Behavioural Factors Influence on Investment Performance: A Survey of Individual Investors at Colombo Stock Exchange

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In finance, it is assumed that the individual investors are rational, but in reality empirical studies show that their judgments and decision making lead towards irrational decision making causing market inefficiency. Thus, this study aims at examining whether some behavioural and contextual factors influence on irrational behavior of individual investors decisions in the Colombo Stock Exchange (CSE). The results show that the individual investors in the CSE are influenced by four behavioral biases: Herding, Heuristics, Prospect, Market and the contextual factors in which each dimension includes certain behavioural variables. The multivariate analysis demonstrates that among all the five underlying biases; Heuristics, Prospect, Market and Herding and Contextual, only four factors are found to be influenced on investment performance. The herding, heuristics and contextual factors have to be influenced positively on individual investors’ performance. Although the prospect variables (two sub groups; regret aversion and loss aversion) are supposed to have a positive impact on investment performance, it is found that regret aversion is to be influenced positively while in contrast negative impact existed between loss aversion and investment performance. It can be concluded that individual investors do not act rationally all the time when making investment decisions and confirm the presence of psychological biases among Sri Lankan individual investors.

Keywords: Behavioural finance, Colombo Stock Exchange, Individual investors, Investment performance, Psychological biases

Track: Finance

1. Background

Traditional theories of finance (CAPM, EMH & modern portfolio theories) assume that investors are rational and make rational decisions through following basic financial rules based on their investment strategies and risk-return consideration. They are unbiased of the predictions about future stock returns by taking into account all available information. On the contrary, all the investors’ decisions are not to be the same and their strategic investment decisions depend mostly on their personal characteristics and information composition. The new paradigm of finance, the behavioural finance derives the investor-market behavior from psychological factors of decision making in order to emphasize why people invest in shares.

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A large number of researchers in the field of behavioural finance have emphasized that individuals do not act rationally all the time when making their investment decisions and several psychological biases; heuristics, prospect, Herd behaviour, Contextual factors, Market factors and demographic factors etc. influence their investment decisions in the stock market (Barberis and Thaler, 2003; Ritter, 2003; Waweru et al., (2008); Barberis and Huang, (2001); Gevaris et al.(2001a); Luong and Ha,(2011); Allen and Evans, (2005); Rockenbach, (2004); Kengatharan and Kengatharan, (2014); Kumar and Lee, (2006); Baker and Wurgler, (2007).

The relationship between various cognitive factors and individual investment behaviour has been one of the most explored issues among the applied finance researchers globally and most of them are undertaken in the developed stock markets of the US, UK and Europe and not many studies have been conducted in Asia, particularly in the Sri Lankan context. It is believed that unlike institutional investors, individual investors are to be less informed, have psychological biases. The researchers in finance do not tend to give more importance to the behaviour of individual investors to the extent that their respective role in affecting stock prices is concerned and it is assumed that trading behaviour of individual investors rarely influences the stock prices. In order to overcome this perception about the individual investors considering their key role in stock market which appears to be influenced by some psychological biases, it is important to identify the factors most influential to individual trading behavior and performance. Thus, this study scrutinizes certain behavioural factors that seem to be influenced on individual equity investors, and not only includes the factors investigated by previous studies and derived from prevailing behavioural finance theories, namely Heuristic theory, Prospect theory, Herding and other theories (Market factor) but also contextual psychological factors that are believed to be influenced on the investors’ investment decisions in the CSE. Thus, the main objective of the study is to investigate the behavioral factors which influence on individual investor behavior at the Colombo Stock Exchange.

2. Review of Literature

The traditional finance theory assumes that people are rational; but it is challenged by psychologists arguing that people often suffer from cognitive and emotional biases and act in a seemingly irrational manner. Behavioural finance is a relatively new paradigm of finance and tries to understand how emotions and cognitive errors influence behavior of individual investors. Thus, behavioral finance is becoming a vital part of the decision making, as it heavily influences the performance of individual investors. The following theories and some of the basic findings within behavioral finance field challenge the basic assumptions of traditional finance theories.

2.1 The Prospect Theory

Kahneman and Tversky (1979), is the one who best describes the prospect theory in the phenomena of economic psychology and they state that the people have an irrational tendency to be less willing to gamble with profits than with losses. People tend to under weigh probable outcomes compared with certain ones and people response differently to the similar situations depending on the context of losses or gains in which they are presented. Kishore (2004) called this certainly effect that human beings are not consistently risk-averse; rather they are risk-averse in gains but risk-takers in losses and
traders are most apt to take subsequent risks if they have already experienced losses. Waweru et al., (2008) propose that the prospect theory describes some states of mind affecting an individual’s decision-making processes including Regret aversion, Loss aversion and mental accounting. Regret is an emotion occurs after people make mistakes and investors avoid regret by refusing to sell decreasing shares and willing to sell increasing ones. Moreover, investors tend to be more regretful about holding losing stocks too long than selling winning ones too soon (Shefrin and Statman, 1985; Forgel and Berry, 2006) and Lehenkari and Perttunen, 2004).

Loss aversion refers to the difference level of mental penalty people have from a similar size loss or gain (Barberis and Huang, 2001). Barberis and Thaler, (2003) shows that people are more distressed at the prospect of losses than they are pleased by equivalent gains while Barberis and Huang, (2001) find that a loss coming after a prior gain is proved less painful than usual while a loss arriving after a loss seems to be more painful than usual. Mental accounting is a term referring to the process by which people think about and evaluate their financial transactions (Barberis and Huang, 2001) and it allows investors to organize their portfolio into separate accounts (Barberis and Thaler, 2003 and Ritter, 2003).

2.2 Heuristics Theory

Heuristics are defined as the rules of thumb, which makes decision making easier, especially in complex and uncertain environments (Ritter, 2003). Waweru et al., (2008) explain that in general, these heuristics are quite useful; particularly when time is limited. Sometimes they lead to biases (Kahneman and Tversky, 1974; Ritter, 2003). Kahneman and Tversky, (1974) seem to be ones of the first writers who studied the factors belonging to heuristics by introducing three factors namely representativeness, availability bias, and anchoring. Further, Waweru et al., (2008) introduce two other factors namely Gambler’s fallacy and Overconfidence into heuristic theory. DeBondt and Thaler, (1995) propose that the representativeness refers to the degree of similarity that an event has with its parent population. Representativeness may result in some biases such as people put too much weight on recent experience and ignore the average long-term rate (Ritter, 2003).

Kahneman and Tversky,(1974) state that Anchoring is a phenomenon used in the situation when people use some initial values to make estimation. Anchoring is a bias in which the investor relies too heavily on limited known factors or points of reference as they cannot integrate new information into their thinking since they are too “anchored” to their existing views (Shefrin, 2002). Anchoring has some connection with representativeness as it also reflects that people often focus on recent experience and tend to be more optimistic when the market rises and more pessimistic when the market falls (Waweru et al., 2008).

Daniel, Hirshleifer and Subramanian, (1998) state that if an investor overestimates his ability to generate information or to identify the significance of existing data that others neglect, he will underestimate his forecast errors; he will tend to be overconfident about
the information he has generated but not about public signals. Barber and Odean, (1999) recognize that overconfidence leads to high volume of trading, in which investors believe their own judgment too definitely and do not duly consider others’ assessment. Overconfidence refers to a situation where people overestimate the reliability of their knowledge and skills (DeBondt and Thaler, 1995, Hvidé, 2002). Moreover, Kim and Nofsinger, (2003) assert that overconfident investors are more likely to sell their winners and holding their losers, which can affect badly to their investment results. Allens and Evans, (2005) believe that overconfident investors trade much greater than their rational ones, thus they may significantly affect trading volume, market depth, distribution of wealth, and other outcomes. Thus, overconfidence impacts positively to investment performance because making higher amounts of transactions probably results in greater returns than fewer transactions (Anderson et al., 2005).

2.3 Market Factor

It is believed that changes in market information, fundamentals of the underlying stock and stock price can cause over/under-reaction to the price changes and empirically proved to have the high influence on decision-making behavior of investors. Waweru et al. (2008) identifies price changes, market information, past trends of stocks, customer preference, over-reaction to price changes, and fundamentals of underlying stocks as the factors of market which impact on investors’ decision making. Moreover, they conclude that market information has very high impact on investors’ investment decisions in which they tend to focus on popular stocks and other attention-grabbing events that are relied on the stock market information. Odean (1999) affirm that investors prefer buying to selling stocks that experience higher price changes during the past two years and change in stock price in this circumstance can be believed as an attention-grabbing occurrence in the market by investors.

2.4 Herding Effect

Herd behavior in financial market is identified as tendency of investors’ behaviors to follow the others’ actions and herding can cause some emotional biases. Investors gather as groups with the belief that herding can help them to collect useful and reliable information. Generally, in security markets, herding investors base their investment decisions on the masses’ decisions of buying or selling stocks thus causing a state of inefficient market, which is usually identified by speculative bubbles. Caparrelli et al., (2004), state that herding investors act the same ways as prehistoric men who had a little knowledge and information of the surrounding environment and gathered in groups to support each other and get safety. Hirshleifer and Teoh, (2003) propose that overconfidence can promote herding in security markets whereas Shiller, and Pound, (1989) argues that herding behavior or “crows effects” happens when people imitate others’ decisions and often associated with large fluctuation of stock price or excessive volatility. Waweru et al. (2008) identify that the others’ buying, selling, choice of stock, length of time to hold stock, and volume of stock to trade can be impacted on stock investment decisions of an investor and conclude that herding behavior helps investors to have a sense of regret aversion for their decisions.
3. Data and Methodology

3.1 Sample and Data

Data were collected by means of a survey of about 164 individual investors based in CSE and the sample was drawn from the clientele of seven leading stock brokerage firms which provided the researcher with access the contact details of their client base and the particulars on the active investors. The study first adopted the stratified sampling technique in order to collect the survey responses. Next, the sample was randomly drawn only from active investors for the purpose of data collection.

3.2 Design of Measurements and Questionnaire

This study examines certain behavioural factors that seem to apply the greatest influence on individual equity investors, and not only includes the factors investigated by previous studies and extracted from prevailing behavioural finance theories but also contextual psychological experiments that are supposed to influence the investors' investment decisions in the CSE. Thus, the questionnaire was based on the theories of behavioral finance: Heuristic theory, Prospect theory, and other theories about impacts of behavioral factors on investors' decision-making, as highlighted in Waweru et al. (2008). These psychological factors have been extracted from the experimental psychological studies.

The survey questionnaire consists of three parts, one each for personal information, use of behavioural finance factors and use of contextual factors on investment decision-making. The Personal Information Segment asks the respondents demographic information whereas the second segment covers all the behavioural factors, herding factors which is covered by two questions the use of heuristics which includes questions covering representativeness, overconfidence and anchoring, the use of prospect theory which covers loss aversion, regret aversion, and mental accounting biases, the use of market factors that cover customer preferences, the fundamental value of stocks, market information and past trends of stocks and further three questions under investment performance. Third section is based on other contextual factors suggested by professional and contextual sources, and asks the respondents to rate the impact of three such factors (accounting and financial information, price changes of stocks and brokers recommendation) on their investment decision-making.

The 5-point Likert scale, which is widely used for asking respondents' opinions and attitudes, is utilized to ask the individual investors to evaluate the degrees of their agreement with the impacts of behavioral factors on their investment decisions as well as with the statements of investment performance. The 5 points in the scale are respectively from 1 to 5: extremely disagree, disagree, neutral, agree and extremely agree. The survey questionnaire was finalized after consulting five experts; two from academics, one high net worth client and two from industry professionals. In order to identify how investors' psychology impact the investors' decisions and performance at the CSE the following hypotheses are formulated.
**Hypothesis H1:** The behavioral variables that influence the investment decisions of individual investors at the Colombo Stock Exchange are grouped into four dimensions: Heuristics, Prospect, Market, and Herding.

Exploratory factor analysis was applied to identify the dimensions in which the behavioral variables belong to.

**Hypothesis H2:** The behavioral and contextual factors influence positively on the investment performance of individual investors at the Colombo Stock Exchange.

Multiple regression analysis was performed to test this hypothesis using the factors extracted through factor analysis technique.

### 3.3 Data Analysis Method

The collected data were processed and analyzed by using STATA and Minitab softwares. Firstly, the data were cleaned by eliminating the questionnaires with poor quality which includes too many missing values or bias ratings. Next, the reliability of each construct and its precise dimensions were judged using Cronbach’s Alpha coefficients. Then, Factor Analysis technique was applied to extract the most relevant factors which explain a higher variation in investors’ investment performance. The individual investor behaviour is influenced by a large number of factors and the study employed 16 scenario-based questions with a five-point Likert scale to collect opinion from the sample investors. Thus, the factor analysis was used to reduce the data collected on 16 variables into lesser number of convenient meaningful variables by exploring common dimensions existing among the variables. Finally, multiple regression was performed in order to determine which behavioural factors impact mostly on investment performance of individual investors in CSE.

#### 3.3.1 Factor Analysis

The main purpose of factor analysis is to describe, if possible, the covariance relationships among many variables, in terms of a few underlying, but unobservable, random quantities called factors. Basically, the factor model is motivated by the following argument: suppose, variables can be grouped by their correlations. That is, suppose all variables within a particular group are highly correlated among themselves but have relatively small correlation with variables in a different groups. Then it is conceivable that each group of variables represent a single underlying construct or factor, that is responsible for the observed correlations.

#### 3.3.2 The Orthogonal Factor model (Orthogonal).

The \( p \) – random variables \( X_1, X_2, \ldots, X_p \) has mean \( \mu \) and acovariance matrix \( \Sigma \). The factor model postulates that \( X_1, X_2, \ldots, X_p \) is linearly dependent upon a few unobservable random variables \( F_1, F_2, \ldots, F_m \), called common factors, and \( p \) additional sources of variations, \( \varepsilon_1, \varepsilon_2, \ldots, \varepsilon_p \), called errors or, sometimes, specific factors.
Factor model can be written as,

\[ X_i - \mu_i = l_{i1}F_1 + l_{i2}F_2 + \ldots + l_{im}F_m + \epsilon_i, \quad i = 1, \ldots, p \]

In matrix notation: \( \mathbf{X} - \mathbf{\mu} = \mathbf{L} \mathbf{F} + \mathbf{E} \). The coefficient \( l_{ij} \) is called the loading of the \( i^{th} \) variable on the \( j^{th} \) factor, so the matrix \( \mathbf{L} \) is the matrix of factor loadings. The \( i^{th} \) specific factor \( \epsilon_i \) is associated only with the \( i^{th} \) response (variable) \( X_i \). The \( p \) deviations \( X_1 - \mu_1, X_2 - \mu_2, \ldots, X_p - \mu_p \) are expressed in terms of \( p + m \) random quantities \( F_1, F_2, \ldots, F_m \) and \( \epsilon_1, \epsilon_2, \ldots, \epsilon_p \), which are unobservable. To estimate the factor loadings and identify the factors, following assumptions are made. \( \mathbf{E}[\mathbf{F}] = \mathbf{0}, \) \( \mathbf{Cov}(\mathbf{F}) = \mathbf{E}[\mathbf{FF}^T] = \mathbf{I}, \) \( \mathbf{Cov}(\mathbf{E}) = \mathbf{E}[\mathbf{EE}^T] = \Psi \) and \( \mathbf{F} \) and \( \mathbf{E} \) are independent, so \( \mathbf{Cov}(\mathbf{E}, \mathbf{F}) = \mathbf{E}[\mathbf{EE}^T] = \mathbf{0} \).

With these assumptions, the covariance structure of \( X_1, X_2, \ldots, X_p \) can be written as,

\[ \Sigma = \mathbf{Cov}(X_1, X_2, \ldots, X_p) = \mathbf{E}[\mathbf{X} - \mathbf{\mu}][\mathbf{X} - \mathbf{\mu}]^T = \mathbf{E}[\mathbf{LF} + \mathbf{E}][\mathbf{LF} + \mathbf{E}]^T = \mathbf{LL}^T + \Psi \]

and hence,

\[ \text{Var}(X_i) = l_{i1}^2 + l_{i2}^2 + \ldots + l_{im}^2 + \psi_i \]

\[ \text{Cov}(X_i, X_j) = l_{i1}l_{j1} + \ldots + l_{im}l_{jm} \]

\[ \text{Cov}(X_i, F_j) = l_{ij} \]

**Principal component solution to factor model**

The principal component factor analysis of the covariance matrix \( \Sigma \) (or the correlation matrix \( \mathbf{P} \)) is specified in terms of its eigenvalue - eigenvector pairs \((\lambda_1, \mathbf{e}_1), (\lambda_2, \mathbf{e}_2), \ldots, (\lambda_p, \mathbf{e}_p)\) where \( \lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_p \geq 0 \). Let \( m \) \((< p)\) be the number of common factors, then the matrix of estimated factor loading \( \{l_{ij}\} \) is given by,

\[ \mathbf{L} = \begin{bmatrix} \sqrt{\lambda_1} \mathbf{e}_1 & \sqrt{\lambda_2} \mathbf{e}_2 & \cdots & \sqrt{\lambda_p} \mathbf{e}_p \end{bmatrix} \]

The estimated specific variances are provided by the diagonal elements of the matrix \( \Sigma - \mathbf{LL}^T \), so with \( \psi_i = \sigma_{ii} - \sum_{j=1}^{m} l_{ij}^2 \). The principal component factor analysis of the correlation matrix \( \mathbf{P} \) is obtained by starting with \( \mathbf{P} \) in place of \( \Sigma \).

In general,

\[ \frac{\lambda_i}{\sigma_{ii} + \sigma_{i_2} + \ldots + \sigma_{pp}} \frac{f_{or}}{\Sigma} \]

The proportion of the total sample due to \( i^{th} \) factor is equal to

\[ \frac{\lambda_i}{p} \frac{f_{or}}{\Sigma} \]

This criterion is used for determining the appropriate number of common factors. Hence, the number of common factors retained in the model is increased until a "suitable proportion" (for example 80% or more) of the total variance has been explained.
Factor Scores

The main interest in factor analysis is identifying the unobservable factors (common factors) and uses them for inputs in subsequent analysis. In this research, these common factors have been used in the multiple linear regression to identify the relationships between behavioural factors and individual investors performance. For this purpose, the estimated values of the common factors are needed and they are called factor scores. These scores can be estimated based on the weighted least square method or regression method.

4. Results and Discussions

4.1 Measurement Reliability Test Using Cronbach’s Alpha

Cronbach’s Alpha was used to test the internal consistency of the items included in the factors in order to make sure that the measurements are reliable for further uses. The overall Cronbach's alpha for the six categories is 0.87 which indicates a high level of internal consistency for the scale used. The Cronbach's Alpha for the six categories, namely, Herding, Heuristics, Prospect, Market, contextual and investment performance are 0.69, 0.77, 0.64, 0.80, 0.68 and 0.75 respectively which are also greater than 0.6. Therefore, the results of reliability analysis confirmed that consistency is at an acceptable level for each factor as the marginally acceptable reliability should be above 0.60 (Gliner and Morgan, 2000). Scales’ content validity was appraised with the help of five experts; consist of two academicians and two practitioners and one high net-worth client to scrutinize it. Consequently, the researcher made changes on the survey instrument in terms of eliminating, adding /rewording some of the items included in it.

4.2 Sampling Adequacy

In order to determine the appropriateness of data for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's Test of Sphericity were applied. Bartlett's Test of Sphericity explains that there should not be the identity matrix in original correlation matrix and its value in above table is highly significant 0.000 which shows that there is no identity matrix in R-matrix. A measure of sampling adequacy of 0.877 with a value of Bartlett’s test of Sphericity (1237.031) with a high significant level (P <0.000), indicates that there exist significant associations among variables and supports the view that the factor analysis is suitable for these data.

4.3 Factor analysis of behavioral variables influencing on the individual investment decisions and investment performance

4.3.1 Determining the Number of Meaningful Factors to Retain

The factor analysis was used for the behavioural variables to identify the factors in which these variables belong to. In order to determine how many meaningful factors should be
retained for interpretation, three criteria were used (Cattell, 1966, Stevens, 1986): the eigen value-one criterion, the Scree plot, and the proportion of variance accounted for. According to the eigen value-one criterion/ Kaiser criterion any factor with an eigen value greater than 1.00 was retained for rotation and interpretation. Next, with the scree plot, factors with relatively large eigen values and small eigen values were found, thus identifying the break between the two and are considered as meaningful and kept for rotation.

Table 1: Factors and Variance Explained

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Factor</th>
<th>Eigen Value</th>
<th>% of Variance Explained</th>
<th>Cumulative Variance %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factor 1</td>
<td>7.478</td>
<td>0.21</td>
<td>0.21</td>
</tr>
<tr>
<td>2</td>
<td>Factor 2</td>
<td>2.291</td>
<td>0.13</td>
<td>0.34</td>
</tr>
<tr>
<td>3</td>
<td>Factor 3</td>
<td>2.051</td>
<td>0.12</td>
<td>0.46</td>
</tr>
<tr>
<td>4</td>
<td>Factor 4</td>
<td>1.469</td>
<td>0.11</td>
<td>0.57</td>
</tr>
<tr>
<td>5</td>
<td>Factor 5</td>
<td>1.216</td>
<td>0.08</td>
<td>0.65</td>
</tr>
<tr>
<td>6</td>
<td>Factor 6</td>
<td>1.096</td>
<td>0.08</td>
<td>0.73</td>
</tr>
</tbody>
</table>

Finally, the factors which account for a specified percentage of data set and the cumulative percentage of variance are treated as equally important for reducing the number of factors and cumulative percentage of at least 70% is recommended to retain adequate number of factors. Varimax rotation together with Kaiser Criterion was applied to classify and reduce the factors to interpretable components and it was qualified six factors which are sufficient to explain above 70% of total data variance (See Table 1 and Figure 1).
All the factor loadings of the questionnaire items on a factor are greater than 0.6 (with the sample of 164 respondents) which ensure that factor analysis is best matched with the analyzed data (Hair et al., 1998). A common meaningful interpretation for each behavioral variable was arrived by considering the factor loadings.

4.3.2 Behavioral variables influencing on the individual investment decisions

As can be seen in the Table 2 all the behavioural variables are categorized into four factors; herding, heuristics, prospect (two sub groups; regret aversion and loss aversion) and market in which they belong to. However, some of the variables were eliminated from the analysis as their factor loadings are not at a satisfactory level. The questions are coded from Q9 to Q 27 inclusive of items relating to investment performance (Q15 to Q17)² to investigate the impact level of behavioral variables on the individual investment decisions at the CSE.

As shown in the Table 2, the variables of herding, heuristics, and market are grouped into only one related factor each; while, the prospect variables belong to two factors: regret aversion and loss aversion bias. Thus, there are four behavioral factors that influence the investment decisions of individual investors at the CSE. All the two original variables in the herding factor (question 9 and 10) are retained after the factor analysis while only two of four original items of market factor (questions from 22 to 24) and all the four original heuristics items (questions from 11 to 14) are accepted by factor analysis.
Further, only two of three original variables of prospect (questions from 18 to 20) kept after the analysis which is divided into two groups: regret aversion and loss aversion bias. In addition, only one item from the contextual factors is remained after the analysis. The factor analysis accepted all the three original items of investment performance retaining all in one dimension. The above factor analysis proves that Hypothesis H1 which states that behavioural factors influence on individual investors decisions at the CSE belong to four factors is almost supported.

4.3.3 Factor analysis of Behavioral variables influencing on the individual investment performance

The recent literature on behavioural finance proposes a number of behavioural factors which influence on investors’ behavior hence, the study examines different behavioural factors jointly by applying multivariate regression procedure. As can be seen in the Table 2, among them herding, heuristics, regret aversion and contextual factors have positive effect whilst loss aversion has negative significant impact on the investment performance. Although we expected to have the market variables a significant influence, the results could not reveal such significant effects at all.

Table 2: Summary Statistics of the Fitted Multiple Regression

<table>
<thead>
<tr>
<th>Behavioural Factor</th>
<th>Coefficient</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.307</td>
<td>0.000***</td>
</tr>
<tr>
<td>Market</td>
<td>0.079</td>
<td>0.382</td>
</tr>
<tr>
<td>Heuristics</td>
<td>0.307</td>
<td>0.002***</td>
</tr>
<tr>
<td>Herding</td>
<td>0.107</td>
<td>0.102*</td>
</tr>
<tr>
<td>Regret Aversion</td>
<td>0.105</td>
<td>0.104*</td>
</tr>
<tr>
<td>Loss Aversion</td>
<td>-0.145</td>
<td>0.028**</td>
</tr>
<tr>
<td>Contextual Factors</td>
<td>0.128</td>
<td>0.094*</td>
</tr>
</tbody>
</table>

*Note: *** and * indicate significance at 1%, 5% and 10% respectively.

Heuristics Factor

Heuristics factor which is measured by overconfidence, representativeness and anchoring biases are directly proportional to the investment performance of the investors at the CSE. Considering the overconfidence, the finding reveals that investors in the CSE, who are confident, more likely to use their skills and knowledge in certain situations to improve their investment performance. Moreover, investors overestimate their ability to produce information with the help of accessible data that others neglect, they will make cognitive errors in forecasting future prices and they are more likely to be overconfident about the facts they create ignoring the public information. This finding supports the Daniel, Hirshleifer and Subramanian, (1998) findings which state that the person who overestimates the precision of his own information signal instead of received public information signals as an overconfident investor. Anderson et al., (2005) document that overconfidence can affect positively on investment performance as they make higher amounts of transactions which results in superior returns than fewer transactions and the findings of this study provides a great support for that argument.
Furthermore, Kim and Nofsinger, (2003) assert that overconfident investors are more likely to sell their winners and holding their losers, which can affect adversely on their investment performance and the findings strongly support this argument. Thus, the findings reveal that investors should be very careful as it may lead to unanticipated shock on their investment performance, although it is fine. This finding strongly supports the studies of Allen and Evans (2005), Gervais, Simon and Odean (2001) who propose that people usually believe in their skills and knowledge to outperform the market.

The results also show strong evidence of the existence of representativeness bias among the individual investors in the CSE. The respondents tend to be following recent past experience in the market with respect to their investments and they buy hot stocks based on that. This result is consistent with the finding of Ritter, (2003) which states that people put too much weight on recent experience and ignores the average long-term rate.

Thus, the study reveals that investors in the CSE are more likely to forecast future changes of stock prices based on the recent stock prices hence, they are better at their relative thinking compared to their absolute thinking. Investors always refer to the initial purchase price of stocks when they sell or analyze thereby determining the day’s prices against those of the past. Thus, anchoring makes investors to identify a range for a share price based on the past trends which lead to under-reaction to unexpected changes and the findings provide a great support for the findings by Kahneman and Tversky, (1974) and Hvide (2002).

Herding Factors

The study provides strong support for the existence of herding variables which impacted positively on individual investors’ performance at the CSE significantly. This implies that investors in the CSE tend to follow the others actions and they rely more on collective information rather than private information which results in the volatility of stock prices from their fundamental values. Moreover, they may prefer herding believing that herding can facilitate them to capture useful and reliable information. It is found that the investors in the CSE base their investment decisions on the masses’ decisions of buying or selling stocks and they react quickly to others’ investment decisions with an expectation of higher returns. Thus, CSE as a small emerging market experiences speculative bubbles in the short run that leads to a state of inefficient market due to the herd behavior of investors. This finding strongly supports the findings by Waweru et al. (2008) who conclude that buying and selling decisions of an investor are significantly impacted by others’ decisions, and herding behavior helps investors to have a sense of regret aversion for their decisions. As argued by Hirshleifer and Teoh (2003) overconfidence of investors can promote herding in stock markets and that argument is supported by findings of this study in Sri Lankan stock market.
Prospect Factors

The prospect variables belong to two sub dimensions; Loss aversion and regret aversion biases, which show a negative and positive impact respectively, which are not at high levels, on the individual investors’ decisions at the CSE. The Prospect Theory explains that the losses are three times more painful compared to the pleasure experienced by a gain of similar magnitude hence, people hate regret and the losses produce regret. In the light of this view the results show strong evidence of the existence of regret aversion bias among CSE investors. Here, the market participants tend to delay in selling stocks that have decreased in value and always sell those shares whose values are increasing. Moreover, they believe that the prices of stocks to recover and delay in selling such stocks until the prices rebound to their reference point; the fact due to this is that when the stock price goes up, participants would like to realize profit while in contrast, when price goes down, they do not wish to be a loser, hence they keep the stocks and anticipate that its movement will reverse. The findings are consistent with the argument of Shefrin and Statman (1985), Fogel and Berry (2006) and Lehenkari and Perttunen, (2004) that propose investors regret about holding a losing stocks too long more than selling a wining ones too soon.

In contrast to regret aversion bias, the loss aversion bias is found to affect negatively to investment performance of the CSE investors. Although, it is a common behavior of investors it is a wrong investment decision which affect poorly on their wealth. The results give strong evidence for investors in the CSE being risk averse when faced with sure loss and they tend to react to the stock markets under the grab of fear becoming fearful when the market price is falling. These findings strongly support the findings of Barberis and Huang, (2001), and Barberis and Thaler, (2003) who argue that people are more distressed at the prospect of losses than they are pleased by equivalent gains. This also strongly supports the suggestion given by Barberis and Huang, (2001) who affirm that a loss coming after prior gain is proved less painful than usual while a loss arriving after a loss seems to be more painful than usual.

Contextual Factors

Besides the behavioural and market factors, the contextual factors also have significant positive influence on investment performance. Although the magnitude of the impact is not so strong, it is evidenced that the individual investors at the CSE tend to rely on brokers recommendations rather than accounting and financial information and price changes of stocks. This may be due to the fact that they believe the stock market analysts may consider every aspects of the market and give better recommendations on investment/trading decisions and investors act accordingly. This finding strongly supports the findings of Chandra and Kumar, (2011) who reports that Indian individual investors are more likely to use advocate recommendations at a higher level in investment/trading decisions. Although, the market factors which contain changes in market information and fundamentals of the underlying stocks are expected to have a strong influence on individual investors performance they do not provide any significant impact.

5. Conclusions
The study focused on exploring the impact of behavioural and contextual factors on investment performance of individual investors in the CSE by collecting data from 164 investors and analyzing using Factor analysis and multiple regression techniques. The results of the factor analysis confirm that the individual investors in the CSE are influenced by four behavioral biases: Herding, Heuristics, Prospect and Market in which each dimension includes certain behavioural variables thus supporting the Hypothesis H1 which states that the behavioral variables that influence on the investment decisions of individual investors at the Colombo Stock Exchange are grouped into four behavioural dimensions.

The results also confirm the prior literature by revealing irrational behavior of CSE investors identifying five underlying behavioural biases (including contextual factors). Herding including buying and selling and speed of herding, heuristic variables which consist of over-confidence, anchoring and representativeness and brokers’ recommendations under contextual factor are found to have positive influence on individual investors’ performance whereas regret aversion and the loss aversion under prospect dimension are found to be influenced positively and negatively respectively on investment performance. Thus, the results do not support the hypothesis H2 which reveals that all the behavioral factors have positive impacts on the investment performance of CSE investors.

Policy Implications

The individual investors at the CSE should be over-confident at an adequate level to use their own skills and knowledge in certain situations to reap higher investment performance and they should not be under-confident in the cases where they experience uncertainty in making decisions which affect badly on their investment performance. The positive association between herding and investment performance imply investors to be cooperative of a crowd of investors and to choose well knowledgeable and reliable investors to lower the associated risk and obtain higher returns on their investment. In contrast, the negative impact of loss aversion of heuristics guides investors to be careful before making investment decisions not caring too much on the previous loss for their subsequent investment decisions.

It will help the financial advisors and companies to have an understanding of how an individual investor respond to market movements in order to formulate appropriate strategies and policies. The government should understand how investors behave and what factors may influence on individual investors behavior in the CSE to implement the required legislation and further practices in making an investor friendly market environment to ensure a higher level of individual investors participation in the CSE thereby promoting the economic growth.
References


Chandra, A and Kumar, R 2011, Determinants of individual investor behaviour: An orthogonal linear transformation approach, http://mpra.ub.uni-muenchen.de/29722/


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i Bryman and Bell, (2007) notes the stratified sampling ensures that the sample is distributed in the same way as the population.

ii In the survey instrument, Questions from 15 to 17 are designed to identify the evaluation of individual investors about their own investment performance.

iii The questionnaire contains four items under market factor dimension and the factor analysis extracted only these two items as significant variables which explains most of the variations in investment performance.

iv Waweru et al.(2008, p.36) identifies the factors of market that have impact on investors’ decision making: Price changes, market information, past trends of stocks, customer preference, over-reaction to price changes, and fundamentals of underlying stocks.