpha coefficient of internal consistency. This is the most frequently used Cronbach's alpha coefficient. And—Standardized Item Alpha—The Cronbach's alpha coefficient of internal consistency when all scale items have been standardized. This coefficient is used only when the individual scale items are not scaled the same. And—Statistics for Scale—These are summary statistics for the 5 items comprising the scale. The summated scores can range from a low of 5 to a high of 20.

Table 4.24 Item Statistics

	Mean	Std. Deviation	N
Const. 2 Q 03	3.7000	.92338	20
Const. 2 Q 08	3.8500	.36635	20
Const. 2 Q 09	3.2000	.41039	20
Const. 2 Q 11	3.1500	.48936	20
Const. 2 Q 13	2.0000	1.41421	20

Table 4.25 Inter-Item Correlation Matrix

	Const. 2 Q 03	Const. 2 Q 08	Const. 2 Q 09	Const. 2 Q 11	Const. 2 Q 13
Const. 2 Q 03	1.000	.327	.167	.105	.000
Const. 2 Q 08	.327	1.000	-.490	.132	.000
Const. 2 Q 09	.167	-.490	1.000	.105	-.091
Const. 2 Q 11	.105	.132	.105	1.000	-.456
Const. 2 Q 13	.000	.000	-.091	-.456	1.000

Table 4.26 Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.180	2.000	3.850	1.850	1.925	.528	5
Item Variances	.679	.134	2.000	1.866	14.902	.631	5

Table 4.27 Reliability Statistics

Cronbach's Alpha ^a	Cronbach's Alpha Based on Standardized Items ^a	N of Items	
-.145	-.110	5	
a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.			
Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
15.9000	3.042	1.74416	5

4.3.2.3 Construct 3

Tables below shows the item-analysis output from SPSS for the multi-item scale of construct 1. A description of the sections and related terms are as follows:

Table 4.28 Item Means and Standard Deviation—These are summary statistics for the five individual item variances.

Table 4.29 Inter-Item Correlations Matrix—This is descriptive information about the correlation of each item with the sum of all remaining items. In construct 1 there are 5 correlations computed: the correlation between the first item and the sum of the other five items, the correlation between the second item and the sum of the other five items, and so forth.

Table 4.30 Item-total Statistics—This is the section where one needs to direct primary attention. The items in this section are as follows: Statistical analysis of the three constructs were ran to establish what the means for each

Table 4.31 Alpha—The Cronbach's alpha coefficient of internal consistency. This is the most frequently used Cronbach's alpha coefficient. And—Standardized Item Alpha—The Cronbach's alpha coefficient of internal consistency when all scale items have been standardized. This coefficient is used only when the individual scale items are not scaled the same.

Table 4.32 Statistics for Scale—These are summary statistics for the 5 items comprising the scale. The summated scores can range from a low of 3 to a high of 16.

Table 4.28 Item Statistics

	Mean	Std. Deviation	N
Const. 3 Q 04	3.3500	.58714	20
Const. 3 Q 05	3.8500	.36635	20
Const. 3 Q 06	3.4000	.82078	20

Table 4.29 Inter-Item Correlation Matrix

	Const. 3 Q 04	Const. 3 Q 05	Const. 3 Q 06
Const. 3 Q 04	1.000	.257	-.306
Const. 3 Q 05	.257	1.000	-.140
Const. 3 Q 06	-.306	-.140	1.000

Table 4.30 Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.533	3.350	3.850	.500	1.149	.076	3
Item Variances	.384	.134	.674	.539	5.020	.074	3

Table 4.31 Reliability Statistics

Cronbach's Alpha ^a	Cronbach's Alpha Based on Standardized Items ^a	N of Items
-.455	-.216	3
a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.		

Table 4.32 Scale Statistics

Mean	Variance	Std. Deviation	N of Items
10.6000	.884	.94032	3

5 ANALYSIS AND DISCUSSION OF THE RESULTS/FINDINGS

5.1 QUANTITATIVE RESULTS

Chapter four presented and analysed the findings of this study. Primary data were obtained by means of questionnaires. Twenty questionnaires were distributed within Johannesburg stock and exchange industry. The questions chosen for the questionnaire were directly linked to the research questions and objectives of the study form the basis for this analysis.

These questions will now be discussed in their different constructs.

5.1.1 CONSTRUCT 1

5.1.1.1 Forecasting future price changes of financial assets

The findings presented confirm that the forecasting of future price changes of financial assets is the feature of Technical analysis. The technical analyst makes use of various tools during his analysis. Share prices move in a series of peaks and troughs. The direction of those peaks and troughs determine the direction or cycle trend of the market. A trend is a time measurement of the direction in price levels covering different time spans. There are many trends, but the three trends that are most widely followed are the primary, secondary or intermediate and minor or short-term trends.

5.1.1.2 Many ways to using historical prices to extrapolate future movements

Out of the total respondents who participated in the study, ninety percent agreed (twenty percent strongly agreed and seventy percent agreed) that technical analysts have created many ways to use historical prices in an attempt to extrapolate future movements. According to (Nison, 1991) technical analysts have developed tools which looks for peaks, bottoms, trends, patterns, and other factors affecting a share's price movement and then making a buy or sell decision based on those factors. It is a technique many people attempt though very few are truly successful. Unlike the fundamental analyst, the technical analyst is not concerned with the intrinsic value of the share and the reasons for share-price movements, believing that all the fundamental information is already factored into their charts and reflected in the resultant share price. The technical

analyst aims to buy as near to the starting point of an upward cycle in a share's price, and to sell as near to the top of the cycle as possible.

5.1.1.3 Visually complex chart patterns in price data to inform trader decisions

The study results also revealed that over ninety percent of respondents agreed that traders often use visually complex chart patterns in price data to inform their decisions (Goo, Chen & Chang, 2007:47). For instance if a trader had to choose only one of the two approaches to use, the choice would logically have to be the technical. Because, by definition, the technical approach includes the fundamentals. If the fundamentals are reflected in market price, then the study of fundamentals becomes unnecessary. Chart reading becomes a shortcut form of fundamental analysis. The reverse, however, is not true. Fundamental analysis does not include a study of price action. It is possible to trade financial markets using just the technical approach.

5.1.1.4 Investors and traders typically employ two classes of tools to decide what stocks to buy and sell

This result shows that that ninety percent strongly agreed, and ten percent agreed. This indicates that investors and traders typically employ two classes of tools to decide what stocks to buy and sell. There are four main types of charts that are used by investors and traders depending on the information that they are seeking and their individual skill levels. Below are the four main charts investors and brokers use:

Line Chart: The most basic of the four charts is the line chart because it represents only the closing prices over a set period of time. The line is formed by connecting the closing prices over the time frame. Line charts do not provide visual information of the trading range for the individual points such as the high, low and opening prices. However, the closing price is often considered to be the most important price in stock data compared to the high and low for the day and this is why it is the only value used in line charts.

Bar Charts: The bar chart expands on the line chart by adding several more key pieces of information to each data point. The chart is made up of a series of vertical lines that represent each data point. This vertical line represents the high and low for the trading period, along with the closing price. The close and open are represented on the vertical line by a horizontal dash (Kirkpatrick and Dahlquist, 2011:210). The opening price on a bar chart is illustrated by the dash that is located on the left side of the vertical bar. Conversely, the close is represented by the dash on the right. Generally, if the left dash (open) is lower than the right dash (close) then the bar will be shaded black, representing an up period for the stock, which means it has gained value. A bar

that is coloured red signals that the stock has gone down in value over that period. When this is the case, the dash on the right (close) is lower than the dash on the left (open).

Candlestick Charts: The candlestick chart is similar to a bar chart, but it differs in the way that it is visually constructed. Similar to the bar chart, the candlestick also has a thin vertical line showing the period's trading range. The difference comes in the formation of a wide bar on the vertical line, which illustrates the difference between the open and close. And, like bar charts, candlesticks also rely heavily on the use of colours to explain what has happened during the trading period. A major problem with the candlestick colour configuration, however, is that different sites use different standards; therefore, it is important to understand the candlestick configuration used at the chart site you are working with. There are two colour constructs for days up and one for days that the price falls (Kirkpatrick and Dahlquist, 2011:211). When the price of the stock is up and closes above the opening trade, the candlestick will usually be white or clear. If the stock has traded down for the period, then the candlestick will usually be red or black, depending on the site. If the stock's price has closed above the previous day's close but below the day's open, the candlestick will be black or filled with the colour that is used to indicate an up day.

Point and Figure Charts: The point and figure chart is not well known or used by the average investor but it has had a long history of use dating back to the first technical traders. This type of chart reflects price movements and is not as concerned about time and volume in the formulation of the points (Kirkpatrick and Dahlquist, 2011:215). The point and figure chart removes the noise, or insignificant price movements, in the stock, which can distort traders' views of the price trends. These types of charts also try to neutralize the skewing effect that time has on chart analysis.

5.1.1.5 Price and volume data is readily available in real time, which makes technical analysis ideally suited for short-term swing trades

Price and volume data is readily available in real time, which makes technical analysis ideally suited for short-term swing trades. The underlying assumption in technical analysis is that stock prices evolve with certain regularity, forming reliable and predictable price and volume patterns that reveal market psychology which can be used to determine shifts in supply and demand (Turner, 2007). What we are basically looking for when doing technical analysis is patterns in the price data that signal continuations or reversals in trend. We want to recognize situations that signal a continuation in trend so that we can ride the trend as long as possible.

5.1.2 CONSTRUCT 2

5.1.2.1 The head and shoulders patterns - a profitable trading strategy

The results from the respondent support that the head and shoulders patterns lead to a profitable trading strategy. This result confirms Schwager (1996), that head and shoulder leads to a profitable trading strategy. According to Schwager (1996) a large amount of technical analysis, however, is applied to technical patterns visual patterns that can be seen to occur on price-time charts. Good examples of such include the interestingly named head and shoulders, flags, pennants and wedges and can be found in the technical analysis. Such patterns do not have simple algebraic representations and, despite being easy to identify with the eye, are highly complex to represent in a systematic fashion (Pring, 1986).

5.1.2.2 Momentum causes time prices to be able to push beyond support or resistance

The response ratio reveals that the respondents fully understand that any time prices are able to push beyond support or resistance. This is due to the reversal from an up-trend to a down-trend is usually separated by some volatile trading-range activity in which buyers and sellers experience a closely fought battle. In the up-trend or rally phase, buyers have the upper hand over the sellers, since it is their enthusiasm that pushes the prices up. During the transitional phase, the enthusiasm of buyers and sellers becomes more balanced as neither is able to dominate over the other. Finally, sellers win and the prices begin a new downtrend.

It is important to note that it is not the number of buyers or sellers that changes, but the relative balance in their enthusiasm.

5.1.2.3 Short selling a stock is done to profit from selling a stock with the intention of buying it back later

The results also revealed that all of the participants agreed that the process of short selling a stock is done to profit from a price decline and involves selling a stock with the intention of buying it back later at a lower price (Park and Irwin, 2007). Technical analysis focuses on market sentiment and assesses the share in terms of its popularity in the eyes of investors. The technical analyst makes the assumption that the past movements of share prices allow us to determine the probability of

future price moves in any given direction: up, down or sideways (Park and Irwin, 2007). The technical analyst makes use of graphs and statistical techniques to study historical price and volume patterns in order to predict the future course of share prices. In this way technical analysis aids us in our decisions regarding when it is best to buy or to sell shares.

5.1.2.4 Profitability of technical analysis has increased in volume and statistical significant during the past years

The volume pattern should generally increase in the direction of the market trend and is an important confirming factor in the completion of all chart patterns. The completion of each pattern should be accompanied by a noticeable increase in volume (Nison, 1991). The volume pattern with most price chart patterns is very similar in that volume diminishes as the pattern works itself out and then increases on the breakout. The technical analyst can detect slight shifts in the volume pattern coinciding with the swings in the price action.

5.1.3 CONSTRUCT 3

The study had 20 participants. The participants were presented with the statement “the head and shoulders pattern is regarded as one of the most informative by traders”. Almost all the respondent agreed to the above statement. This clearly shows that a large number of different rules for trading the head & shoulders pattern have been tested and proved to be generally profitable, both before and after slippage considerations. A number of pattern attributes have been analysed for linkage with profitability and, in some cases, the statistical significance of results was high (Pring, 1986). Discriminant analyses of various kinds have been conducted and resulting classification, in some cases, proved better than chance when applied to out of sample test data. Finally, various filters have been developed from the above analysis which significantly improves trading profitability under test conditions.

5.2 STATISTICAL ANALYSIS

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. Based upon the formula $\alpha = rk / [1 + (k - 1)r]$ where k is the number of items considered and r is the mean of the inter-item correlations the size of alpha is determined by both the number of items in the scale and the mean inter-item correlations. George and Mallery, (2003:231) provide the following rules of thumb: " $\alpha > .9$ – Excellent, $\alpha > .8$ – Good, $\alpha > .7$ – Acceptable, $\alpha > .6$ – Questionable, $\alpha > .5$ – Poor, and $\alpha < .5$ – Unacceptable".

While increasing the value of alpha is partially dependent upon the number of items in the scale, it should be noted that this has diminishing returns.

It should also be noted that an alpha of .026, -.145 and -.455. is totally out of the expectable range. It is important to keep in mind that while a high value for Cronbach's alpha indicates good internal consistency of the items in the scale, it does not mean that the scale is unidimensional.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The purpose of the study was to investigate how profitable the utilisation of technical analysis in generating buy-and-sell signals could be to trade binary options. The significance of this research is to point out that there is possibility to trade on profitable level using technical analysis of strategy and setting inputs correctly. This research was chosen due to the growing popularity the topic in trade binary options.

The previous chapter discussed the research findings and linked the results with the literature review. This chapter concludes the study by providing a brief summary of the literature review and the research results in the light of the research question, problem statement, objectives and purpose of the study. The conclusions and recommendations, based on the findings of the study, are highlighted. Lastly, areas that merit further studies and limitations of the study are presented.

6.2 CONCLUSIONS FROM THE STUDY

6.2.1 FINDINGS FROM THE LITERATURE REVIEW

In this study conclusions were drawn from both the literature and the empirical studies. They serve as the basis for the recommendations in the utilisation of technical analysis in generating buy-and-sell signals to trade binary options. The literature review suggests that the technical analysis concept or approach in generating buy-and-sell signals to trade binary options has developed as both investors and brokers realise that profitability of technical analysis has increased in volume and statistical significant during the past years.

With regards to technical analysis it is an “attempt to forecast prices by the study of past prices and a few other related summary statistics about security trading” (Brock *et al.*, 1992:1731). This indicates the reason that it has often been held in such disdain by academics; in focusing on past prices alone, technical analysis directly contradicts weak-form market efficiency, which states that it should not be possible to earn excess returns from studying past price movements. Technical analysts (technicians or chartists) have created many ways to use historical prices in an attempt to

extrapolate future movements, ranging from basic averaging indicators to visually oriented chart patterns which are considerably more difficult to express algebraically in the context of academic study. Achelis (2001) and Bulkowski (2005) show just how many technical indicators, patterns and strategies have been created and employed by technical analysts.

Furthermore, according to Malkiel (1999) the utilisation of technical evaluation in trade binary alternatives includes the sole use of price and associated precise facts, which includes volume, to tell buying and selling choices. Given its lengthy-status use in financial markets, technical analysis has evidently come to be a focal point of academic study. In component, that is due to the fact income accruing from an approach constructed absolutely across the evaluation of beyond charges runs counter to the least restrictive form of marketplace performance.

Concerning the trading stocks Bulkowski (2005) states that it is the process of buying and selling shares of a company on a stock exchange with the aim of generating profitable returns. The stock exchange operates like any other economic market; when a buyer wants to buy some quantity of a particular stock at a certain price, there needs to be a seller willing to sell the stock at the offered price. Transactions in the stock market are processed by brokers who mediate sales between buyers and sellers. Brokers typically charge a commission fee for completed transactions for example a fixed amount for each transaction or a small percentage of the order total. Naturally, buyers want to minimize the price paid for the stock and sellers want to maximize the selling price for the stock. The stock market is thus governed by the same fundamental economic principles as any other economic market, namely supply and demand.

The literature further illustrates that forecasting according to Murphy (1999) the supply and demand curve does have a relationship between supply (provided by the sellers) and demand (provided by the buyers). At price equilibrium when the supply curve intersects with the demand curve, the seller and buyer agree on a price and a transaction can occur. In our case, this would involve a buyer of some quantity of shares Q_* of a stock at price P_* as provided by some seller.

In the summary the literature further explains that financial specialists and brokers ordinarily utilize two classes of devices to choose what stocks to purchase and offer; major and technical analysis, both of which go for breaking down and anticipating shifts in supply and demand (Turner, 2007). As said before, movements in supply and demand is the premise of most monetary and key anticipating? In the event that there are a larger number of dealers than purchasers for a stock (expanded supply), the hypothesis expresses that the price ought to fall, and correspondingly, if

there are a bigger number of purchasers than venders (expanded demand) the price ought to rise. Given the capacity to predict these movements in supply and demand in this way gives the merchant the capacity to set up beneficial passage and leave positions, which is a definitive objective of stock analysis.

6.2.2 CONCLUSIONS FROM PRIMARY RESEARCH

Technical analysis in trading binary options involves the sole use of price and related summary statistics, such as volume, to inform trading decisions. The findings showed that a majority (Seventy percent strongly agreed. A further 15% agreed, and 15% disagreed) of the participants agreed that technical analysis in trade binary options involves the sole use of price and related summary statistics, such as volume, to inform trading decisions. The above result confirms Turner (2007) assertion that price and volume data is promptly accessible progressively, which makes technical analysis in a perfect world suited for fleeting swing exchanges.

With regards to forecasting future price changes of financial assets is the feature of technical analysis. Sixty five percent strongly agreed with the statement, while 25% agreed and 10% disagreed. The technical analyst makes use of various tools during his analysis. Share prices move in a series of peaks and troughs. The direction of those peaks and troughs determine the direction or cycle trend of the market.

Traders often use visually complex chart patterns in price data to inform their decisions”; Fifty five percent agreed, forty percent strongly agreed and only 5 percent disagreed. The response ratio reveals that the respondents fully understand the patterns in price data to inform their decisions. This is in accordance with argument Goo, Chen and Chang (2007:47) which that chart reading becomes a shortcut form of fundamental analysis. The reverse, however, is not true. Fundamental analysis does not include a study of price action. It is possible to trade financial markets using just the technical approach.

With regards to the head and shoulders patterns lead to a profitable trading strategy. This result in Table 4.10 indicated that 85% percent strongly agreed, and 15% agreed. This indicates that the head and shoulders patterns are a leading profitable trading strategy. The result confirmed Schwager (1996), that head and shoulder leads to a profitable trading strategy. According to Schwager (1996) a large amount of technical analysis, however, is applied to technical patterns visual patterns that can be seen to occur on price-time charts. Good examples of such include the

interestingly named head and shoulders, flags, pennants and wedges and can be found in the technical analysis.

The results in Table 4.12 indicated that Technical analysts have created many ways to use historical prices in an attempt to extrapolate future movements. Eighty five percent strongly agreed and 10% agreed. The response confirms that a number of ways have been created to help predicate future prices. This is in accordance with Nison (1991) assessment that technical analysts have developed tools which looks for peaks, bottoms, trends, patterns, and other factors affecting a share's price movement and then making a buy or sell decision based on those factors. It is a technique many people attempt though very few are truly successful.

One hundred percent agreed (eighty five percent strongly agreed and fifteen percent agreed) that the momentum technician, any time prices are able to push beyond support or resistance. This is due to the reversal from an up-trend to a down-trend is usually separated by some volatile trading-range activity in which buyers and sellers experience a closely fought battle. In the up-trend or rally phase, buyers have the upper hand over the sellers, since it is their enthusiasm that pushes the prices up.

Investors and traders typically employ two classes of tools to decide what stocks to buy and sell". Fifty five percent strongly agreed forty percent agreed and five percent disagreed. The results outlined the four main types of charts that are used by investors and traders depending on the information that they are seeking and their individual skill levels.

6.3 RECOMMENDATIONS

In the course of analysing the results from the secondary and experimental research, the researcher concluded with the recommendations below.

6.3.1 *PARAMETER OPTIMIZATION*

In this regard, the application of parameter optimization with individual technical indicators as there are many parameters which can be optimized. This can be explored further for instance by calculating the positive and negative Directional index which can be used average for 14 days. Such short of parameters can be optimized to give best result with maximum number of stocks.

6.3.2 IMPROVEMENT IN COMBINING TECHNICAL INDICATORS

There is no single correct or optimum way of combining different technical indicators. A combination which might work for one stock might not work for another one. One thing is very clear from this study is that the better we combine technical indicators the better we can expect the learning?

6.3.3 AREAS FOR FUTURE RESEARCH

As this study was limited to Johannesburg, and particularly to the technical analysis to generate buy-and-sell signals in South Africa, further studies could be done nationally, which was not covered in this study.

A relative investigation could be done with the sole purpose of establishing what tools in trade binary options. Furthermore, other studies could analyse securities and how to make investment decisions. The recommendations if implemented would benefit all stakeholders in the industry.

Future research must address these problems in testing before conclusive evidence on the profitability of technical analysis strategies is provided.

6.4 LIMITATIONS OF THE STUDY

- The research is limited in that it is confined to a single typology, namely utilising technical analysis to generate buy-and-sell signals to trade binary options.
- The survey is a once-off event and cannot predict changes in practice of technical analysis to generate buy-and-sell signals to trade binary options.

6.5 CONCLUSION

In conclusion, from the literature and results above, it can be concluded that economic profits is generated by technical analysis and provides important implications about market efficiency. Despite this positive evidence about profitability, improved procedures for testing technical trading strategies, and plausible theoretical explanations, academics still appear to be sceptical about

technical analysis rules. The paper further established that economic profits generated by technical analysis provide important implications about market efficiency.

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APPENDICES

A: QUESTIONNAIRE

QUESTIONNAIRE

UTILISING TECHNICAL ANALYSIS TO GENERATE BUY-AND-SELL SIGNALS TO TRADE BINARY OPTIONS

Administered by

Fritz Brits

I am doing my MBA research on “utilising technical analysis to generate buy-and-sell signals to trade binary options” under the supervision of Dr. Henry Lotz. This research is conducted in partial fulfilment of my MBA Mini Dissertation at North West University at the Potchefstroom campus. Your participation in the study is completely voluntary and all responses will be held confidential and used for academic purposes only. All information gathered will be used in a statistical form without any reference to individuals. Your participation will help form an understanding of technical analysis to generate buy-and-sell signals to trade binary options. Please remember that there are no right or wrong answers, express your view. Completing this questionnaire takes approximately 15 minutes.

Instruction: This Questionnaire has two Sections. Please complete all sections as requested.

SECTION 1

Demographic (only for statistical purposes)

Please place a tick in the relevant box

Please indicate your Age.



21-30	☐	☐
31-40	☐	☐
41-50	☐	☐
51-60	☐	☐

Please indicate your gender.



Male	☐	☐
Female	☐	☐

Please describe your position in the organisation.



Personal financial managers	☐	☐
Stock brokers stood	☐	☐
Project financial analysts	☐	☐
Securities sales agent	☐	☐
Executive director	☐	☐

Highest educational qualification obtained



Matric		
National Diploma		
University Degree		
Postgraduate Degree		
<i>Other : please specify</i>		

Formal work experience in health sector



Less than one year		
1-5 years		
5-10 years		
10-15 years		
16-20 years		

SECTION 2:

Please consider the statements presented and indicate your level of agreement by marking with an (X) in the relevant box:



	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree	Code these fields as:
Technical analysis in trade binary options involves the sole use of price and related summary statistics, such as volume, to inform trading decisions					
Forecasting future price changes of financial assets is the feature of Technical analysis					
Technical analysis covers a multitude of different techniques and strategies to utilise price data					
Traders often use visually complex chart patterns in price data to inform their decisions					
The head and shoulders patterns lead to a profitable trading strategy					
The head and shoulders pattern is regarded as one of the most informative by traders					
Technical analysts have created many ways to use historical prices in an attempt to extrapolate future movements					

For the momentum technician, any time prices are able to push beyond support or resistance					
The process of short selling a stock is done to profit from a price decline and involves selling a stock with the intention of buying it back later at a lower price.					
Investors and traders typically employ two classes of tools to decide what stocks to buy and sell.					
Price and volume data is readily available in real time, which makes technical analysis ideally suited for short-term swing trades					
The difference in valuation is what drives market changes, trends, and profitable situations					
Profitability of technical analysis has increased in volume and statistical significant during the past years					

1. Questions in this survey may not have afforded you the opportunity to explicitly make any comments that you may have. Please make any additional comments that you may have regarding the Technical analysis in trade binary options.

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End: Thank you for taking time to answer this questionnaire.

Kindly email responses to