

INFLUENCE OF BEHAVIOURAL FACTORS TOWARDS INDIVIDUAL STOCK INVESTMENT DECISIONS AND INVESTMENT PERFORMANCE IN SRI LANKA

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Abstract

This study focused on identifying different behavioural biases affecting individual stock investors at the Colombo Stock Exchange during the economic uncertainty and crisis of 2022. Through an online questionnaire, 384 responses were gathered from individual stock investors using stratified sampling. Identifying decision-making works as a mediator in the relationship between behavioural factors and investment performance, Structural Equation Modelling was used to achieve the study's objectives. As heuristic and market factors had influenced investors' decision-making and investment performance, it was concluded that the behavioural factors hindered the quality of decisions and investment performance of individual investors at the Colombo Stock Exchange.

JEL: G41, G11, G14, D91, C39

Keywords: *Behavioural Finance, Individual Stock Investors, Investment Decisions, Investment Performance, Structural Equation Modelling.*

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INTRODUCTION

A stock market investment is one of many potential investment vehicles in which a person can invest their excess income and reap the returns of its growth over time. Generally, it is believed that the stock market operations are highly sensitive to changes in the political and economic environment in the country, as in most other markets (Financial Markets, 2022). The spread of Corona Virus Disease (COVID-19), which started at the end of 2019, was unexpected for almost all countries, and because of this phenomenon, a global economic crisis was born. The pandemic's emergence has driven a rapid shift in the focus of the global financial markets. Fear and uncertainty were the main factors behind this market shift (Kusumahadi & Permana, 2021) and this ultimately resulted in many market investors making irrational investment decisions.

The IMF described the decline of the global economy due to COVID-19 as the worst since the Great Depression of the 1930s (Jones et al., 2021). Many countries imposed strict lockdowns to contain the further spread of the virus and halted major economic operations, which was ultimately received negatively by the stock markets (Ganie et al., 2021). Global market capitalisation dropped by 2.1% to US\$ 95 trillion by the third quarter of 2020 as overall investor confidence was impacted by the crisis, uncertain government policies, and declining economic performance (Colombo Stock Exchange Annual Report, 2020). Then the Ukraine-Russia war broke out, causing a prolonged effect on the global economy. Global economic growth is expected to slow significantly in 2022, largely due to the Ukraine-Russia war and the prices of fuel and food rises already having a global impact, with vulnerable populations, particularly in low-income countries, being the most affected (World Economic Outlook 2022).

The economic decline following COVID-19 hit hard to Sri Lanka, where the economy heavily relied on tourism and commodity exports. The COVID-19 outbreak and the first lockdown in Sri Lanka had caused a national panic and loss of market confidence among local and international investors which led to a market crash, but the Colombo Stock Exchange (CSE) eventually recovered in a shorter period, whilst the confidence of the national investors started to arise though there still was a lack of confidence among international investors. Therefore, the CSE was resilient to the second wave of COVID-19 and did not fall as anticipated during the second lockdown (Fernando, 2022). But this situation drifted back within a few months of 2022, Sri Lanka facing a massive shortage of foreign reserves and dealing with a major economic crisis which was aggravated by the collapse of the tourism industry, the country's ongoing political crisis, and the decision to ban fertiliser and implement organic farming. Additionally, the Russia-Ukraine war also hastened Sri Lanka's economic downfall. Due to the catastrophic economic changes, the Sri Lankan Rupee started steeply depreciating against the US dollar, causing massive inflation in the country.

The headline inflation measured by the year-on-year (Y-o-Y) change in the National Consumer Price Index (NCPI, 2013=100) increased to 58.9% in June 2022 (CBSL, 2023). The prices of fuel and household commodities kept skyrocketing with the shortage of dollars, creating an unpredictable state for investors with the rising market risk and uncertainty. In March 2022, the stock market had already lost 7.7 per cent after falling 11 per cent in the previous month. Overall, the market has lost 13.6 per cent so far in 2022 after being one of the world's best stock markets with an 80 per cent return in 2021 (EconomyNext Editorial Team, 2022). The high volatility in the CSE was mainly due to unpredictable market conditions and irrational investor behaviours.

Thus, this study is significant in determining the impact of behavioural factors that influence individual stock investment decisions during Sri Lanka's economic crisis in 2022.

The primary objective of this study is to examine how behavioural factors influence the investment decisions and performance of individual stock investors at the CSE during the 2022 economic crisis in Sri Lanka. This is achieved by measuring the strength of possible behavioural factors on the investment decision-making of individual stock investors and by measuring the strength of the possible behavioural factors on the investment performance of individual stock investors.

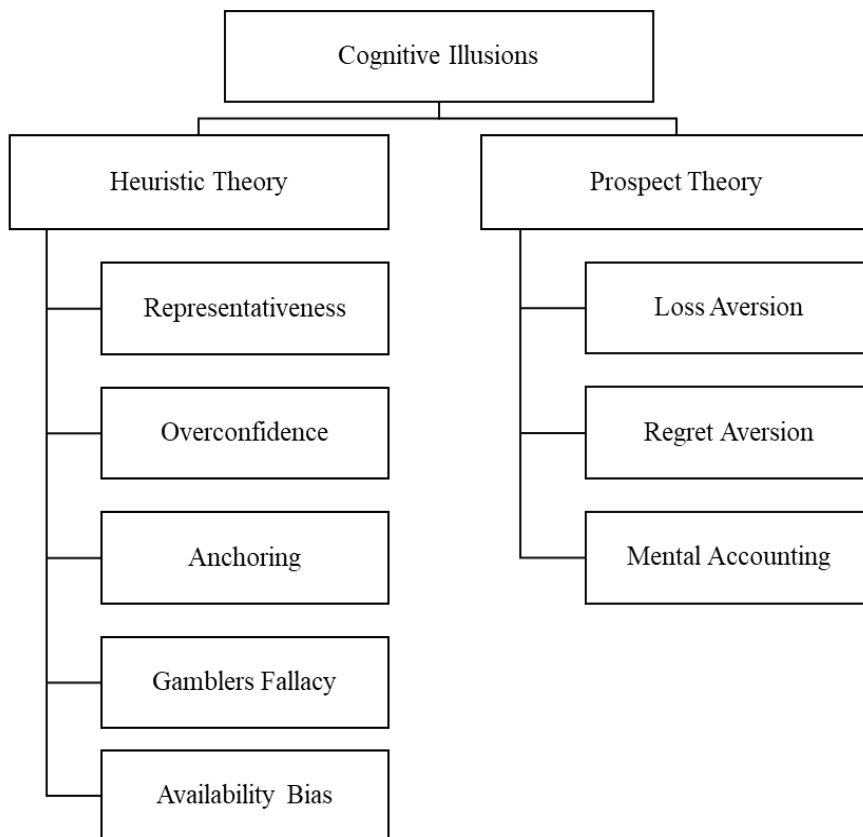
LITERATURE REVIEW

Even though traditional finance assumes investors show rational behaviour in the financial market, most researchers have proven that behavioural factors do affect individual investment decisions. Behavioural Finance is a subfield of Behavioural Economics that explores the reasoning behind people making irrational investment decisions that do not follow the predictions of traditional financial models.

It may not always be possible for investors to make rational decisions as knowingly or unknowingly their behavioural biases could hamper the quality of their investment decisions. Investors usually ignore these biases and it will ultimately lead to poor decisions. Behavioural Finance helps to study various behavioural biases of investors and how those affect their investment decisions (Shukla, 2021).

According to Ritter (2003), the foundation of behavioural finance is based on cognitive psychology and limits to arbitrage. Cognitive psychology indicates that cognitive illusions/ thinking errors affect human decision processes. Limits to arbitrage refer to when markets will be inefficient. When predicting economic conditions with irrationality underlying investor behaviour, it was evident that the form of agents' irrationality needed to be specified (Barberis & Thaler, 2002).

According to behavioural finance theories, cognitive illusions can be classified as depicted in Figure 1 (Waweru et al., 2008).

Figure 1: Classification of Cognitive Illusions

Source: Waweru et al., (2008)

Heuristic Theory

Past literature gives evidence that Heuristics, also known as rules of thumb, are useful in decision-making. Kahneman and Tversky (1974) pointed out that people tend to rely on a limited number of heuristic principles that reduce the complexity of tasks by assessing likelihoods and predicting values to simpler judgmental operations. Heuristics are generally quite useful but can occasionally lead to biases that result in suboptimal investment decisions (Ritter, 2003).

Representativeness allows investors to label an investment as good or bad based on its recent performance. As a result, investors tend to buy stocks after prices have risen, expecting the price increase to continue, ignoring stocks when stock prices are below their intrinsic values (Baker & Ricciardi, 2014).

Overconfident investors feel certain about their knowledge and their investment skills (Chen et al., 2007). It is quite hard to predict short-term market performance when trading as individual investors as it is unlikely to have access to better information, intuition, or

analytical powers than others. Because of that, the market has deceived many respected but overconfident investment professionals, teaching a lesson for individual investors that they should be investing for the long term rather than trading for the short term (Baker & Ricciardi, 2014).

When people are faced with uncertainty, they adopt a reference value and then make decisions based on this value, this process is due to anchoring bias (Özen & Ersoy, 2019). Anchoring is a consequence of people excessively relying on pre-existing information or the first information they find when making decisions (Cao et al., 2021).

Gambler's fallacy occurs when investors predict future events based on past information. Due to the gambler's fallacy, people incorrectly forecast that a market trend will reverse, leading investors to await the end of a run of good or poor market returns (Waweru et al., 2008). In an upward market trend with a continuous increase in market prices, some investors tend to avoid buying shares, believing there will be a considerable decline in future market prices similarly, in a downward market trend with a continuous decline in market prices, some investors tend to buy shares believing there will be a considerable incline in future market prices. This is caused in the minds of investors due to the effect of the gambler's fallacy.

Availability bias is when people place unnecessary importance on easily accessible information. Investors encounter a challenge in deciding to buy security among many alternatives as it is difficult to analyse and compare. Thus, investors will be inclined to invest in familiar securities and rely on easily obtainable information, ignoring the fundamental principles set for diversification of portfolio management for optimisation (Humra, 2016).

Prospect Theory

Prospect theory, pointed out by Kahneman and Tversky (1979), is developed for simple prospects with monetary outcomes and stated probabilities, but it can be extended to more involved choices. Regret Aversion, Loss Aversion, and Mental Accounting are three key concepts in prospect theory that describe how the human mind can influence decision-making.

According to Benartzi and Thaler (1995), loss aversion is the tendency for individuals to be more sensitive to losses than gains.

Regret aversion explains why investors try to avoid selling “losing” investments due to the fear of making wrong decisions (Jian et al., 2021). Disciplined investing requires overcoming the reluctance to realise losses (Baker & Ricciardi, 2014).

Benartzi and Thaler (1995) described mental accounting as the indirect methods (investments, transactions, gambles, etc.) that individuals use to code and analyse financial outcomes. Sometimes, investors break down investment decisions in minds that should, in principle, be analysed as a whole (Özen & Ersoy, 2019).

Market Variables

Bich Ngoc (2014) pointed out that generally, changes in market information, fundamentals of the underlying stock, and stock price can cause over and under-reaction to the price changes. These changes are empirically proven to have a high influence on the decision-making behaviour of investors. Therefore, a rational stock investor should always be up to date with changing market information.

Herding Behaviour

Herding behaviour indicates when investors follow the actions of other investors without making their own investment decisions by rational market analysis (Nguyen et al., 2015). In the securities market, herding investors base their investment decisions on the masses' decisions of buying or selling stocks whereas informed and rational stock investors usually ignore following the masses' flow, making the market efficient (Ngoc, 2014).

It was evident from past literature that behavioural factors; namely heuristic factors, prospect factors, market factors, and herding behaviour can impact investors' investment decisions and investment performance (Rasheed et al., 2018; Metawa et al., 2019; Cao et al., 2021; Septian et al., 2022; Kengatharan and Kengatharan, 2014) found that most behavioural factors have a moderate impact on the investment decisions of individual investors at the CSE, Sri Lanka.

The Sri Lankan economy was badly affected by COVID-19, facing drastic economic and political changes in 2022. Therefore, this study was conducted to identify the importance of determining the impact of behavioural biases on investors' decisions and their investment performance during the 2022 economic crisis in Sri Lanka. The study was based on the following research questions, identifying that behavioural factors could impact individual stock investors at the CSE during the financial crisis period.

- Measure the strength of possible behavioural factors on investment-decision making of individual stock investors.
- Measure the strength of the possible behavioural factors on the investment performance of individual stock investors.

METHODOLOGY

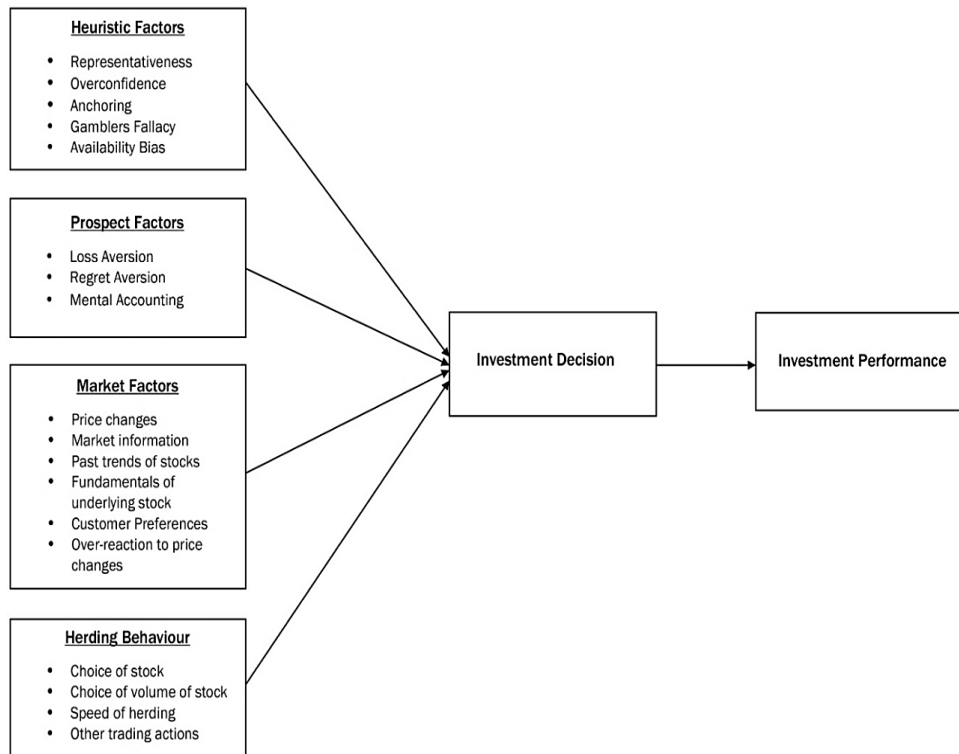
In this study, the behavioural factors namely; heuristic factors, prospect factors, market factors and herding behaviour were identified as independent variables. The investor performance was the dependent variable and the variable investment decision acts as a mediator variable in the relationship.

The individual stock investors at the CSE are the population of this study. The sample size was determined as 384 using the Krejcie and Morgan table. With the assumption of homogeneity within the stockbroker firms, the selection of the sample was done using the

probabilistic sampling technique; Stratified Sampling identifying the registered stockbroker firms at the CSE as strata. The data collection process of the study was carried out for about four months using an online questionnaire.

The questionnaire was mainly divided into three sections namely; Demographic and Socio-Economic Factors, Behavioural Factors that Influence Investment Decisions and Investment Performance. The questionnaire consisted of multiple-choice questions, rating scale questions and open-ended questions. A 5-point Likert scale was used to measure the level of agreement for the statements used in the questionnaire.

Figure 2: Conceptual Framework of the Study



Source: Developed by authors

Cronbach's Alpha was used to test the reliability of the dataset and results are reported in Table 1. Cronbach's Alpha measures were in the range of 0.849 to 0.897, which is above the desired level of 0.7. This indicates a good level of internal consistency (Hulin et al., 2001). The Kaiser–Meyer–Olkin (KMO) index which measures the sampling adequacy, was greater than 0.7 and indicates that the sample is adequate. Barlett's test of sphericity measures redundancy between the variables. The results for each construct were statistically significant, indicating that correlations between items are sufficiently large for Principal Component Analysis (Field, 2009).

Table 1: Reliability and Validity Measures of the Dataset

Construct	Cronbach's Alpha	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity	
			Chi-Square	P-value
Heuristics	0.872	0.895	1194.837	0.000
Prospects	0.875	0.889	1157.606	0.000
Market	0.897	0.904	1317.230	0.000
Herdling	0.882	0.821	816.632	0.000
Decision	0.849	0.731	489.815	0.000
Performance	0.881	0.740	624.186	0.000

Source: Survey results

Statistical Software AMOS, SPSS, Microsoft Excel, and Minitab were used accordingly to achieve the objectives of the study. Structural Equation Modelling (SEM) analysis was used to identify, measure and analyse the direct and indirect effects of behavioural factors on investment performance by considering the mediating effect of investment decision-making.

RESULTS AND DISCUSSION

Once the overall model fit is considered, the Minimum Discrepancy Function by Degrees of Freedom divided (CMIN/DF) recorded 1.733, making the measurement model acceptable.

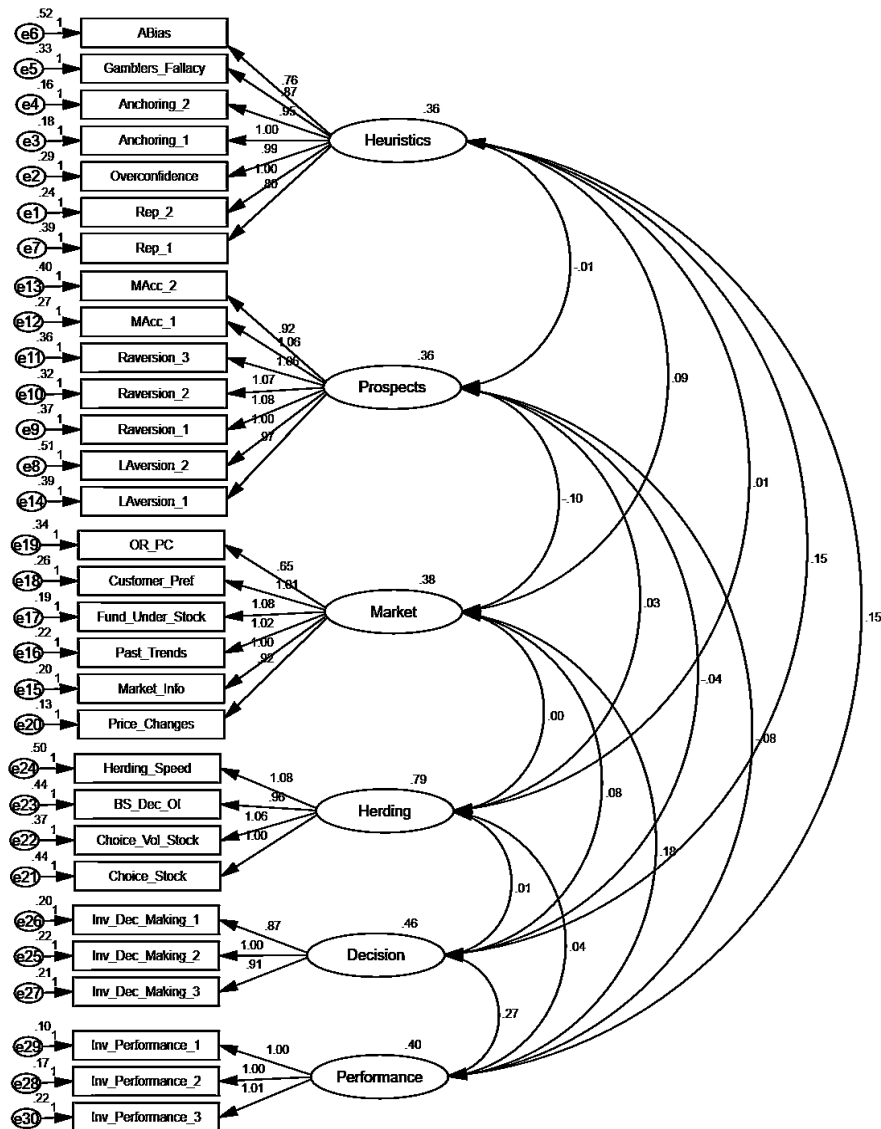
Table 2: Goodness of Fit of the Measurement Model

Category	The Goodness of Fit Index	Observed Value
Absolute Fit Indices	CMIN/DF	1.733
	GFI	0.895
	RMSEA	0.044
	RMR	0.029
Incremental Fit Indices	TLI	0.947
	CFI	0.952
	RFI	0.883
	NFI	0.895
Parsimony Fit Indices	PRATIO	0.897
	PNFI	0.803
	PCFI	0.854

Source: Survey results

As shown in Table 2, the Root Mean Square Error of Approximation (RMSEA), which assesses the hypothesised model fit with a population covariance matrix, is 0.044 for the estimated model and the root means square residual (RMR) value for the current study (RMR = 0.029) is less than the critical value of 0.1 while Goodness of fit index (GFI) that represent the overall amount of the covariation among the observed variables that the model can account for is 0.895. The Comparative fit index (CFI) and the value for the model are greater than 0.9 (CFI = 0.952), indicating a good overall fit of the measurement model.

Figure 3: Estimated Measurement Model



Source: Constructed by the authors

This study's Normed Fit Index (NFI) value was 0.895, which is greater than 0.8. The Tucker-Lewis Index (TLI) and Relative Fit Index values for this model were 0.947 and 0.883, respectively, indicating a good incremental fit. Moreover, Parsimony-Adjusted Measures; Parsimony Comparative Fit Index (PCFI), Parsimony Normed Fit Index (PNFI) and Parsimony Ratio (PRATIO) are also close to one. Accordingly, all the model fit indices meet the requirements for a good-fitting measurement model.

Validation of the Measurement Model

Convergent validity and discriminant validity can be tested to evaluate the validity of the measurement model. The variables that measure a specific construct should converge and share a high proportion of variance among them and it can be measured with the aid of convergent validity. In this study convergent validity was evaluated by using three criteria; individual standardized factor loadings, Average Variance Extracted (AVE) and composite reliabilities. Results from the Convergent Validity Measures are reported in Table 3.

Table 3: Convergent Validity Measures of the Measurement Model

Construct	No. of Items	Standardised factor loadings [Min – Max]	AVE	Composite Reliability
Heuristics	7	0.532 - 0.812	0.654	0.850
Prospects	7	0.644 - 0.778	0.510	0.877
Market	6	0.844 - 0.566	0.505	0.877
Herding	4	0.787 - 0.840	0.604	0.900
Decision	3	0.795 - 0.825	0.653	0.883
Performance	3	0.809 - 0.890	0.716	0.883

Source: Survey results

Since all the composite reliability measures are above the cut-off of 0.7, it can be concluded that there is evidence for a satisfactory level of convergent validity for the measurement model.

Table 4 compares the inter-construct correlation estimates with the square root of Average Variance Extracted (AVE) for all constructs. Diagonal entries are the square root of AVE for all constructs and sub-diagonal entries are the inter-construct correlation estimates among constructs. Table 4 indicates that the square root of AVE for each construct was higher than the correlations between that construct and other constructs. It confirmed that the discriminant validity of the model.

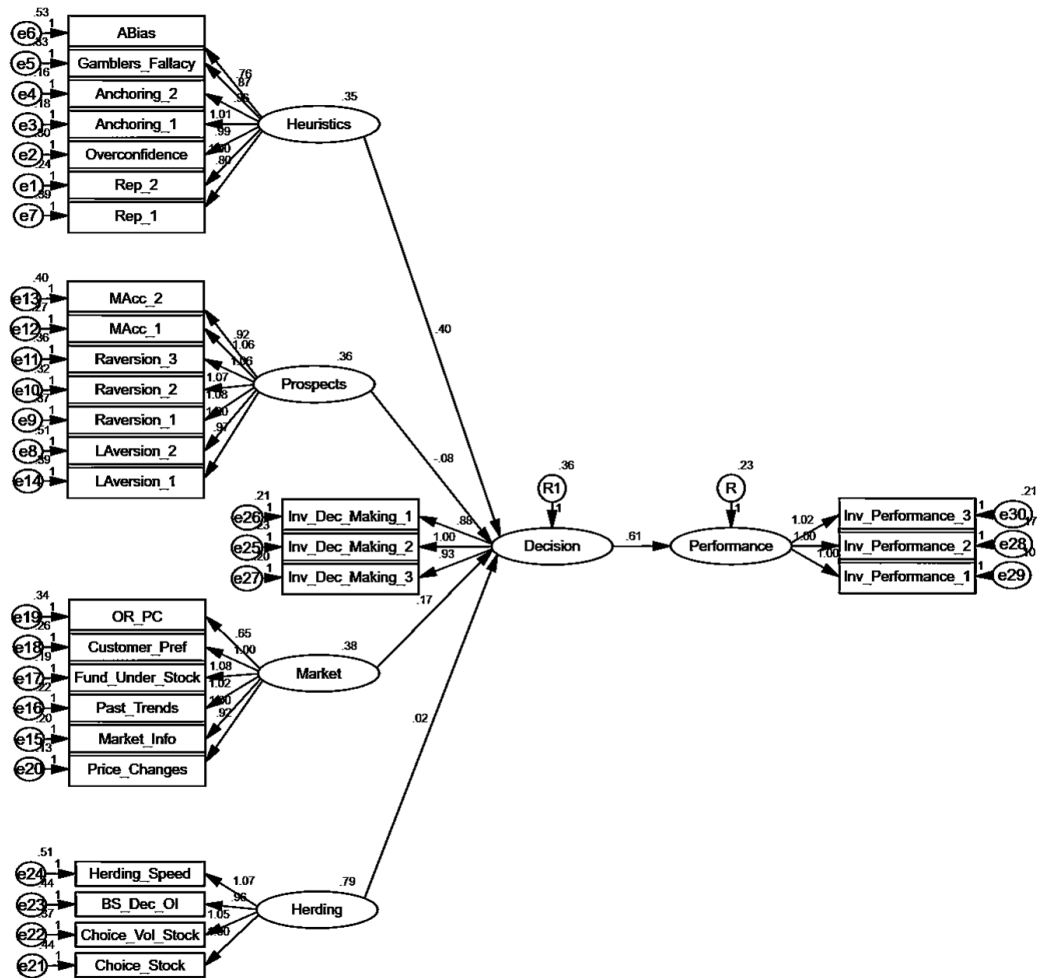
Table 4: Comparison of Squared Inter-Construct Correlations with AVE

	Inv_Dec	Heuristics	Prospects	Market	Herding	Inv_Perf
Inv_Dec	0.808					
Heuristics	0.361	0.714				
Prospects	-0.097	-0.035	0.711			
Market	0.192	0.241	-0.258	0.777		
Herding	0.020	0.023	0.051	-0.007	0.808	
Inv_Perf	0.622	0.396	-0.209	0.466	0.074	0.846

Source: Survey results

The Estimated Structural Model

Figure 4: Structural Model



Source: Survey results

Figure 4 above illustrates the structural model created to illustrate the relationship between behavioural factors and investment performance. Investment decision-making acts as a mediator variable in this relationship.

Table 5: Goodness of Fit of the Structural Model

Category	Goodness of Fit Index	Observed Value
Absolute Fit Indices	CMIN/DF ¹	1.970
	GFI ²	0.878
	RMSEA ³	0.050
	RMR ⁴	0.059
Incremental Fit Indices	TLI ⁵	0.930
	CFI ⁶	0.936
	RFI ⁷	0.867
	NFI ⁸	0.878
Parsimony Fit Indices	PRATIO ⁹	0.920
	PNFI ¹⁰	0.807
	PCFI ¹¹	0.860

Source: Survey results

Once the overall model fit is considered, the CMIN/DF value recorded 1.9706, making the structural model acceptable. As shown in Table 5, the RMSEA value, which assesses the hypothesised model fit with a population covariance matrix, is 0.050 it is less than the critical value of 0.1 while GFI represents the overall amount of covariation among the observed variables that the model can account for is 0.878. The CFI and the value for the fitted model are greater than 0.9 (CFI = 0.936), indicating a good overall fit of the fitted structural model. The NFI of this study was 0.878. The TLI and RFI values of the fitted model were 0.930 and 0.867 respectively, and it indicates a good incremental fit.

¹ Minimum Discrepancy Function by Degrees of Freedom divided

² Goodness of Fit Index

³ Root Mean Square Error of Approximation

⁴ Root Means Square Residual

⁵ Tucker-Lewis Index

⁶ Comparative Fit Index

⁷ Relative Fit Index

⁸ Normed Fit Index

⁹ Parsimony Ratio

¹⁰ Parsimony Normed Fit Index

¹¹ Parsimony Comparative Fit Index

Moreover, Parsimony-Adjusted Measures; PCFI, PNFI, and PRATIO are also close to one. Accordingly, all the model fit indices meet the requirements for a good-fitting structural model.

Identify the Direct Effects of Behavioural Factors on Investment Decision-Making.

Table 6 indicates that the heuristic factors significantly positively impact the decision-making ($\beta = 0.358$, $P = 0.001$). Therefore, it can be concluded with 95% confidence that the heuristic factors significantly positively impact the decision-making of individual stock investors at the CSE.

Table 6: Impact of Behavioural Factors on Decision-Making

Path	Path coefficients	Standardised path coefficients	Standard error	P- value	Decision
Heu_F $\rightarrow$ Inv_Dec	0.396	0.358	0.075	0.001	Supportive
Pros_F $\rightarrow$ Inv_Dec	-0.084	-0.077	0.068	0.215	-
Mar_F $\rightarrow$ Inv_Dec	0.167	0.156	0.075	0.025	Supportive
Herd_F $\rightarrow$ Inv_Dec	0.020	0.028	0.044	0.626	-

Source: Survey results

Table 6 also indicates that the prospect factors do not have a significant impact but have a negative relationship with decision-making ($\beta = -0.077$, $P = 0.215$). Therefore, it can be concluded with 95% confidence that the prospect factors do not significantly impact the decision-making of individual stock investors at the CSE.

Table 6 further shows that the market factors significantly positively impact decision-making ($\beta = 0.156$, $P = 0.25$). Therefore, it can be concluded with 95% confidence that the market factors significantly positively impact the decision-making of individual stock investors at the CSE.

It is reflected also from the Table 6 that the herding factors do not have a significant impact but have a positive relationship with decision-making ($\beta = 0.028$, $P = 0.626$).

The results of Table 6 indicate that out of the two significant behavioural components, heuristic factors have the strongest effect on the decision-making of individual stock investors. Identify the indirect effects of behavioural factors on investment performance with a mediating effect on investment decision-making.

Table 7 indicates that the heuristic factors significantly positively impact investment performance ($\beta = 0.230$, $P = 0.001$). Therefore, it can be concluded with 95% confidence that the heuristic factors significantly positively impact individual stock investors' performance at the CSE.

Table 7: Impact of Behavioural Factors on Investment Performance

Path	Path coefficients	Standardised path coefficients	Standard error	P-value	Decision
Heu_F → Inv_Dec → Inv_Perf	0.396	0.230	0.065	0.001	Supportive
Pros_F → Inv_Dec → Inv_Perf	-0.084	-0.049	0.061	0.167	-
Mar_F → Inv_Dec → Inv_Perf	0.167	0.100	0.059	0.005	Supportive
Herd_F → Inv_Dec → Inv_Perf	0.020	0.018	0.041	0.616	-

Source: Survey results

Table 7 indicates that the prospect factors do not have a significant impact but have a negative relationship with investment performance ($\beta = -0.049$, $P = 0.167$).

Table 7 indicates that the market factors significantly positively impact investment performance ($\beta = 0.100$, $P = 0.005$). Therefore, it can be concluded with 95% confidence that the market factors significantly positively impact individual stock investors' performance at the CSE. The herding factors do not have a significant impact but have a positive relationship with investment performance ($\beta = 0.018$, $P = 0.616$). Therefore, it can be concluded with 95% confidence that the herding factors do not significantly impact individual stock investors' performance at the CSE.

According to the results of the table, out of the two significant behavioural components, heuristic factors have the strongest effect on investment performance.

CONCLUSIONS & RECOMMENDATIONS

Both Heuristic factors and Market factors have significantly positively impacted individual stock investors' decision-making, and Heuristic factors and Market factors have significantly positively impacted individual stock investors' performance at the CSE during the 2022 economic crisis in Sri Lanka. A significant presence of Heuristic factors in investors' decision-making signifies that individual stock investors tend to make their investment decisions by assessing likelihoods and predicting values to simpler judgmental operations. Whereas, a significant presence of Market factors on investment decision-making signifies that the changes in the market have a high influence on the decision-making of individual stock investors. However, the study also indicates that investors are not prone to herding behaviour or prospect factors. Out of the two behavioural components, Heuristic factors have the strongest effect on decision-making and investment performance. The presence of these behavioural factors ultimately hinders the quality of investors' investment decisions and then significantly affects their investment performance. After all, this indicates that the investors' mind is affected by

various behavioural factors and that we cannot always assume that investors always act rationally as machines. Since it was evident that behavioural biases were present among individual stock investors at the CSE, this study helps market investors, investment advisors, and policymakers better understand stock market outcomes and anomalies. It is recommended that the relevant stakeholders incorporate the impact of relevant behavioural biases for precise stock market analysis and market forecasts. Recognising such influences of behavioural biases could benefit in making much-informed investment decisions and minimise or prevent unforeseen negative impacts from anomalies in the stock market. This study will help individual stock investors to study how their stock market investments could be influenced by certain behavioural factors.

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