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IMPACT OF CONTEXTUAL DETERMINANTS TOWARDS THE DISPOSITION BIAS OF INDIVIDUAL INVESTORS IN THE SRI LANKAN STOCK MARKET

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Abstract

The findings are important for individual stock investors and potential investors significantly; can be attentive to their peculiar cognitive and emotive factors in their accurate investment decisions. Among the 306 individual investors in the Colombo Stock Exchange (CSE) was used as survey model. Through standardized questionnaires from earlier research studies, the events, beliefs, behavioral consequences, loss aversion, disposition, and investor sentiment assessed. AMOS software was used for the structural equation modelling (SEM) analysis of the data. The empirical data supported that loss aversion and investor sentiment positively impacted the disposition bias of individual investors. The events, beliefs and behavioral consequences (emotions) do not considerably drive factors of disposition bias in the Sri Lankan stock market. The results showed that loss aversion and sentiment are the primary causes of disposition bias, which is supported by the previous scholar's findings. The study supported loss aversion through disposition bias and the mediational impact of events. The main theoretical contribution is; the ABC model does not fully support in the Sri Lanka context to address the disposition where the loss aversion contributes to the execution of the disposition and moderating by investor sentiment. The existing outcomes will be useful for the investors, prospective investors and the stockbroker firms for maintaining and leading to substantial assertive decision making reducing of having biased decisions. The study identified the biases of a person's personality about nature in the early structure before leading to disposition bias. The second half of 2020 was used for which statistics were collected, and only the Sri Lankan market was included in the generalization. The macroeconomic implications and the institutional investors do not consider for the study due to complexity. The association between loss aversion and disposition bias was proved via the investigation. The paper recommended that investors with risk-averse prime for the disposition and the disposition is heavily influenced by a person's loss-averse personality, which is controlled by investor sentiment.

Keywords: Disposition Bias, Loss Aversion, Colombo Stock Exchange, Individual Investors

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1. Introduction

Disposition bias is a term used to describe an investor's tendency to hold losing investments for a long period of time and quickly sell winning investments. Traditional financial theory is based on the main assumption that investors are rational beings, which is consistent with the efficient market hypothesis (EMH). Behavioral finance uses insights from investor psychology to explain the irrational behavior and biases of retail investors. Behavioral finance is a branch of finance that uses identified psychological biases to explain stock market anomalies (Fama, 1998). Behavioral finance recognizes several types of biases, including overconfidence, collective behavior, loss aversion, temperament, and self-attribution. Thus, disposal bias can positively or negatively influence investor decision-making on the Colombo Stock Exchange (CSE), which has been empirically proven by researchers (Siraji & Buvanendra, 2019). CSE investors may overestimate their own predictions, leading to biased behavior (Pathirawasam & Edirisinghe, 2011). Therefore, it is worthwhile to examine and understand the individual investor's behavior related to her CSE and the determinants that influence its decisions.

As of June 30, 2020, the CSE has 289 listed companies representing 20 industry groups. 2018 got off to a strong start for CSE as investors entered the capital market with optimism. By February 2018, however, the situation had reversed, starting with a correction in global stock markets. Despite the unprecedented business environment, CSE had to cut its market capitalization to 2% in 2018.

An active primary market mainly drove this trend with thirteen new equity and debt issuances. Investors' active participation is necessary for stock market development since it impacts the country's economic growth. The Sri Lankan stock market contributes largely to the Sri Lankan economy and attracts foreign investments. Therefore, studying investors on the Colombo Stock Exchange is essential in the current context to attract investors for expansion.

2. Literature Review

Traditional financial theories explain the rational decision-making of rational investors. However, the Bounded Rationality Theory contends that investors' policymaking is "bounded by rationality" rather than being entirely rational. It explains why people are more eager to make satisfying decisions than optimal ones. The rational decision-making is not applicable. Simon suggests that due to the complexity of many situations, economic agents use heuristics to make decisions rather than applying rigid and rigid optimization rules.

Following Simon's (1955) assessment, psychologists started to worry more about how humans read probability incorrectly (and irrationally). Kahneman and Tversky (1979) presented the initial research in this approach in their prospect theory, which described how constrained rationality functions in humans. The prospect theory made clear that determining an alternative's likelihood of success depends on a single personal judgment based on heuristics, which control people's rationality in terms of making decisions (Tversky & Kahneman, 1973, 1974). People choose between options that involve risk and return, according to the prospect hypothesis (Tversky & Kahneman, 1973, 1974).

There is also a different approach to making decisions in risky and unclear situations. Disposition bias is caused by the cognitive psychology perspective's rational and irrational behavior, which ignores cause and effect. Miller (1999) describes the theoretical viewpoints of modern finance, Ritter (2003); Baker and Nofsinger (2010); Statman (2014) and Thaler (2016) provide clear explanations of the historical development of behavioral finance. From a psychological perspective, irrationality in human decision-making is fundamental to human nature (Ellis, 1976).

All people have inevitable psychological biases that prevent them from making logical decisions, and these biases adversely affect investment decisions and market efficiency according to behavioral finance models.

According to Bakar and Yi (2016), psychological variables significantly influence the stock market decisions made by individual investors. Baker and Nofsinger (2010) claim that "cognitive mistakes," "basic heuristics," and "psychological biases" have an effect on the policymaking process when making investments. It is implied that mental biases exist as convictions and tendencies (Pompain, 2006). Investment decision-making and efficiency of markets are complex conceptions that scholars are discussing. The economy and stock exchange have a positive relationship; if the stock exchange declines, the economy will suffer, and the opposite is also true. As a result, the decisions made by individual investors on the securities exchange are crucial in determining market development, which controls the economy of country (Kengatharan & Kengatharan, 2014). However, scholars have found that an individual’s psychological makeup strictly correlates with their investment decisions in the stock market (Ajmal et al., 2011; Baker & Nofsinger, 2002; Shefrin, 2006).

The current research study focuses mainly on disposition bias, a mental heuristic in behavioral finance. Traditional finance discusses and elaborates on rationality, though the concept is outdated compared to the concept of irrationality that scholars in the 1970’s examined. The ABCs of Cognitive-Behavioral Therapy (CBT) and Rational-Emotive

Therapy (RET) defined complicated cognition, emotions, and behavior and described how these three aspects inexorably include and interact with one another (Ellis, 1991).

The ABC Model of Causation offers a conceptual framework for comprehending the causes and consequences of peculiar investor behavior in the stock market (Ellis, 1991). The ABC Model is based on the primary model with A- activating events; B- core beliefs (emotional and intellectual which contain both rational & irrational elements) and C-behavioral consequences (behavioral anomalies, positive or negative). The notion of causation, which gives rise to the disposition bias, can be used in this model to logically understand the underlying reason for irrational human behavior.

Disposal bias derives from loss aversion. Disposal bias is one of the fundamental phenomena of agency in both risk and uncertainty, showing that losses outweigh gains (Kahneman & Tversky, 1984; Tversky & Kahneman, 1991). Prospect theory explains disposition through three main components, namely, activating events, beliefs, and behavioral consequences, as explained in the ABC model (Ellis, 1976). Sentiment contributes to the model as a moderating factor. Investor Sentiment in the state induced by a particular event. The proxies of investor sentiment influence investor decision-making (Baker & Wurgler, 2006).

The ABC model was tested by (Brahmana et al., 2012) to investigate psychological biases and day-of-the-week anomaly (DOWA). These researchers tested whether the day effect was combined with the theoretical ABC model. The scholars tested DOWA empirically in the stock market using the ABC model, and they explored the role of psychological biases on the DOWA. They were able to conclude that the 05 psychological variables might influence the DOWA.

Standard finance makes the assumption that people always make logical decisions and have access to all available information. Understanding irrational decision-making involves using imperfect information (Bikhchandani et al., 1992), bounded rationality (Pompain, 2006), anomalies (Ajmal et al., 2011), and basic heuristics (Baker & Nofsinger, 2010) should be understood, psychological bias (Baker & Nofsinger, 2002) or behavioral bias (Shefrin, 2007) and psychological reporting.

These findings were critically evaluated in a literature review. Most people reluctant to lose gain (loss realization). For this reason, investors continue to hold stocks while prices are falling. Prices are expected to rise the next day (Shefrin & Statman, 1985). The results proved that the disposal effect does not appear in laboratory experiments, but also in real financial markets. The cause of this was not identified in this study, but the effects are being closely monitored.

The existence of a disposal bias in a market can have various effects on the performance of that market. One of the most important effects is the price reversal of losing and winning stocks due to trading pressure on these two stocks (Bandara, 2012). This particular research study is based on CSE from 2006 to 2010 period using 20 strains. Secondary data were used and the study concludes that unobservable factors are distinct from firm-specific and time-specific factors such as Disposal Effect, Impact on Individual Investor Behavior. The results indicate a disposal bias, but the reasons and causes for this disposal were not found as mentioned in the previous article.

Behavioral biases significantly impact investor behavior on the CSE (Kengatharan & Kengatharan, 2014). The results of this study were summarized based on three hypotheses. The final results revealed that heuristics, market, prospect, and herding; influence the investment decisions of individual investors in the CSE. Quantitative data was gathered using the cross-sectional design, and questionnaires with data synthesis were distributed to individual CSE investors. The information gathered via questionnaires gives fundamental insight into the variables influencing investors' choices in the CSE. Respondents selected with the stratified random sample technique were sent questionnaires. Using stratified sampling, one may be certain that the sample is distributed similarly to the population (Bryman & Bell, 2007). Using the 1–5 Likert scale: strongly disagree, disagree, no opinion, agree, and strongly agree.

There are findings about the disposal bias of individual investors and team investors, and researchers found and experimentally analyzed the disposal effects of team investors and individual investors.

The results show that both situations involve decision bias (Rau, 2015). The impact is stronger for team investors, though. Additionally, the results demonstrate that teams experience less capital loss than individuals. They also typically experience higher financial gains than individual investors. In this study, secondary data (PLR) were used to calculate the percentage of realized gains (PGR) and the percentage of realized losses (PLR). PGR (PLR) is calculated by dividing the total number of capital gains (losses) available for sale by the number of actual capital gains (losses). Odean (1998) investigated the same idea using 10,000 unique brokerage accounts.

Ahmad (2019) research results show that extraversion, industriousness, and risk-taking are associated with temperamental biases. This indicates that extroverted and hardworking individuals make more optimistic economic decisions based on their skills, knowledge and experience (Ahmad, 2019). Data were provided by undergraduate and postgraduate students

from his two prestigious universities in Peshawar, Pakistan. Exercises were conducted by a total of 405 students and 396 questionnaires were used to collect data. Results showed that attitudes to risk had a negative moderating effect on the relationship between extraversion, agreeableness, and temperamental biases among investors.

This demonstrates that investors are less likely to display disposition bias if they have high levels of extraversion and affability under risk. People with extraversion and affability (those with a risk-taking mentality) are better at selecting, analyzing, and updating their portfolios.

Another research study showed that among the behavioral factors of anchoring, disposal effects, overconfidence, and risk perception, there was a large positive or negative impact on investors' investment decisions for CSE (Siraji & Buvanendra, 2019). These researchers identified and described gender expression as an effect that moderates the relationship between behavioral factors such as anchoring, disposal effects, grazing, overconfidence, risk perception, and stock investment decision-making. This research was conducted as a private investor survey on CSE.

Scholarly articles from the 1950s came up with different arguments and models. At that time, it was popular and common for most scholars to follow Odean (1998), secondary data model, to test disposition bias, where the model was developed through daily share prices. Another set of scholars used only one variable to test the existence of disposition bias in the stock market. A few scholars recognized the impact of psychological factors on disposition bias and the causes of disposition bias. However, the reasons that drive the disposition effect have not been comprehensively addressed in the past literature; the current study aims to fill this research gap.

2.1. Hypotheses and Conceptual Model

The conceptual framework presents a conceptual model derived from three independent variables: a mediator, a moderator, and a dependent variable; (See Figure 01). Activating events, beliefs, and consequences are considered independent variables; loss aversion is considered as mediating variable; investor sentiment is regarded as the moderating variable, and disposition bias is considered as a dependent variable. The eleven hypotheses were developed as follows.

2.1.1. The Impact of Loss Aversion on Disposition Bias

H_1 A positive relationship between activating events and the loss aversion of individual investment decisions

H_2 A positive relationship between core beliefs and loss aversion of individual investment decisions

H_3 A positive relationship between behavioral consequences on the loss aversion of individual investment decisions

H_8 A positive relationship between loss aversion and the disposition bias of individual investment decisions

H_9 A positive relationship between activating events and the disposition bias of individual investment decisions mediated by loss aversion

H_{10} A positive relationship between core belief and disposition bias of individual investment decisions mediated by loss aversion

H_{11} A positive relationship between behavioral consequences and disposition bias of individual investment decisions mediated by loss aversion

2.1.2. The Impact of Activating Events on Disposition Bias

H_4 A positive relationship between activating events and individual investment decisions' disposition bias

2.1.3. The Impact of Core Beliefs on Disposition Bias

The argument is that for emerging markets such as Sri Lanka, it is essential to test this for the betterment of investor decision-making.

H_5 A positive relationship between core beliefs and individual investment decisions' disposition bias.

2.1.4. The Impact of Behavioral Consequences/ Emotions on Disposition Bias

H_6 A positive relationship between behavioral consequences and individual investment decisions' disposition bias.

2.1.5. The Impact of Investor Sentiment on Disposition Bias

H_7 Investor sentiment moderates the positive relationship between activating events, beliefs, behavioral consequences and disposition bias of individual investment decisions.

The conceptual model of the study and the hypotheses are given in figure 01.

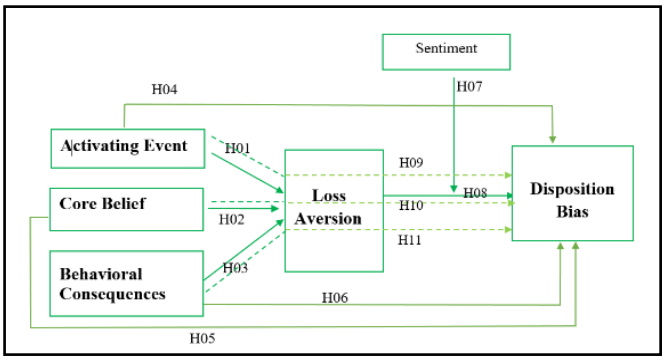

Figure 01 - Conceptual Model of the Study

Figure 01 was developed based on the two theories, the prospect and ABC model. The ABC Model (Ellis, 1976) explained the three main causes of disposition bias: an activating event, core beliefs, and behavioral consequences. The feeling is in line with experiences, core evaluations (attitudes) regarding investment decisions, and emotional behavior. The above said three antecedents lead to loss aversion. The dotted lines represented the mediation impact of the variables. Evaluating the consequences of alternatives derives from individual personal judgment based on mental shortcuts in uncertain situations with rapid decision-making. (Tversky and Kahneman, 1973, 1974).

3. Methods

The unit of analysis is individual investors in the CSE. Based on the availability population number (647,584), the sample size was calculated using Solving's formula $n= N/(1+Ne^2)$. According to Solving's Formula, the sample size calculation answer is given as 242 minimum responses out of investors of CSE at a 95% confidence level. The data analysis process through SPSS AMOS software 22.0 and, were collected 315, which of nine were excluded due to incompleteness; finally filtered as 306 pure responses for the study. The study used the positivism approach to empirically test the variables using the questionnaires from individual investors. The deductive approach is used where to test the ABC model applicability in the disposition bias of CSE. The structured questionnaires are used to collect primary data from individual investors, where the quantitative technique is chosen for the research.

4. Results

A pilot study was conducted with 30 respondents (individual investors) to assess the questionnaire's face validity and reliability which Cronbach alpha is 0.737 and Pearson correlation Analysis closer to zero; proving that the validity and reliability are achieved.

The multivariate assumptions, homoscedasticity, normality, and multicollinearity, were assessed and confirmed. For all items, the factor loadings were above 0.7, excluding one

variable, 'Activating Events". However, the variable could not be excluded due to the theoretical link to the model. Further, the Cronbach alpha value was greater than the 0.7 level. The Cronbach alpha value test was carried out to test for consistency and reliability.

4.1. Measurement Model

Confirmatory Factor Analysis (CFA) with Structural Equation Model (SEM) was evaluated through the AMOS 22.0 version with a sample size of 306. The final results of the descriptive statistics, reliability, and validity tests are given in Table 1.

Table 1: Descriptive Statistics

Variable	Number of Items	Mean	Standard Deviation	Cronbach Alpha	CR	AVE
Activating Events	02	4.13	.47	.351	.46	.50
Core Belief	03	3.71	.65	.822	.66	.40
Behavioral consequences	03	3.73	.62	.666	.68	.41
Loss Aversion	02	4.09	.55	.605	.08	.32
Investor Sentiment	22	3.74	.75	.946	.97	.62

The GOF (Goodness of Fit) guides confirmed the appropriateness of the model. For the measurement model, all correlations and standard regression weights were significant at the 95% confidence interval. Moreover, the GOF results proved that the absolute index of fit validates the fit between the observed data and the model. The incremental values being close to the 01 levels, and within the range 0.290 - 0.377, confirmed that the model fit was good (Hair et al., 2010). Therefore, the model reported satisfactory GOF indices and the present study validated the fit between the experimental data and the model.

The first structural model to test H01*:* The resulted in fitness indices that the $\beta = 0.113$ and P-value (.337) > 0.000 support the dismissal of the hypothesis, which says; no positive relationship between activating events and loss aversion.

H_2: The hypothesis resulted in the $\beta = 0.585$ and P-value (.949) > 0.000 supports the refusal of the hypothesis which says; no positive relationship between core beliefs and loss aversion.

H_3: This resulted in the β= 0.212 and P-value (.984) > 0.000 ensuring the refusal of the hypothesis which says; no positive relationship between behavioral consequences and loss aversion.

H_4: The fourth hypothesis is given that β= 0.091 and P-value (.483) > 0.000 support the refusal of the hypothesis which says; no positive relationship between activating events and disposition bias.

H_5: The output resulted in the β= 0.462 and P-value (.975) > 0.000 support the refusal of the hypothesis which says; no positive relationship between core beliefs and disposition bias.

H_6: Sixth, resulted in the β= 0.168 and P-value (.71) > 0.000 ensures the refusal of the hypothesis which says; no positive relationship between behavioral consequences and disposition bias.

H_7: Resulted in the β= 0.126 and P-value (.000) > 0.000 ensures the acceptance of the hypothesis which says that there is a moderating impact from investor sentiment on the relationship of the irrational behavior of disposition bias.

H_8: Results in the β= 0.09 and P-value (.023) > 0.000 support the acceptance of the hypothesis; which says; there is a positive relationship between loss aversion and disposition bias.

The mediating impact was tested in H_9, H10 and H_{11}. The mediating impact was that of activating events, beliefs and behavioral consequences through loss aversion towards disposition bias. The mediating effect of the model was tested via direct and indirect pathways using the AMOS 22 version. There was only one partial mediation detected for the relationship between activating events and disposition bias through loss aversion. The remaining two mediations were not significant, nor were there any partial or full mediations detected (Core belief, disposition through loss aversion; behavioral consequences, disposition through loss aversion).

The data analysis revealed that a strong mental behavioral bias leads to disposition bias. The theoretical ABC model embedded to test its contributions did not add value to the findings. An important factor in prospect theory, which is loss aversion cognition, was found to be a key driver for the execution of disposition bias in the Sri Lankan context. Therefore, in Sri Lankan; it is necessary to overcome a "loss averse" attitude to prevent disposition bias. This is a positive contribution of the study to individual investors, stockbroking advisors, and potential investors in Sri Lanka.

5. Limitations and Directions for Future Research

As previously explained, disposition bias is one of the psychological biases in behavioral finance. There are more than seventeen (17) psychological biases according to scholarly articles (Kumar & Goyal, 2014; Zahera & Bansal, 2017). The current study only focused on disposition bias which was recognized initially by Kahneman and Tversky (1979). The study is limited to one bias, though several biases may have been in operation concerning individual investors' decisions (Kengatharan & Kengatharan, 2014; Siraji & Buvanendra, 2019). The sample size was limited to 306 individual investors since it was difficult in practical terms to cover the entire population. Further, investors were taken as a whole in a gender-blind manner whereas (Siraj & Buvanendra, 2019) have originate that gender has a substantial moderating consequence on bias. Future researchers can replace the ABC model with another appropriate model that is more suited for psychological biases.

6. Conclusion

The main purpose of this study was to contribute to existing knowledge on behavioral biases and their history that affect retail investors in Sri Lankan markets. Studies have been conducted to identify whether biases exist in the stock market or not. However, there have only been limited studies on the antecedents of biases leading to irrational decision-making patterns. Disposition bias is led by the loss aversion context of each behavior. Also, the disposition is significantly moderated by the investor sentiment towards irrational decision-making. An investment cannot be recognized as positive or negative initially, but its consequences have to be borne by the investor. Loss aversion is the main reason behind Sri Lankan market behavior. The outcomes of the current study can be pragmatic to the Sri Lankan context, where future research can be designed on a different platform to test the overall model of biases.

The knowledge of investors' behavior provided by this study can be further extended and groomed for better outcomes with the suggestions mentioned above. These suggestions may be a useful guide for individual investors to build stock portfolios and make informed investment decisions.

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