CHAPTER III

REVIEW OF LITERATURE

In this chapter, the past studies related to the subject of the current research are reviewed. It includes studies on frequent trading behaviour of individual investors, factors influencing such behaviour and reviews related to the application of the Theory of Reasoned Action and the Theory of Planned Behaviour.

Much of economic and financial theory is based on the assumption that individuals act perfectly rational and appraise all available information when making economic decisions. However, recently, numerous studies have documented the instances of irrational behaviour and judgemental errors of individuals. In most cases, investors are unaware of their predisposition for error and more often, an irrational investor turns out to be a dissatisfied investor. But, if investors understand themselves better and attempt to correct the cognitive biases, they would be able to adhere to a disciplined investment plan and remain satisfied. Behavioural finance enriches economic understanding by incorporating behavioural aspects of human nature into financial models. The present study is one such attempt in the field of behavioural finance to identify the factors behind irrational decision making among individual investors.

DeBondt and Thaler (1995) noted that the high trading volume observed in financial markets is perhaps the single most embarrassing fact to the standard finance paradigm. Recently, researchers have begun to study and document that behavioural attributes influence trading volume (Shefrin and Statman, 1985). Further, Shanmugham (2000) documented that among the various factors, psychological and sociological
factors dominated the economic factors in share investment decisions. Though, a sizeable
number of studies have found that behavioural biases and social factors like media, social
interactions, and usage of internet have contributed to trading volume, still, it cannot be
said that behavioural bias alone will contribute to frequent trading. Individuals’ decision
making is affected by their personality traits also. Hence, a comprehensive study is
conducted to study the effect of personality factors, cognitive factors, and social factors
on individual investors’ trading behaviour by using the Theory of Reasoned Action and
Theory of Planned Behaviour.

3.1 Frequent Trading and Trading Loss

Braber, Lee, Liu and Odean (2005) documented that the aggregate portfolio of
individuals suffered an annual performance penalty of 3.8 percentage points by using the
complete transaction records of all traders on the Taiwan Stock Exchange from January
1, 1995 to December 31, 1999. Individual investor losses are equivalent to 2.2% of Taiwan’s
gross domestic product (GDP) or 2.8% of the total personal income. They concluded that
‘virtually all individual trading losses can be traced to their aggressive orders’. However,
compared to huge losses by aggressive trading, trading volume and trading frequency
have always been ascending.

Barber and Odean (2000) studied trading patterns and returns of over 66,000
accounts held by private investors with stockbrokers during the period 1991-96. The study
concluded that the average investor in their sample have realised lower return as they had
traded frequently. Moreover, the difference in net return between the two groups - the 20%
investors that traded the least and the 20% that traded the most is about 7% percentage
point. The average net return of the group is less than that of Standard & Poor's 500 by 1.5 percentage point. On the basis of this empirical evidence, Barber and Odean concluded that the average individual investor trades excessively.

3.2 Application of the Theory of Reasoned Action and the Theory of Planned Behaviour

According to Ghen and Liu (2004), attitude is a main factor influencing behavioural intention. Attitude can be used to predict behavioural intention (Ajzen and Driver, 1992). When attitude is used to predict behavioural intention, attitude serves as an important predictive factor. Further, Bock and Kim (2002) maintained that individual attitude influences behavioural intention.

Ramayah et al (2003) analyzed the data from Malaysian sample of 239 bank customers and found that attitude positively influenced the intention to use Internet banking. Chan and Yu (2008) also documented that the attitude on participation in eco-travel through the use of the Internet has a positive significant relationship with the behavioural intention to participate in eco-travel.

Ajzen and Driver (1992) stated that perceived control behaviour can predict behavioural intention. Perceived Behavioural Control (PBC) reflects beliefs regarding the access to resources and opportunities needed to perform behaviour. According to Blue (1996), PBC not only influences the intention of an individual towards engaging in leisure activities, but it also directly affects the individual’s actual leisure behaviour. Perceived behavioural control has been identified to be a significant factor influencing the behavioural intention, especially in a situation beyond the individual’s control (Schifter and Ajzen, 1985). The concept of PBC is most compatible with Bandura's (1977) concept of perceived self-efficacy.
Ryu et al (2003)\textsuperscript{14} carried out a study on the knowledge sharing behaviour of physicians in hospitals and concluded that perceived control behaviour directly influences intention to share knowledge. Perceived control behaviour had a significant contribution in predicting behavioural intention and had greater influence than attitude. Among the factors influencing the behavioural intention of citizens towards participation, perceived control behaviour is found to be the most influencing one. (Yang et al, 2007b)\textsuperscript{15}. As the perceived control behaviour of an individual becomes more positive, the behavioural intention to participate also becomes more positive (Kuo et al, 2007)\textsuperscript{16}.

Ajzen and Driver (1992)\textsuperscript{7} proposed that the subjective norms (SN) can predict behavioural intention. SN is a function of beliefs about the expectations of important persons, and his/her motivation of complying with these people. SN is the most important predictive factor of behavioural intention. Bock and Kim (2002)\textsuperscript{8} and Ryu et al (2003)\textsuperscript{14} documented that subjective norms can influence behavioural intention. Kuo et al (2007)\textsuperscript{16} showed that as subjective norm becomes more positive, behavioural intention to participate also becomes more positive. Further, Titah and Barki (2009)\textsuperscript{17} had identified a substitution relationship or negative synergy between intention and subjective norms.

Ajzen and Driver (1992)\textsuperscript{7} and Hrubes et al (2001)\textsuperscript{18} stated that behavioural intention can effectively influence behaviour. Bock and Kim (2002)\textsuperscript{8} employed the TRA to examine knowledge sharing behaviours which showed that behavioural intention directly influences actual behaviour. Willingness is an important predictive factor and behavioural intention is an important factor influencing behaviour (Blue, 1996\textsuperscript{11}; Gopi and Ramayah, 2007\textsuperscript{19}).
3.3 Cognitive factors affecting Trading Behaviour

Cognitive psychology offers useful insights in human decision and the biases that tend to influence the decisions (van Witteloostuijn and Katrin, 2008)\textsuperscript{20}. According to Statman (2002)\textsuperscript{21}, normal investors are affected by cognitive bias and emotions in decision making behaviour. Individuals who are prone to such cognitive bias will take more risk that they do not acknowledge, experience outcomes that they did not anticipate and will be prone to unjustified trading (Kahneman and Riepe, 1998)\textsuperscript{22}. This section discusses the past studies related to cognitive bias which influences the decision making behaviour of individual investors.

3.3.1 Overconfidence

Human beings are overconfident about their abilities, their knowledge and their future prospects. Odean (1998b)\textsuperscript{23} showed that overconfident investors’ trade more frequently than rational investors and doing so reduces their average utilities, since overconfident investors’ trade too aggressively when they receive information about the value of a security. Further, Griffin and Tversky’s (1992)\textsuperscript{24} found that among all categories of individuals, professionals are found to be more overconfident than amateurs.

DeBondt and Thaler (1995)\textsuperscript{1} noted that the high trading volume on organized exchanges is due to overconfidence. Further, according to Kyle and Wang (1997)\textsuperscript{25}, overconfidence may strictly dominate rationality since an overconfident trader may not only generate higher expected profit and utility than his rational opponent but also higher than if he is also rational.
Barber and Odean (1999)\textsuperscript{26} highlighted two common mistakes investors make such as excessive trading and the tendency to disproportionately hold on to losing investments while selling to winners. They argue that these systematic biases have their origins in human psychology. The tendency for human beings to be overconfident causes the first bias in investors and the human desire to avoid regret prompts the second.

Barber and Odean (2001a)\textsuperscript{27} tested the theoretical model that overconfident investors trade excessively by partitioning investors on gender basis. Psychological research demonstrates that, in areas such as finance, men are more overconfident than women. Thus, theory predicts that men will trade more excessively than women. Using account data for over 35,000 households from a large discount brokerage, the researchers analyzed the common stock investments of men and women from February 1991 to January 1997. They documented that men traded 45 percent more than women. Trading reduces men's net returns by 2.65 percentage points a year opposite to 1.72 percentage points for women. Further Gervais and Odean (2001)\textsuperscript{28} argued that less experienced traders will be more overconfident than more experienced traders.

Barber and Odean (2002)\textsuperscript{29} in their study concluded that overconfidence led investors to trade actively and that active trading resulted in subpar performance. They analyzed a sample of 1,607 online investors during the period 1991-1996 and showed that those individual investors, who switched from traditional trading mode (phone or desk trading) to online trading, recorded lower performances compared to other investors with similar characteristics who did not switch to online trading on an average. It is also found that investors who switched to online mode tend to increase their portfolio turnover once they go online and trades appeared to be more speculative.
Statman, Thorley, and Vorkink (2006) used the U.S. market level data to test the hypothesis that overconfidence leads to high trading volume. They argued that after high returns subsequent trading volume will be higher as investment success increases the degree of overconfidence. They found an increase in trading activity after bull markets. This is consistent with the hypothesis that a higher degree of overconfidence lead to higher trading volume as long as high past returns is a proxy for overconfidence.

Biais, Hilton, Mazurier and Pouget (2005) measured the degree of overconfidence in judgement and self-monitoring of 245 participants and also observed their behaviour in an experimental financial market under asymmetric information. Empirical results proved that overconfidence reduced and self-monitoring enhanced trading performance. The effect of the psychological variables is strong for men but non-existent for women.

Bhandari and Deaves (2006) explored the demographics of overconfidence using a survey of about 2,000 defined contribution pension plan members. Noting that overconfidence can be partitioned into certainty and knowledge, the researchers found that highly-educated males who are nearing retirement, who have received investment advice and who have experience investing for themselves, tend to have a higher certainty level. Further, they found that highly-educated males are more subject to overconfidence.

Glaser and Weber (2007) tested the hypothesis that overconfident investors will trade more than rational investors by correlating individual overconfidence scores with several measures of trading volume of individual investors. Approximately 3,000 online broker investors are asked to answer an internet questionnaire which is designed to measure various facets of overconfidence like miscalibration, volatility estimates and better than average effect. The measures of trading volume are calculated by the trades of 215 individual
investors who answered the questionnaire. They found that investors who think that they are above average in terms of investment skills or past performance traded more frequently.

Grinblatt and Keloharju (2009)\textsuperscript{34} analyzed the role that two psychological attributes namely sensation seeking and overconfidence that influence the tendency of investors to trade stocks. Equity trading data from Finland are combined with data from investor tax filings, driving records, and mandatory psychological profiles. The researchers used these data, obtained from a large population to construct measures of overconfidence and sensation seeking tendencies. Controlling for a host of variables, including wealth, income, age, number of stocks owned, marital status, and occupation and they found that overconfident investors and those investors who are most prone to sensation seeking traded more frequently.

A study by Chuang and Susmel (2011)\textsuperscript{35} is a comprehensive investigation of the trading behaviour of institutional investors versus individual investors in Taiwan. The research is an attempt to identify who is the highly overconfident trader. They found that institutional investors do not exhibit a higher overconfident trading behaviour, while individual investors’ overconfident trading behaviour is pronounced. Moreover, they found that individual investors trade more aggressively following market gains in bull markets, when their forecasts turn out right, and when they underestimate risk than institutional investors. Overall, these findings indicate that individual investors turn out to be overconfident traders than institutional investors.

3.3.2 Herd Behaviour

Scharfstein and Stein (1990)\textsuperscript{36} presented a model demonstrating how reputation conscious "dumb" agents might ignore information and simply imitate the behaviour of "smart" managers: a "follow the herd" scenario. Since that time, empirical evidence has
been found to support the idea of herd behaviour. Kirman (1991)\(^3\) found that investors may not necessarily base decisions on their own views about investments but upon what they see as the majority view. The majority being followed are not necessarily well-informed rational investors. The investors who are followed may be uninformed and subject to psychological biases that render their behaviour irrational. Rational investors may even focus on predicting the behaviour of irrational investors rather than trying to ascertain the fundamental value.

Froot, Scharfstein, and Stein (1992)\(^3\) have shown that if speculators have short horizons, they may herd on the same information, trying to learn what other informed traders also know. This is in contrast to the standard models of informed speculation which suggest that traders try to learn information that others do not have.

Hirshleifer, Subrahmanyam, and Titman (1994)\(^3\) analyzed the trading behaviour and equilibrium information acquisition when some investors receive common private information before others. The model implied that, under some conditions, investors will focus only on a subset of securities ("herding"), while neglecting other securities with identical exogenous characteristics. In addition, the model is consistent with empirical correlations that are suggestive of often-cited trading strategies such as profit taking (short-term position reversal) and following the leader (mimicking earlier trades).

Nofsinger and Sias (1999)\(^4\) documented strong positive correlation between changes in institutional ownership and returns measured over the same period. The results suggested that either institutional investors traded more than individual investors or institutional herding impacts price more than herding by individual investors. Welch (2000)\(^4\) investigated herding among investment analysts. Herding is seen as occurring when analysts appeared
to mimic the recommendations of other analysts. It is found that there is herding towards the prevailing consensus, and towards recent revisions of the forecasts of other analysts.

Prechter (2001)\textsuperscript{42} has claimed that human herding behaviour results from impulsive mental activity in individuals responding to signals from the behaviour of others. Experiments with a small number of naive individuals as well as statistics reflecting the behaviour of large groups of financial professionals provided evidence of herding behaviour. Herding behaviour, which is appropriate in some primitive life-threatening situations, is inappropriate and counterproductive to success in financial situations. Further, Hwang and Salmon (2006)\textsuperscript{43} investigated in the US, UK, and South Korea and found that herding increases with market sentiment. They also found that herding occurs to a greater extent when investor expectations are relatively homogeneous.

Walter and Weber (2006)\textsuperscript{44} distinguished between intentional and unintentional herding. Intentional herding is seen as arising from attempts to copy others. Unintentional herding emerges as a result of investors analysing the same information in the same way. Intentional herding could develop as a consequence of poor availability of information. Investors might copy the behaviour of others believing that others have traded on the basis of information.

3.3.3 Self Attribution

Kent et al (1998)\textsuperscript{45} developed a model of investor behaviour that takes account of overconfidence and biased self-attribution. They modelled these psychological mechanisms by assuming that investors tend to overestimate their amount of private information and their ability to interpret this information. Besides overconfidence, biased self-attribution is also considered in the model, because investor interprets public information asymmetrically.
Further, Gervais and Odean (2001) found that self attribution bias will cause successful investor to grow increasingly overconfident about their general trading process. Also, according to Kent et al (1998), investors who have experienced the greatest past success in trading will trade the most in the future.

Gervais and Odean (2001) analyzed the link between past returns and trading volume formally. They found that learning process of traders is affected by biased self-attribution. The investors in the model attributed past success to their own abilities which made them overconfident. Accordingly, the degree of overconfidence changed dynamically over time. They further predicted that overconfidence is higher after market gains and lower after market losses.

Barber and Odean (2002) examined the changes in the stock trading behaviour and investment performance of 1,607 investors who switched from phone based to online trading during the period 1991 to 1996. The researchers compared the performance and trading with that of 1607 investors who do not trade online. It is found that after going online, investors traded more actively, more speculatively and less profitably than before. The increase in trading and reduction in performance of online investors is explained by overconfidence augmented by self-attribution bias, the illusion of knowledge, and the illusion of control. They proposed that investors with unusually good returns are likely to have much credit for their success and grown more overconfident about their stock picking abilities.

Glaser and Weber (2007) studied 3,000 individual investors over a 51 month period to test the prediction that past stock returns affect subsequent stock trading volume. They found that both past market returns as well as past portfolio returns affect
trading activity of individual investors. After high portfolio returns, investors buy high risk stocks and reduce the number of stocks in their portfolio. They argued that overconfidence theories based on biased self-attribute and differences of opinion explains for high levels of trading activity. Further, Beyer (1990)\textsuperscript{46} found that self-attribute bias will be stronger for male traders than for female ones.

3.3.4 Illusion of Control

Friedland, Keinan, and Regev (1992)\textsuperscript{47} found that competitive and stressful environments can produce illusion of control. Taylor and Armor (1996)\textsuperscript{48} proposed that the degree of illusion of control can be affected by the individual’s environment. Presson and Benassi (1996)\textsuperscript{49} identified that a number of attributes fosters the illusion of control. One of these is the outcome sequence. Positive outcomes give a person more illusion of control than negative outcomes. This is akin to the tendency for some people to become addicted to gambling if their first few bets are successful. In a rising stock market people investing for the first time will experience gains. This is likely to engender the illusion of control, overconfidence, and the inclination to invest more.

DeBondt (1998)\textsuperscript{50} suggested that one manifestation of the illusion of control is the belief of many investors that they would be able to sell before a large fall in prices. This belief that they would be able to avoid losses by selling in time causes such investors to underestimate the risks of their investments. Barber and Odean (2002)\textsuperscript{29} have concluded that the illusion of control and the illusion of knowledge increased overconfidence of online investors and overconfidence made investors to trade actively. Further Fenton-O’Creevy et al (2005)\textsuperscript{51} found that traders in financial markets are subject to the illusion of control. They also found that the illusion of control is associated with poorer performance.
3.3.5 Anchoring

Tversky and Karneman (1974)\textsuperscript{52} found that investors set an initial value for future prices. They found that even when persons subject to test knew that the anchor is totally random and unrelated to the actual question, it still had a dramatic effect on the decisions of these persons. They further suggested that the overconfidence results from forecasters anchoring too much on their most likely prediction.

Shiller (1999)\textsuperscript{53} argued that “if we connect the phenomenon of overconfidence with the phenomenon of anchoring, we see the origins of differences of opinion among investors, and some of the source of the high volume of trade among investors. Apparently, many investors do feel that they do have speculative reasons to trade often, and this must have to do with some tendency for each individual to have beliefs that he or she perceives as better than others’ beliefs. It is as if most people think they are above average”. Further, Mussweiler and Strack (1999)\textsuperscript{54} found that the existence of an anchor leads people to consider information that is consistent with the anchor instead of considering information that is inconsistent with the anchor. This happens even though the inconsistent information may be more relevant for the decision-making situation. This kind of behaviour where people try to look for information that is consistent with the anchor, takes place when the anchor is set externally instead of developing it by the decision maker himself.

Epley and Gilovich (2001)\textsuperscript{55} found that people develop estimates by starting from an anchor, and adjusting from it to yield a final answer. However, people do not adjust their answer enough to be away from the initial anchor. This happens when the anchor is developed by the decision maker himself. Ritter (2003)\textsuperscript{56} found evidence of stock investors’ estimating the future performance of stock market based on the performance of
the market during the last 100 days. Further, Kaustia (2003)\textsuperscript{57} found evidence of investors considering the break-even price of a stock after direct and indirect fees as the reference point. However, there may be situations where the reference point is set based on the expected return or the return hoped for.

Bazerman (2006)\textsuperscript{58} considered yearly salary increases that are based on some growth percentage as a good example of the anchoring effect. The anchor here is the last year’s salary. So, even though all the employees are treated fairly by giving everyone an increase of 5% it does not mean that the relative levels of salaries are fair. The level of the new salary depends on last year’s salary.

3.3.6 Availability Heuristics

Tversky and Kahneman (1973)\textsuperscript{59} carried out a series of psychological experiments and established that people indeed treat instances that are more easily recalled or scenarios that are easier to imagine as being more likely to occur. Further, Tversky and Kahneman (1973)\textsuperscript{59} described three heuristics that are employed when making judgments under uncertainty: Representativeness, Availability and Anchoring and adjustment. They further provide examples of availability which may provide practical clues for assessing frequencies and probabilities. They find that familiarity of an object, defined as having personal acquaintance of it, as well as its salience, defined as a state when the features of the object are highlighted; both affect the easiness of recalling the instances related to the object. Furthermore, they argue that "recent occurrences are likely to be relatively more available than earlier experiences" and thus, concluded that people assess probabilities by overweighting current information as opposed to processing all relevant information.
Kahneman, Slovic and Tversky (1982)\textsuperscript{60} found that subjects using the availability heuristics assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind. People also become victims of presumed association, which means that they tend to assess wrongly the likelihood of two events occurring together. Overall, when the event is fresh in memory it seems like it is more probable to take place than some other event, even if this is not true. Kahneman and Tversky (1983)\textsuperscript{61} tested this heuristic by asking people to recall English words that end with “ing” and words that have the letter “n” as the second last in a word. When people are asked to estimate which kind of words are more common they would say that the ones that end with “ing”. However, there are of course a lot more of those words that have “n” as the second last because all the “ing” words are also included in this group. The point is that those ones with just the “n” are a lot harder to bring to mind. Also, investors are more certain that a downward trend can take place in the market if they have experienced it by themselves before. This may appear as pessimistic expectations about future returns and risk averse behaviour. That is why older people who have seen several ups and downs in the market may display more risk aversion than younger investors.

Kent et al (2002)\textsuperscript{62} concluded that investors and analysts are on average too credulous, that is, when examining an informative event or a value indicator, they do not discount adequately for the incentives of others to manipulate this signal. Credulity may be explained by limited attention and the fact that availability of a stimulus causes it to be weighed more heavily. Further, Frieder (2003)\textsuperscript{63} reported that stock traders seek to buy after large positive earnings surprises and sell after large negative earnings surprises, and
explains this tendency by the availability heuristic, assuming that the salience of an earnings surprise increases in its magnitude.

Chiodo et al (2003)\textsuperscript{64} constructed a model of belief formation based on the assumption that it is easier for people to recall information which had recently arrived, and respectively, investors overreact to new information. They analyzed some economic phenomena and found that stocks with very high levels of press coverage underperform in the subsequent two years. This is because market analysts are found to be influenced by availability heuristics.

Lee et al (2005)\textsuperscript{65} discussed the "recency bias", which is the tendency of people to make judgments about the likelihood of events based on their recent experience. They found that analyst ‘forecasts of firms’ long-term growth in earnings per share tend to be relatively optimistic when the economy is expanding and relatively pessimistic when the economy is contracting. The finding is consistent with the availability heuristic, indicating that forecasters overweigh current state of the economy in making long-term growth predictions. Also, Barber and Odean (2007)\textsuperscript{66} stated that when choosing stocks to buy, investors tend to consider only those stocks that have recently caught their attention and based on their heuristics.

3.3.7 Disposition Effect

Odean (1998b)\textsuperscript{23} studied the trades of 10000 trading accounts from a nationwide discount brokerage from 1987 to 1993. At each sell trade, the amount of paper gains and losses in the investor portfolio is computed. If the stock sale is of a winner or loser, the proportion of the total gains or losses that the investor realized is calculated. Odean found that when investor sells ‘winners’, the sale represents 23% of the total gains of the
investors’ portfolio. Alternatively, a loser being sold represented only 15.5% of the unrealized losses in the portfolio. On an average, investors are 50% more likely to sell a winner than a loser. The researcher also found that investors sell winners too soon and hold losers too long.

Weber and Camerer (1998)\textsuperscript{67} designed experiments to see if subjects would exhibit disposition effects. Subjects bought and sold shares in six risky assets. Asset prices fluctuated in each period. They found that subjects sold winners and kept losing stocks. Further, Feng and Seasholes (2005)\textsuperscript{68} provided an in depth analysis of an investor’s reluctance to realize losses and his propensity to realize gains. They found that sophistication and trading experiences eliminated the reluctance to realize losses but failed to eliminate the disposition behaviour.

Barber and Odean (2000)\textsuperscript{5} highlighted two common mistakes that investors make which are excessive trading and the tendency to disproportionately hold on to losing investments while selling winners. They argued that these systematic biases have their origins in human psychology. The tendency of human beings to be overconfident causes the first bias in investors and the human desire to avoid regret prompts the second. Further, Odean (1999)\textsuperscript{69} studied 1,63,000 individual accounts at a brokerage firm. For each trading day during a period of one year, Odean counted the fraction of winning stocks that are sold, and compared it to the fraction of losing stocks that are sold. He found that investors sold their winning stock 1.7 times more frequently than their losing stocks. In other words, winners had a 70 percent higher chance of being sold.

Grinblatt and Keloharju (2001)\textsuperscript{70} studied 293,034 sell trades in the Finnish stock market to find whether the position is traded either in profits or in losses. They found that
individual investors sell a stock if it experiences an increase in price than a decrease in price. They also found that if a stock outperforms the market by 10%, the investors’ likelihood of selling the stocks increases by 26%. On the other hand, an underperformance of 10% decreases the likelihood of selling the stock by 14%. Hence, they concluded that investors do not like selling losers, only winners.

Shapira and Venezia (2001)\textsuperscript{71} found that individual investors are more affected by the disposition effect than institutional investors. Further, Dhar and Zhu (2006)\textsuperscript{72} found that wealthier, more experienced, and professional investors exhibit a smaller disposition effect.

Chen, Kim, Nofsinger and Rui (2007)\textsuperscript{73} found that chinese investors make poor trading decisions: the stocks they purchase underperform those they sell. They also found that Chinese investors suffer from three behavioural biases: (i) they tend to sell stocks that have appreciated in price, but not those that have depreciated in price, consistent with a disposition effect, acknowledging gains but not losses (ii) they seem overconfident and (iii) they appear to believe that past returns are indicative of future returns (a representativeness bias). In comparison to prior findings, Chinese investors seem more overconfident than U.S. investors and their disposition effect appears stronger.

3.3.8 Conservatism

Edwards (1968)\textsuperscript{74} documented that people do not consider new sample data sufficiently and are too conservative. The treatment of the latest available information is based on an anchoring and adjustment process that takes the weight of evidence into account, though it is insufficient. Also, Griffin and Tversky (1992)\textsuperscript{24} found that people focus too much on the strength of information and too little on its statistical weightage.
Barberis et al (1998)\textsuperscript{75} modelled investor sentiment in a setting in which investors’ at times overweighed new information relative to priors (representativeness) and at times underweighed new information (conservativeness). They found that positive relation exists between morning profits and afternoon risk-taking thereby confirming conservativeness bias. They found that investors displayed conservatism and under react to information that had a high weight when adjusting their beliefs.

According to Hirshliefer (2001)\textsuperscript{76}, the phenomenon of conservatism dictates that under appropriate circumstances, individuals do not change their beliefs as much as would a rational Bayesian in the face of new evidence. Too much emphasis on the initial probability estimates or anchoring is one cause of this conservatism.

3.3.9 Mental Accounting

Thaler (1999)\textsuperscript{77} documented that mental accounting influenced the choice of individuals. Further, Barberis and Huang (2001)\textsuperscript{78} showed that mental accounting can contribute to or magnify other psychological biases, such as disposition effect. Rabin and Thaler (2001)\textsuperscript{79} found that mental accounting affects the investors’ attitude towards risk. Investors observed the return and risk involved with the different parts of their wealth as separate matters, independent of each other. Thus, high correlations between different assets are left out of notice.

Ritter (2003)\textsuperscript{56} studied mental accounting and found that people tend to separate their decision-making when they should combine the different aspects in order to maximize their utility. According to the traditional expected utility theory people maximize their wealth and utility as a whole. However, in their everyday life, people and investors liked to separate their money according to what it is spent on and where it has
come from. For example, people might save money by buying cheap food and avoiding higher quality ingredients at a grocery store but then spend much more on the same ingredients while eating at a restaurant.

3.3.10 Familiarity Bias

French and Poterba (1991)\textsuperscript{80} have documented that investors buy a disproportionate amount of securities from their country, despite the well-documented gains from international diversification, called home bias. Investors have home bias because companies from their country or region are more familiar to them than foreign companies. Coval and Moskowitz (1999)\textsuperscript{81} showed that the preference for investing close to home also applies to portfolio of domestic stocks. Huberman (2001)\textsuperscript{82} provided evidence that people have a propensity to invest in the familiar stocks, while often ignoring the principles of portfolio theory.

Benartzi (2001)\textsuperscript{83} studied the allocation choices of 2.57 million participants in a study of 401 (k) plans at 154 firms in the S&P 500 index. They found that 32\% of assets are invested in their companies stock thus confirming familiarity bias. Massa and Simonov (2005)\textsuperscript{84} investigated the way investors react to the familiarity bias. The researchers attempted to distinguish between behavioural and rational hypotheses like pure familiarity and information based familiarity. It is found that information based familiarity existed among investors.

3.3.11 Excess Sensitivity to Rumours

Pound and Zeckhauser (1990)\textsuperscript{85} examined the effects of takeover rumours on stock prices using a sample of rumours published in the Wall Street Journal's "Heard on the Street" column. They found that the market reacts efficiently to rumours. They also
found that most takeover rumours are preceded by unusual price and volume activity in the
stock that is subject to rumours. Further, He and Wang (1995)\textsuperscript{86} showed that uncertainty
brought out by rumours enhanced trading volume under certain conditions.

In a study conducted by DiFonzo and Bordia (1997)\textsuperscript{87}, subjects claimed that
rumour source are non-credible and that they are not influenced by rumours in trading
decisions; nevertheless they traded on rumours as they are on news. Brunnermeier (2001)\textsuperscript{88}
showed that a trader who received a leaked signal prior to a public announcement exploited
this private information and traded aggressively. Further, Tumarkin and Whitelaw (2001)\textsuperscript{89}
documented a significant relationship between internet message board activities and
trading volume.

Kosfeld (2005)\textsuperscript{90} presented a simple model to study the effects of rumours on
markets. The results showed that if the rumour dies out, long-run equilibrium prices
 correspond to pre-rumour values. However, if the rumour stayed, it produced a price run-up
for the good that is positively targeted by the rumour. According to Das and Chen (2007)\textsuperscript{91},
individual investors paid more attention to pre-news and rumours than institutional investors.

\textbf{3.3.12 Over Optimism}

Langer and Roth (1975)\textsuperscript{92} found that people are unrealistically optimistic about pure
chance events. Also, Camerer and Lovallo (1999)\textsuperscript{93} found experimentally that overconfidence
and optimism lead to excessive business entry. DeBondt and Thaler (1985)\textsuperscript{1} documented that
excessive optimism lead investors to overestimate expected returns. Further, according to
Kunda (1987)\textsuperscript{94}, people are also unrealistically optimistic about future events. They expect
good things to happen to them more often than to their peers.
3.4 Social factors affecting Trading Behaviour

To date, most of the behavioural finance research on investor decision making has focused on psychology of investors. Yet, many factors like social interactions, information on mass media also directly affect individual investors’ decision making. Individual investors discuss with and are affected by their family members, neighbours and friends, as far as their investment decisions are concerned (Nofsinger, 2005). Hence, factors like media, internet and social interactions have been considered and their related literature is discussed in this section.

3.4.1 Media

Nofsinger (2002a) documented that media influences individuals towards storytelling and keep them away from formal investment analysis. Also, Shiller (2000) had documented that the media had a tendency to keep investors focused on specific stories for long periods of time called as an ‘attention cascade’. In some cases, the attention cascade had contributed to speculative bubbles in stock markets. Davis (2006) confirmed the role of the media in the development of extreme market movements. The media are found to magnify market responses to news. At times of market crisis, the media had pushed trading activity to extremes. The media had triggered and reinforced opinions.

Barber and Odean (2008) tested and confirmed the hypothesis that individual investors are net buyers of attention-grabbing stocks like stocks in the news, stocks experiencing high abnormal trading volume and stocks with extreme one day returns. Attention-based buying resulted from the difficulty that investors faced when searching the thousands of stocks they could potentially buy. Individual investors had not faced the
same search problem when selling, because they sold only a small subset of all stocks that they already owned. Stocks bought by individual investors on high-attention days under performed stocks sold by those investors.

### 3.4.2 Social Interactions

Shiller and Pound (1989)\textsuperscript{100} surveyed 156 high-income investors and found that in more than half of the cases, investor interest in a stock resulted from another person mentioning the stock. Also, for buying the stocks, the investor had spoken to, on an average, to 20 other potential investors about the company. Ellison and Fudenberg (1995)\textsuperscript{101} illustrated the importance of talking as a way to obtain information and detected the emotional reactions of others, which helped to form opinions.

Hong, Kubik and Stein (2004)\textsuperscript{102} examined the proposition that more socially active households have higher participation in the stock market. They used responses from a survey of 7,500 households in Health and Retirement study of households. A social household is characterized as one in which its members interact with neighbours or attended church. After controlling other factors such as wealth, race, and education, the researchers found that social households are 4% more likely to invest in the stock market than non-social households. Those social households with greater wealth and education levels are 8% more likely to invest and other things being equal. Social households that live in high participation areas are 9% more likely to invest in the stock market if they are socially active.

Duflo and Saez (2002)\textsuperscript{103} illustrated how dramatic the peer effect can be on 401(k) participation. They considered the participation rate of 436 university librarians who worked in 11 different building throughout the campus. They found a large difference in
participation rates among the different buildings. In one building, 73% of the librarians participated while only 14% participated in a different building. Because librarians are such a homogeneous group, the large variation in participation rates is striking. One explanation for the large differences is the social norms of each building. The degree to which a peer group’s social norms affect a particular person depends on the person’s characteristics.

Hong, Kurbik, and Stein (2004)\textsuperscript{102} proposed that social interaction may partly induce stock market participation and trading. Their model predicted that any given ‘social’ investor found the market more attractive when more of his peers participated. Using the Health and Retirement Study data, they provided strong support for their prediction and those households who had more social interaction with the community participated more in the stock trading. Shive (2010)\textsuperscript{104} examined whether social influence affects individual investors' trading and stock returns. The researcher found significant social effects on individual investor trading using data on all individual investor trades in the twenty most frequently-traded Finnish stocks between 1995 and 2003. The effects of social trading are economically significant. Socially motivated traders predicted stock returns and the effects are not reversed, suggesting that individuals share useful information. Individuals themselves over time have become less susceptible overtime to social influence but they are more subject to it and thus, the number of trades caused by social influence increased slightly over the sample period.

3.4.3 Internet

Barber and Odean (2001b)\textsuperscript{105} had documented that technological developments associated with the Internet had affected investors and financial markets. Lower costs and more alternatives clearly benefited investors. However, the researchers have shown that
investors by placing trades directly felt exaggerated sense of control over the outcome of their trades. Furthermore, investors had invested more in e-commerce companies thereby taking more risk. Also, Barber and Odean (2002)\textsuperscript{29} examined the changes in the stock trading behaviour and investment performance of 1,607 investors who switched from traditional phone based mode to online trading during the period 1991 to 1996. The researchers compared the performance and trading with that of 1607 investors who did not trade online. It is found that after going online, investors traded more actively, more speculatively, and less profitably than before.

Singh, Sandhu, Kundu (2010)\textsuperscript{106} conducted a study to examine whether investors who adopted Internet stock trading perceived differently from those of non-adopters. Results indicated that demographic variables contributed significantly in classifying investors as adopters or non-adopters of Internet trading. It is found that the mature, older, experienced, and businessmen investors are less likely to use Internet stock trading as compared to young, inexperienced, and non-businessmen investors.

3.5 Personality factors affecting Trading Behaviour

The most related definition of personality is that it is a relatively stable set of characteristics that influence an individual’s behaviour (Nelson and Quick, 2010)\textsuperscript{107}. According to Americks, Wranik and Salovey, (2009)\textsuperscript{108}, no single personality trait can be used to predict investor behaviour; instead a group of personality traits can influence investor behaviour. The trader personality has more influence on investors’ attitudinal and behavioural responses (Cacioppo, Gardner and Berntson, 1997\textsuperscript{109}; Rozin and Royzman, 2001\textsuperscript{110}). This section presents the previous studies related to the select personality factors used in the study.
3.5.1 Self Esteem

Branden (1969)\textsuperscript{111} has documented that self esteem is a basic human need that reflects an individual’s assessment of his or her own worth or competence. According to Janis (1954)\textsuperscript{112}, people with low self-esteem are persuaded more easily than people with high self-esteem.

3.5.2 Emotional Experience

Lo and Repin (2002)\textsuperscript{113} demonstrated a clear link between emotion and trading behaviour using psycho physiological measurements like skin conductance, breathing rate, heart rate, blood volume pulse, and body temperature for 10 professional traders during live trading sessions. They found strong association between emotions and trading behaviour of sample investors. Steenbarger (2002)\textsuperscript{114} presented evidence that emotions affected trading performance by using a series of case studies. Also, Lo, Repin, Steenbarger (2005)\textsuperscript{115} found that extreme emotional responses are counterproductive from the perspective of trading performance.

3.5.3 Ambitious

Fisher and Statman (1997)\textsuperscript{116} found that investors with the most information set ambitious goals and ultimately take more risk than other investors. Also, Shefrin and Statman (2000)\textsuperscript{117} found that ambitious investors take on high risk. Barber and Odean (2001a)\textsuperscript{27} documented that investors whose objective is to speculate had high ambition levels, high risk profiles, high turnover, and judged themselves to be very confident. They found that such overconfident investors overtraded and consequently, underperformed.
Statman (2002)\textsuperscript{21} showed that investors who perceived investing as playing the lottery had high aspiration levels and are subject to overconfidence. DeGiorgi (2009)\textsuperscript{118} showed that high incentives to reach ambitious short term goals like high target returns and the consequent excessive leverage are the causes for the global financial crisis erupted in 2008. Hoffmann and Shefrin (2010)\textsuperscript{119} found that investors with higher ambition levels and investors who held concentrated portfolios traded more.

3.5.4 Self-Efficacy

Bandura (1997)\textsuperscript{120} showed that higher personal self-efficacy is built upon past success and also found that higher self-efficacy led investors to have an irrational escalation of commitment. Fenton-O'Creevy (2003)\textsuperscript{121} documented that self-efficacy had influential effects in the context of investing. Looney et al (2004)\textsuperscript{122} found that more efficacious investors preferred web-based technologies for investing and trading, whereas less efficacious individuals favoured the traditional method of trading. Forbes and Kara (2010)\textsuperscript{123} surveyed potential sources like knowledge, and confidence of investing self-efficacy in a large sample of working adults and found that applied investment knowledge is low.

3.5.5 Stress Management

In review of research by Staal (2004)\textsuperscript{124} conducted for NASA, the researcher documented a variety of ways by which stress can affect human performance. The author found that stress interferes with attention, memory, decision making, and perceptual motor performance. Lo and Repin (2002)\textsuperscript{113} found that experienced traders are less likely to experience the physiological effects of stress in response to market events than novice
traders. It can be reasonably interpreted that through repeated experience, traders learned to psychologically normalize the stresses associated with the risks, rewards, and uncertainties of financial markets.

3.5.6 Internal Orientation

McInish (1982)\textsuperscript{125} studied the relationship between investors’ locus of control and risk-taking behaviour and found that there is a strong association between locus of control and risk taking behaviour of individual investors. Cox and Cooper (1989)\textsuperscript{126} found that individuals possessing an internal locus of control are more self-confident and more in charge of the situation. Stinerock, Stern and Solomon (1991)\textsuperscript{127} found that men felt more in control of their finances than women. Women sought the help the professional advisors than men. Chui (2001)\textsuperscript{128} found that locus of control did not have any direct impact on trading volume of investors.

3.5.7 Active Involvement

Benveniste and Spindt (1989)\textsuperscript{129} found that informed investors are most active in the stock market than uninformed investors. According to Odean (1998a)\textsuperscript{130}, overconfident individual investors traded more actively and more speculatively and contributed to increased market volatility. Barber and Odean (2002)\textsuperscript{29} found that after going online, investors traded both actively and more speculatively.

Barber and Odean (2001a)\textsuperscript{27} showed that investors who traded more actively earned lower returns. They showed that the most active trader lost 3.9 per cent of his annual household income by trading excessively. Romano (2002)\textsuperscript{131} documented the increased activism in investors trading behaviour. This might be due to technological advancements like online trading and mobile trading.
3.6 Demographic factors affecting Risk Tolerance and Trading Behaviour

It has been amply documented that risk is a factor that shapes individuals’ decisions, including financial and investment decisions (Lipe, 1998; Yang and Qiu, 2005). Keller and Siegrist (2006) found that one's financial risk attitude has a positive influence on willingness to accept investment risk and invest in stocks in one's portfolio.

Individuals differ in characteristics due to demographic factors such as socio-economic background, education level, age, gender, marital status, and alike. Also every investor has his own investment objectives, risk tolerance levels, and other constraints in decision making process. Hence, it becomes imperative to study the various demographic characteristics that affect the risk tolerance levels and investment decision of investors.

3.6.1 Gender

A person’s gender is one of the most researched factor to determine the risk attitude and trading behaviour of individual investors (Bajtelsmit and Bernasek, 1996; Lewellen et al, 1977). Barber and Odean (2001a) studied the difference in investment behaviour between men and women by analyzing the behaviour of more than 35,000 investors and found that, on average, men trade 1.5 times more frequently than women. They proposed that investors who tend to trade excessively take more risk and make poor investment decisions. Further, Hallahan, Faff, and McKenzie (2003) and Frijns, Koellen, and Lehnert (2008) found that males seem to be overconfident and undertake riskier behaviour than females.

Hallahan et al (2004) concluded that among a group of explanatory variables such as age, gender, marital status, education, income and wealth, gender has the most prediction power on risk tolerance. Further, in a study conducted by Pompian and Longo...
women are found to be 33% more risk averse than men. Also, it is found that men look at portfolios more often than women do; Men are more likely to cut losses immediately, while women are more likely to buy and hold.

Female investors are more risk averse than their male counterparts which is demonstrated by their more conservative investment behaviour. This claim is evidenced by a smaller number of market enquiries, lower trading volume and lower frequency of transactions attributable to females (Fellner and Maciejovsky, 2007). According to Haarala (2008), in Finland men have been found to be more willing to take risk with their invested assets than women.

Prince (1993) showed that overconfidence leads men to take more risk in financial matters. Lundberg et al (1994) further documented that overconfidence has been found to be more common among men. Flynn et al (1994) found that socio-political factors such as power and status favour men, resulting in their willingness to undertake higher risk.

There is also contradictory evidence. Johnson and Powell (1994) and Schubert et al (1999) found that in specific circumstances, women appear as risk loving as men or even more loving. Also Charness and Gneezy (2004) showed that males and females are equally successful in making decisions under condition of risk. Schubert (2006) further showed that women appear less sensitive to probabilities and more pessimistic about gains than men. Ronay and Kim (2006) have pointed out that there is no difference in risk attitude between individuals of different gender. Most recently, Feng and Seasholes (2007) use data from a brokerage firm to show that Chinese men and women show similar investment behaviour.
3.6.2 Age

The evidence from most research papers on age and risk tolerance suggest that older people are on average more risk averse than younger people (Lewellen et al., 1977\textsuperscript{136}, McInish, 1982\textsuperscript{125}). Further, Donkers et al. (2001)\textsuperscript{152} studied risk aversion in a large survey with Dutch households and found that age affects negatively the willingness to take risk. Dohmen et al. (2005)\textsuperscript{153} studied the relation of age and willingness to take risk with a German sample group. They also found evidence for risk aversion increasing with age. However, the effect is stronger in sports and leisure than in financial matters.

Riley and Chow (1992)\textsuperscript{154} suggest that risk aversion decreases with age until 65 years is reached and starts decreasing again after that. Hallahan et al. (2004)\textsuperscript{139} also find support for the non-linear relationship between age and risk tolerance by adding age squared as an independent variable into their regressions. Very recent studies about Finnish investors’ risk tolerance also support the view that risk aversion increases with age. This finding has been made by Haarala (2008)\textsuperscript{142} in her study with 10000 Finnish investors and Alanko (2009)\textsuperscript{155} in his very extensive study including risk profiles and true asset allocations of over 85063 Finnish bank customers. Kaustia (2003)\textsuperscript{57} also found evidence for negative correlation between age and willingness to take risk in their Finnish sample.

According to Bodie and Crane (1999)\textsuperscript{156} and Strong and Taylor (2001)\textsuperscript{157}, people rebalance their portfolio in favour of fixed income securities as they get older. The logic is that as people age they are more risk averse and hence prefer to invest in less risky assets. Young investors, unlike older investors, can adjust their current consumption downward and use some leisure time to compensate for losses in portfolios which is not possible by aged people.
There are also some contrary evidences. Yoo (1994)\textsuperscript{158} and Heaton and Lucas (2000a)\textsuperscript{159} report a positive relation between investors age and percentage of equities in portfolios which means aged people take more risk. Summers et al (2006)\textsuperscript{160} found that investors become more risk seeking with age. Poterba (2001)\textsuperscript{161}, Poterba and Samwick (2001)\textsuperscript{162} and Feng and Seasholes (2007)\textsuperscript{151} found no significant relationship between investor’s age and the percentage of equities in investor’s portfolio.

3.6.3 Education

Investor’s educational level as a measure of individual earning power is considered as one of the determinants of trading behaviour. This variable should thus be expected to be highly correlated with investors’ income. Schooley and Worden (1996)\textsuperscript{163} reported that American investors with high-school diplomas tend to hold portfolios heavily biased towards fixed-income securities, which are seen as less risky than equities. Dorn and Huberman (2005)\textsuperscript{164} reported that wealthier investors and those with a college degree turn over their portfolio less frequently.

Christiansen et al. (2006)\textsuperscript{165} found that investors with a higher education invest a larger fraction of asset in stocks and bonds. These findings lend further support to proposition made in several studies, which state that ‘the level of education is also of importance for whether or not an investor participates in the bond and stock market. Moreover, well-educated individuals are more likely to be financial investors’ (Mankiw and Zeldes, 1991\textsuperscript{166}, Haliassos and Bertaut, 1997\textsuperscript{167}, Guiso et al., 2003\textsuperscript{168}).

Graham et al (2009)\textsuperscript{169} found that investors with higher income or more education are more likely to perceive themselves as knowledgeable investors than investors with lower income or less education.
3.6.4 Income and Wealth

Income and wealth is another important factor determining the investment behaviour of individual investors. According to Friedman (1974)\textsuperscript{170} and Cohn et al (1975)\textsuperscript{171}, wealth and income are expected to correlate positively with individuals’ risk taking. A study by Riley and Chow (1992)\textsuperscript{154} with American households found that an increase in income and wealth decreases the average risk aversion of households. Grable and Lytton (1999)\textsuperscript{172} also found that wealth is one determinant of investors’ risk attitude. Their results show that there is a positive correlation between risk seeking and wealth.

Vissing-Jorgensen (2003)\textsuperscript{173} analyzed the 1998 and the 2001 Survey of Consumer Finances and found that wealthier investors make much more trades than less wealthy investors. Recently, Dorn and Huberman (2005)\textsuperscript{164} analyzed a sample of online broker investors and found that wealthier investors place more trades but turn over their portfolio less frequently.

In contradiction, Schooley and Worden (1996)\textsuperscript{163} conducted a study among American families and reported that wealthy people are more conservative with their money, whereas people with low levels of personal wealth are willing to take more risk.

3.6.5 Other factors

There are other factors like marital status (Lazzarone, 1996\textsuperscript{174}), Occupation (Roszkowski et al, 1993\textsuperscript{175}) and experience which have an influence on the trading behaviour of individual investors. Barber and Odean (2001a)\textsuperscript{27} found that investors are more likely to be overconfident when they are less experienced as they learn about their true ability through experience. This implies that overconfidence would decrease with
experience which would further reflect in their trading. Dhar and Zhu (2006)\textsuperscript{72} showed that psychological biases of investors indeed decrease with trading experience due to the learning effect.

3.7 Research Gap

Research on investor behaviour has gained momentum only in the past decade and half. A review of the past studies suggests that the influence of various factors on individual investors trading behaviour has been reasonably established, but there is a lot of scope for further research into unexplored areas.

Firstly, most of the earlier research works have been done in the laboratory settings to capture the behaviour of investors. These methods could have their own shortcomings since evaluations may have been done in a restricted environment. Databases may give information regarding numbers but may not reflect the actual psychological process that an investor undergoes in making investment decisions.

Secondly, earlier studies have been conducted with personality, social and cognitive factors in isolation. But, in general, an investor is simultaneously influenced by all the three factors amidst others. Hence, an attempt has to be made to study the overall factors that influence investors’ trading behaviour.

Thirdly, past studies have taken only less number of factors at a time into consideration. This again may not capture the broader perception and mindset of investors.

Fourthly, most of the studies on trading behaviour have been conducted in the developed markets like the American capital market and few studies have been carried out in other countries. But, such a study of investors in the Indian context is found to be minimal.
Lastly, previous research studies have not studied the trading behaviour based on the frequency of trading.

Therefore, the present study addresses the gaps identified by the review of existing research studies.

3.8 Conceptual framework of the study

Based on the theoretical and empirical reviews done and the gaps identified, the conceptual framework of the study, its objectives and methodology are set forth as in Figure 3.1. This framework summarises the scope of the study.

Trading behaviour is explained by using TPA and TPB which considers attitude, perceived behavioural control, subjective norms, and intention as antecedents to behaviour. Further, personality, social, cognitive, demographic, and risk tolerance factors are considered to be the antecedents of the dependent variable namely attitude towards trading.
Personality factors comprises of self-esteem, emotional experience, ambitious, self-efficacy, internal orientation, stress management, and active involvement. Media, social interactions, and internet constitute the social factors whereas cognitive factors comprises of over-confidence, herd behaviour, self attribution, excess sensitivity to rumours, over optimism, familiarity bias, conservatism, availability heuristics, illusion of control, disposition effect, mental accounting, and anchoring.

The study incorporates all these factors in the questionnaire used to collect the data from the respondents. The next chapter provides the methodology to be adopted in the study.
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