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Чи відрізняються поведінкові упередження інституційних та індивідуальних інвесторів?

Анотація. Мета статті – *виявити, чим відрізняються поведінкові упередження серед індивідуальних та інституційних інвесторів на базі Коломбоської фондової біржі. Дослідження розглядає вплив чотирьох поведінкових упереджень (упередженість надмірності, упередженість репрезентативності, ефект розподілу та ухил ментальності натовпу) на прийняття рішень щодо фінансових інвестицій інституційними та індивідуальними інвесторами. Крім того, це дослідження аналізує вплив демографічних факторів як модераторів, вживаючи заходів для заповнення емпіричного пробілу та практичного розриву в контексті поведінкових фінансів.*

Методологія дослідження: *Для збору даних використовувався опитувальник, а остаточна вибірка включала 104 індивідуальних та 71 інституційного респондента. Дані 175 інвесторів були проаналізовані з використанням підходу часткового моделювання структурних рівнянь найменших квадратів.*

Висновки: *Дослідження показало, що розпорядчий ефект впливає на інвестиційні рішення як індивідуальних інвесторів, так і інституційних інвесторів, тоді як упередження щодо надмірної впевненості впливає лише на інвестиційні рішення індивідуальних інвесторів. Вік та професія впливають на взаємозв'язок між поведінковими упередженнями та інвестиційними рішеннями індивідуальних інвесторів.*

Оригінальність: *Це дослідження є одним із новаторських досліджень, що вивчають розбіжності поведінкових упереджень у процесі прийняття рішень індивідуальними та інституційними інвесторами. Таким чином, це дослідження розширює існуючу літературу в галузі поведінкових фінансів, особливо в контексті нових ринків. У цьому сенсі результати цього дослідження можуть бути корисними для дослідників, інвесторів та політиків, щоб забезпечити прийняття ними раціональних інвестиційних рішень.*

Ключові слова: *упередженість щодо надмірної впевненості, упередженість репрезентативності, упередження ментальності натовпу, ефект розподілу, індивідуальні інвестори, інституційні інвестори.*

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Do behavioral biases differ among institutional and individual investors?

Abstract. Purpose: *The purpose of this paper is to investigate how does the behavioral biases differ among the individual and institutional investors based on Colombo Stock Exchange. The study considers the effect of four behavioral biases; overconfidence bias, representativeness bias, disposition effect and herd mentality bias on the financial investment decision making of individual investors and institutional investors.*

Design / methodology / approach: *A questionnaire was utilized to collect the data and the final sample consisted with 104 individual and 71 institutional respondents. The data of 175 investors was analyzed by using Partial Least Square-Structural Equation Modeling approach.*

Findings: *The study revealed that disposition effect make an impact on the investment decisions of both individual investors and institutional investors whereas overconfidence bias has impact only on the individual investors' investment decisions.*

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Originality: *This study is one of the pioneering studies examining the behavioral biases differences of individual and institutional investors' decision making. Thus, this study expands the existing literature in the field of behavioral finance particularly in emerging market context. In this sense, the findings of this study could draw important inferences for researchers, investors and policy makers to ensure that they make rational investments decisions.*

Keywords: *Overconfidence bias, Representativeness bias, Herd-mentality bias, Disposition effect, Individual investors, Institutional investors.*

1. Introduction

Efficient Market Hypothesis (Fama, 1970) and the Modern Portfolio Theory (Markowitz, 1952) are vital theories which assume that investors are rational as well as risk averse. In 1964, Sharpe introduced the Capital Asset Pricing Model (CAPM) by integrating the idea of efficient market with Markowitz's mean & variance optimization. CAPM assumes that all investors are rational in their financial investment decision making. However, Simon (1956) presented the concept of bounded rationality suggesting people tend to make irrational decisions due to lack of information and memory errors. Thus, the birth of behavioral finance criticizes efficient market hypothesis (Khajavi & Ghasemi, 2006).

Behavioral finance mainly influences investor decisions depending on personality, culture and individual judgments. During the last few decades, some studies have been conducted to investigate the influence of behavioral biases on decision making processes of investors in worldwide financial markets. In particular, the literature on behavioral biases and investment decisions has mainly addressed two categories of investors, namely individual and institutional investors. Individual investors refer to people who invest their excess funds in securities and assets based on their own decisions. Institutional investors refer to various professional investors with huge excess assets to be invested in different lucrative opportunities. Institutional investors consist of banks, pension funds, insurance companies, mutual funds, hedge funds and endowment funds (Baker, Filbeck & Ricciardi, 2017). As evidenced by Schmeling (2007), it is seen that individual and institutional investors exhibit deviations in volume of the transactions and characteristics. Since, institutional and individual investors' risk attitudes, time horizon and profit goals are different, they stand on contradictory positions in the financial markets (George, Wiklund & Zahra, 2005).

Several empirical studies have been conducted to examine the impacts of behavioral finance on different types of investors around the world. Most of the studies investigate the differences of behavioral biases and their impact on individual investors (Raut & Kumar, 2018) and Imran, Kashif, Rehan and Ashow (2018). However, considering the extant literature addressing the behavioral bias differences and its impact on institutional investors are limited.

Moreover, few studies have stressed the importance of examining the institutional investors behavior in the decision-making process. For example; Mahanthe and Sugathadasa (2018) argued the importance of incorporating institutional investors for future research in Sri Lankan context. Kumar & Goyal (2015) have also highlighted the avenues for new research on joining different types of investors such as individuals and institutional investors. The need of finding out the variations in the investors' behavior and the effect of behavioral biases on financial decision-making has been the focus of the extant literature. Mittal (2019) also investigated based on Indian investors and showed the significance of identifying the behavioral biases at micro level and measuring their effect on individual and institutional levels.

Therefore, our study first contributes to the extant literature by comparing the behavioral bias differences in terms of overconfidence bias, representativeness bias, disposition effect and herd-mentality bias among the individual and institutional investors' investment decisions. Moreover, the studies based on the institutional investors were mainly based on developed markets (For example, Suto & Toshino, 2005; Hong, Kubik & Stein, 2005). Therefore, this study contributes to the general body of knowledge particularly in an emerging market perspective by selecting the context of Sri Lanka. Therefore, this study enriches the extant literature in behavioral finance phenomenon in particular to the emerging market context by examining the behavioral biases differences of individual and institutional investors' decision-making.

The rest of the paper is organized as follows. Section 2 reviews the literature and develops research hypotheses. Section 3 presents the research methodology. Section 4 discusses the empirical results. The conclusion and the future research directions are presented in Section 5.

2. Literature review and hypotheses development

2.1 Literature review

Behavioral Finance helps in identifying the behavioral biases which affect investors in investment decision making. Kumar and Goyal (2015) showed that investment decision making process is influenced by several behavioral biases and those biases stimulated investors to diverge from rationality. As a result, investors tend to make irrational investment decisions. Following, we present the empirical studies based on the selected behavioral biases.

a. Overconfidence Bias

People think that they are very much knowledgeable than they actually do, has been defined as overconfidence (Shiller, 2000). Keswani, Dhingra and Wadhwa (2019), found that overconfidence bias affects in higher levels on the investment decisions of individual investors and thereby showing a positive impact on investment performance. The significance of private information is overstated by overconfident investors since that information allows investors to actively trade.

In Sri Lankan context, studies found that a negative substantial influence of overconfidence on investment performance (Kengatharan & Kengatharan, 2014), positive relationship between overconfidence bias and investment decision-making (Mahanthe & Sugathadasa, 2018) and the investment performances were directly proportional to the heuristics factors due to overconfidence (Menike, Dunusinghe & Ranasinghe, 2015). However, there are contradictory views of the influence of overconfidence on investment decision making of Sri Lankan investors. As per Siraji (2019), Sri Lankan investors do not like to realize losses due to heuristics bias impacts on their decision making.

Several studies have analyzed the effect of psychological biases of institutional investors (Marwa & Meryem, 2018; Kaplan, Klebanov & Sorensen, 2012; Hadbaa & Boutti, 2019) and found that, managers are overconfident about investment decisions due to their knowledge and skills therefore, they had shown slight loss aversion, risk and regret. Studies based on developing markets (Waweru, Munyoki & Uliana, 2008; Barber et al., 2007) found that the decision-making of institutional investors was affected by overconfidence heuristic and suggested that when the institutional investors' level of overconfidence increases, it leads to weaken the disposition effect. Thus, overconfidence has been evident as a factor causing irrational investment decisions of all investors.

b. Representativeness Bias

Representativeness bias induces the investors to recall much from the latest performance. A security with recent short term poor returns could be seen as representativeness of long-term poor returns and vice versa. In such instances, investors expect that losses would last for the coming years as well. Barber, Odean and Zheng (2000) argued that when investors purchase and sell, they are exhibiting regular patterns suggesting funds with strong past performance are more attractive to US mutual fund investors. However, investors are induced to sell funds having posted high returns. Keswani et al. (2019) also found that representativeness bias has a positive impact on investment decision-making of individual investors at the National Stock Exchange of India. Latest performance is very representative of a fund's or security's future predictions as per the belief of investors. Thus, many investors rush previous performance in their investment decision-making.

Arrfelt, Wiseman and Hult (2015) argued that investors' failure to recognize the real phenomenon by observing historical records instead of future potential. Historical performance of a firm showing representativeness bias has affected on investment decisions as per the findings of Petkova, Donchev and Wen (2014). Substantial difference could be noticed by Kanojia, Singh and Goswami (2018) among investors having different level of experience in relation to overconfidence bias and representativeness bias.

Considering the institutional investors and representativeness bias, Hadbaa and Boutti (2019) ascertain that representativeness bias has no impact on the decision-making of portfolio managers of equity securities in Morocco whereas, Waweru, Munyoki and Uliana (2008) show that institutional investors are affected by the representativeness heuristic based on the Nairobi Stock Exchange. Grinblatt and Keloharju (2000)'s study based on Finnish retail and institutional investors show that investors follow momentum strategies and some investors may follow one set of trading tactics which are exercising historical yield differences from stocks while other investors follow reverse tactics.

c. Disposition Effect

The behavior of investors' holding losing stocks while selling profitable stocks is known as disposition effect as per Shefrin and Statman (1985). According to the prospect theory introduced by Kahneman and Tversky (1979), individual investment behavior was analyzed under different risk characteristics. The disposition effect has been identified as an addition to the prospect theory. Barber, Odean and Zheng (2000) revealed a disposition effect when selling mutual funds in contrast to their purchases of mutual funds. Carefully affiliated regret aversion is identified as disposition effect by Baker and Ricciardi (2014). Selling stocks appreciating in value quickly and holding depreciating stocks for a longer period has been evident in their study.

To investigate the presence of disposition effect in relation to richer investors, the researchers Dhar and Zhu (2006) associated socioeconomic and demographic factors to their examination. The professional individuals showed less disposition effect. Further, reduced disposition effect was associated with greater trading rate. As per the overall findings of Goo, Chen, Chang and Yeh (2014), in the identification of possible costs related to personal investors, the knowledge of trading patterns would be more useful allowing them to be happy with greater returns through designing healthier trading strategies. The above extant literature identifies that Investors who have more familiarity and knowledge, are less likely to be affected by disposition effect and vice versa. This was the argument of majority of the scholars relating to disposition effect. Even though, past returns forecast the future, investors may not base past performance in selling stocks of mutual funds. Here, those investors are selling appreciating stocks and holding the loss-making stocks. The outcome was that the disposition behavior was accompanied with overconfidence bias of investors. Overconfident behavior was due to the historical experience of stock returns and performance. Moreover, institutional investors were less likely to be disposed to disposition effect. The reason was the experience and professional training associated with them.

With regard to German institutional investors, Menkhoff, Schmeling & Schmidt (2010) were unable to identify disposition effect. Improved investment behavior was not resulted from the level of risk aversion and wealth. However, experience gained through investments has affected advanced investment behavior. Institutional investors keep holding winning stocks, if they assume

that they can make an influence on stocks' values. They are sometimes used to sell losing stocks. However, this behavioral pattern could not be noticed with individual customers since their power is comparatively low. Therefore, individual investors would display disposition effect while institutional investors would not. Similarly, overconfidence and the disposition effect associated with momentum strategies were examined by Sun et al. (2013).

d. Herd Mentality Bias

When investors are persuaded to trust the opinion of the majority investors, they move towards the same direction, this was defined as herding by Fromlet, (2001). Many reasons have been identified in various categories of investors for herd-behavior. For example, protecting reputations and getting reward advancements, analysts seek others' previous familiarities/experiences or decisions (Lee et al., 2004). The results of Chhapra, Rehan, Kashif and Bai (2018) found a positive impact of herd-behavior on investment decisions. In investment decision making, investors' trust also favor herding. This is because, investors assume that the trustworthiness and helpfulness of information generated through herding is very high. Thus, Katper, Azam and Karin (2019) discovered investors act according to other investor groups of the financial market, when they make investment decisions. Kengatharan and Kengatharan (2014) show that when investors are making buying and selling decisions of stocks, sets of investors get together and share the information with other colleagues in the Sri Lankan stock market. However, the outcome was not consistent with the finding of Bakar and Yi (2016) based on Malaysian investors. They concluded that herd behavior does not have a substantial influence on investors' decision making. Similarly, Lim (2012) had also supported that Bakar's argument with regard to Malaysian investors saying herding has no substantial impact on decision- making.

In relation to Sri Lankan investors, Menike, Dunusinghe and Ranasinghe (2015) had found that investors depend more on combined information than private information, therefore they are likely to adopt the performance of others. As investors think that herding is more useful to get reliable facts, investors very much like to get the benefits of herding. In anticipation of greater returns, Sri Lankan investors were to be founding their decisions on group behavior. In relation to institutional investors, Waweru, Munyoki and Uliana (2008) argued that institutional investors at the Nairobi Stock Exchange are keen on the investment activities. In their investment decision making, herd-behavior was evidenced with regard to buying and selling decisions and trading volume of institutional investors. According to the length of time to hold stocks and choice of stocks, institutional investors might not be uniform in terms of their trading activities. With regard to institutional investors of Spain, herd behavior was deliberate, as evidenced by Gavriilidis, Kallinterakis and Ferreira (2013). Informational and career related reasons caused herd behavior. Herd-behavior could be exhibited from institutional investors in instances where maintaining their reputation and risk aversion is of greater importance, as per their findings. In Portugal institutional investors, herding behavior was identified by Holmes, Kallinterakis and Ferreira (2013). The institutional investors may be fear of their reputation in instances where peers are winning while they are losing on stocks. In such an instance, to safe-guard their career and reputation, managers might tend to follow the behavior of wining peers. Portuguese being a concentrated market in which lesser volume of funds were traded comparatively to developed markets (for example, USA and the UK), investors would be aware of the behavioral pattern of other market participants. The availability of herding among individual and institutional investors was tested by Hsieh (2013) in Taiwan Stock Exchange.

Even though, institutional representatives have skills and talents inherent to themselves, they often neglect those and depend on others' skills and talents in making decisions thinking that they are better than themselves. Imitating others' behavior ignoring their personal thinking pattern and analyses is identified as informational cascades. The findings of Areiqat, Rumman, Al-Alani and Alhorani (2019) also showed that stock investment decisions were substantially affected by herd behavior. As identified by Chen, Kim, Nofsinger and Rui (2007) states that trading mistakes could be observed with Chinese individual investors. Investors of aged forties with greater amounts of investments would make ineffective investment decisions, concluding that richer as well as middle aged investors are not best performers in the financial market. Scholars concluded that those Chinese who are not in rural areas and holding stocks for a lengthier period, would make fewer mistakes in their decision making.

2.2 Hypotheses Development

Most of the researchers have examined how overconfidence affects financial decision making of individual investors. For example, in global context, Keswani et al. (2019); Areiqat et al. (2019); Chhapra et al. (2018); Sahi (2017) and Anderson, Henker and Owen (2005) have found that there is a positive relationship between overconfidence bias and investment decision making. As identified by Camerer and Lovallo (1999), inexperienced investors would be disposed to overconfidence bias. In Sri Lankan context, Siraji (2019); and Kengatharan and Kengatharan (2014) found a substantial negative impact of overconfidence on stock investment performance at Colombo Stock Exchange (CSE), Mahanthe and Sugathadasa (2018); and Menike, Dunusinghe and Ranasinghe (2015) found that overconfident investors enjoy better investment performance showing positive relationship between overconfidence bias and investment decision-making. During the past decades, it has been evident that there is an impact of overconfidence on the financial decision-making of institutional investors. Marwa and Meryem (2018); Kaplan, Klebanov, and Sorensen (2012); Hadbaa and Boutti (2019); and Waweru, Munyoki and Uliana (2008) reveled that institutional investors decisions are

mainly affected by overconfidence bias. Experience of institutional investors has led to increases the level of overconfidence. Thus, overconfidence has been evident as a factor causing irrational investment decisions of institutional investors. Thus, all over the world, researchers investigated and concluded the significant role of overconfidence in investment decision-making of investors. Therefore, based on the given literature we formulate our first hypothesis as;

H_1: The overconfidence bias affects differently on individual and institutional investors' investment decisions.

It is evident in the global context that representativeness bias induces the investor to recall from the latest performance. Several researchers have examined the effect of representativeness bias on individual investors' decision making. Authors such as Katper et al. (2019); Keswani, Dhingra and Wadhwa (2019); Baker and Ricciardi (2014); Chitra and Jayashree (2014); Petkova et al. (2014); Ritter (2003); Barber, Odean and Zheng (2000); De Bondt and Thaler (1995); and Simon (1956) have found that representativeness bias significantly affect the financial decision-making of individual investors' decision making. In the Sri Lankan context, Siraji (2019) and Menike, Dunusinghe and Ranasinghe (2015) had revealed that individual investors attached to the CSE are influenced by the representativeness bias. Institutional investors are also influenced by representativeness bias. This is evident from the research work of Hadbaa and Boutti (2019), Waweru, Munyoki and Uliana (2008) and Grinblatt and Keloharju (2000). Those studies have revealed that institutional investors who are known as sophisticated investors, are making decisions based on historical yield differences. However, in the Sri Lankan context, none of the research work found in examining the effect of representativeness bias on investment decision-making of institutional investors. Based on the given rationale, we propose our second hypothesis as;

H_2: The representativeness bias affects differently on individual and institutional investors' investment decisions.

As identified by different authors, disposition effect influences the financial investment decision-making of individual investors. Goo et al. (2014); Baker and Ricciardi (2014); Barber, Odean and Zheng (2000); and Dhar and Zhu (2006) noticed that individual investors are disposed to disposition effect. However, the degree of influence varies according to the associations of socio-demographic factors. There are no studies found in the Sri Lankan context analyzing the impact of disposition effect on the financial decision-making of individual investors. Sun, Tsai and Wang (2013); Chou and Wang (2011); Talpsepp (2011); Menkhoff et al. (2010); Barber et al. (2007); and Grinblatt and Keloharju (2000) have identified the influence of disposition effect on financial decision-making on institutional investors. The disposition effect is therefore identified as an influential factor on financial decision-making of institutional investors. Thus, the third hypothesis is,

H_3: The disposition bias affects differently on individual and institutional investors' investment decisions.

During the last few decades, researchers have examined the impact of herd-mentality bias on financial decision-making of individual investors. Areiqat et al (2019); Keswani, Dhingra and Wadhwa (2019); Katper et al (2019); Asad, Khan and Faiz (2018); Chhapra et al (2018); Bakar and Yi (2016); Fernandez., Merino, Mayoral and Santos, (2011); Lim (2012) and Lee et al. (2010) have argued that herd behavior influences the financial decision-making of individual investors. These studies are based on different contexts. In Sri Lankan context, Menike, Dunusinghe and Ranasinghe (2015); and Kengatharan and Kengatharan (2014) found that individual investors' decision-making is affected by herd-behavior. Many studies found that financial decision-making of institutional investors are affected by herd-mentality bias. Areiqat et al (2019); Marwa and Meryem (2018); Gavriilidis et al. (2013); Holmes, Kallinterakis and Ferreira (2013) and Waweru, Munyoki and Uliana (2008) have proved the effect of herd mentality bias on their institutional financial decision-making. Further, herd-mentality bias has affected enjoying low returns on their investments as found by Holmes et al. (2013). However, Chang et al. (2012) investigated that herd behavior can occur in two folds, as rational and irrational. Wylie (2005) found that herd behavior in the sector level was comparatively higher than the stock level. Suto and Toshino (2005) found that informational and career related reasons caused herd behavior. Hence, the fourth hypothesis is,

H_4: The herd mentality bias affects differently on individual and institutional investors' investment decisions.

3. Methodology

3.1 Data and sample

Our study used quantitative research approach. The population of our study consisted of individual investors and institutional investors investing in the Colombo Stock Exchange in Sri Lanka. We used data obtained from individual and institutional investors through a survey web link following convenient sampling technique[3]. The questionnaire was divided into two sections. The first section of the questionnaire consisted of demographic questions related to investors' background. The second section of the questionnaire consisted with 20 questions relating to overconfidence bias, representativeness bias, disposition effect, herd-mentality bias and financial decision-making of investors. Altogether, 175 questionnaires (100 from individual

[3] Mahanthe & Sugathadasa (2019) and Kengatharan & Kengatharan (2014) has utilized convenience sampling technique for collecting data from individual investors of CSE. Katper et al (2019), Sindhu, et al (2014) also utilized the same technique.

investors and 75 from institutional investors) were selected for the analysis after removing 22 questionnaires which were incomplete. All scaled items were adapted from previous studies, Katper et al. (2019) and Chithra and Jayashree (2014). SMART- PLS was used to analyze data due to the smaller sample size (Hair et al., 2010). Descriptive statistics, PLS algorithm and bootstrapping approaches were used in arriving at a conclusion of our study.

3.2 Empirical models

The empirical model is as follows;

$Y = \alpha + \beta_1 Overconfidence + \beta_2 Representativeness + \beta_3 Disposition + \beta_4 Herding + \varepsilon$

Where:

Y = Investment decision making of Individual/ Institutional investors;

α = Intercept (constant);

β = Coefficient of each parameters;

ε = Is the error term.

4. Findings and discussion

4.1 Descriptive Statistics

4.1.1 Demographic Information of Respondents

The table 1 summarizes the demographic characteristics of the selected sample. Out of the individual investors sample 91% of investors are male and 9% are female. Similarly, 93% of institutional investors are male and only 7% are female showing a high degree of male domination in the investment decision making. Only 16% of people has no higher education from the sample of individual investors. The balance 84% has obtained higher education, from which 49% have a bachelor's degree and 35% of people have a master or doctoral degree. From the institutional investors' data, all investors have obtained a bachelor's degree and 72% of investors have obtained a master degree.

13.3% of Individual investors falling into 18 – 25 age category whereas 60% of them are in the age category of 26- 35 and have investments in the share market amounting to less than Rs 50,000. Investors of above the age of 36 years having investments less than Rs 50,000 which is 26.7%. With regard to higher amounts of investments amounting to Rs 1,000,000 or above, the composition of individual investors falling under the age category of 26-35 years is 33 %. Similarly, 51.9% of investors investing more than Rs 1,000,000 are falling into the age category of 36 - 45 years. The balance 14.8% of high amount of investors falls into the age category of above 46 years.

However, we were unable to find any institutional investors falling into the amount of investment below Rs. 500,000. Nevertheless, all the institutional investors who invested Rs. 500,001 to Rs. 1,000,000 included in the age category of 26–35 years. Finally, we found that majority of the investors who fell into the age category of above 46 years are investing Rs. 1,000,001 or above. Thus, it is evident that the older people who have an interest in investing in the share market are investing around Rs. 1,000,001 or above.

It is evident that 64% of individual investors are from private sector, 20% from the public sector and the balance 16% were self-employed category. However, with regard to institutional investors, 90% of investors were from private sector and the balance 10% from the public sector. By analyzing the information, it was evident that most of the investors were from private sector.

Table 1

Demographic information

Individual Investors		**Institutional Investors**	
Gender			
Male	91%	Male	93%
Female	9%	Female	7%
	100%		100%
Education			
Bachelor's Degree	49%	Bachelor's Degree	28%
Masters/Doctoral Degree	35%	Masters/Doctoral Degree	72%
No higher education	16%		
	100%		100%
Amount of Investment relating to age categories			
Under Rs. 50, 000			
18-25 Years	23.30%	18-25 Years	0
26-35 Years	50.00%	26-35 Years	0
36-45 Years	13.30%	36-45 Years	0
46-55 Years	6.70%	46-55 Years	0
56 or older Years	6.70%	56 or older Years	0
	100.00%		0
Rs 50,001-100,000			

18-25 Years	13.30%	18-25 Years	0
26-35 Years	60.00%	26-35 Years	0
36-45 Years	26.70%	36-45 Years	0
46-55 Years	0	46-55 Years	0
56 or older Years	0	56 or older Years	0
	100%		0
Rs 100,001-500,000			
18-25 Years	0	18-25 Years	0
26-35 Years	66.70%	26-35 Years	0
36-45 Years	26.70%	36-45 Years	0
46-55 Years	6.70%	46-55 Years	0
56 or older Years	0	56 or older Years	0
	100.00%		0
• **Rs 500,001 - 1,000,000**			
18-25 Years	11.80%	18-25 Years	0
26-35 Years	41.20%	26-35 Years	100.00%
36-45 Years	23.50%	36-45 Years	0
46-55 Years	11.80%	46-55 Years	0
56 or older Years	11.80%	56 or older Years	0
	100%		100%
Rs 1,000,001 or above			
18-25 Years	0	18-25 Years	0
26-35 Years	33.30%	26-35 Years	5.40%
36-45 Years	51.90%	36-45 Years	19.60%
46-55 Years	7.40%	46-55 Years	39.30%
56 or older Years	7.40%	56 or older Years	35.70%
	100%		100.00%
Occupation			
Private sector	64%	Private sector	90.00%
Public sector	20%	Public sector	10.00%
Self employed	16%		
	100%		100%

Note: Table 1 shows the demographics characteristics (Gender, education, amount of investments and occupation) of the respondents representing institutional and individual investors at the CSE.

4.1.2 Descriptive statistics for constructs

This particular section of research presents descriptive statistics for every construct in the conceptual model. The descriptive statistics related to individual investors' each construct is shown in the following table 2.

Table 2

Descriptive statistics of the individual investors

Description	Minimum	Maximum	Mean	Std. Deviation
Overconfidence	1.00	4.50	3.2212	.7869
Herd Mentality	1.00	4.50	3.1418	.7756
Disposition	1.00	4.25	3.2644	.7163
Representativeness	1.00	4.75	3.6538	.8341
Decision Making	1.00	4.50	3.4543	.5093

Note: Table 2 shows the descriptive statistics including minimum, maximum, mean and standard deviation relating to the questions on four behavioural biases (overconfidence, hear mentality, representatives, and disposition) and the decision making variable under the individual investor category.

In relation to individual investors, the constructs named as overconfidence bias, herd mentality bias, disposition effect, representativeness bias and decision-making are measured using four questions for each variable in the questionnaire. Overconfidence bias is the first independent variable of the model. For measuring the overconfidence bias, the researcher used 5-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree).

For overconfidence bias construct and herd mentality bias, the maximum average response is 4.5 out of 5-point Likert scale and minimum 1. For disposition effect bias, the maximum average is 4.25 and the minimum is 4.25. For the representativeness construct, the maximum average is 4.75 and the minimum 1. Further, for average decision-making construct, the maximum is 4.5 and the minimum 1. The mean averages are around 3 for all independent and the dependent variable. The maximum standard deviation of 0.8341 is found with average representativeness bias and the minimum standard deviation of 0.5093 with average decision-making.

In relation to institutional investors, the constructs named as overconfidence bias, herd mentality bias, disposition effect bias, representativeness bias and decision-making are also measured using four questions for each bias in the questionnaire as with the individual investors. The descriptive statistics related to individual investors' each construct is shown in the table 3.

Table 3

Descriptive statistics of the institutional investors

Description	Minimum	Maximum	Mean	Std. Deviation
Overconfidence	1.00	4.50	3.0043	1.019
Herd Mentality	1.00	3.75	2.2069	.8031
Disposition	1.00	4.25	2.3707	.8354
Representativeness	1.00	4.50	3.7155	.7615
Decision Making	1.00	4.25	3.3190	.9479

Note: Table 3 shows the descriptive statistics including minimum, maximum, mean and standard deviation relating to the questions on four behavioural biases (overconfidence, hear mentality, representatives, and disposition) and the decision making variable under the institutional investor category.

For overconfidence bias construct, the maximum average response is 4.5 out of 5 point Likert scale and minimum 1. For average herd mentality bias, the maximum is 3.75 while the minimum 1. The maximum point for disposition effect bias construct is 4.25 while the minimum. For representativeness bias construct, the maximum average is 4.25 and the minimum 1. The mean averages are around 3 for all independent and the dependent variable. The maximum standard deviation of 1.0190 is with average overconfidence bias construct and the minimum standard deviation of 0.7615 with average decision-making.

4.2 PLS Results

4.2.1 Direct Structural Model – Individual Investors

We developed H_1 to H_4 hypotheses to meet the objectives of the study. The structural model tests four hypotheses of this research under bootstrapping method. The four hypotheses were developed to see the relationships between the independent variables and the dependent variable in relation to individual and institutional investors.

The relationship between overconfidence bias and individual and institutional investors' investment decision making (H_1), relationship between representativeness bias and individual and institutional investors' investment decision making (H_2), relationship between disposition effect and individual and institutional investors' investment decision making (H_3) and last the relationship between herd mentality bias and individual and institutional investors' investment decision making (H_4), were tested for the purpose of achieving the study objectives. The path analyses were carried out relating to two separate investor categories. The path analysis is shown in figure 1 in relation to individual investors.

As per the path analysis of individual investors, the path regression coefficients for those relationships were found positive 1.884, 0.158, 2.203 and 0.083 for overconfidence bias, representativeness bias, disposition effect and herd-mentality bias respectively.

Table 4

Survey findings on individual investors

Relationships	Coefficient	Standard Deviation	T Statistics	P Values
Overconfidence > DM of Ind.	0.220	0.116	1.836	**0.067**
Representativeness > DM of Ind.	0.041	0.165	0.154	0.877
Disposition > DM of Ind.	0.278	0.125	2.222	**0.026**
Herd mentality > DM of Ind.	0.033	0.143	0.008	0.994

Note: This table shows the results under the direct structural model relating to individual investors. It reports the coefficient, standard deviation, t-statistics and the p-value. The hypothesis testing under bootstrapping method was carried out at 90% level and the values in bold in p-value column shows they are significant at 10% level.

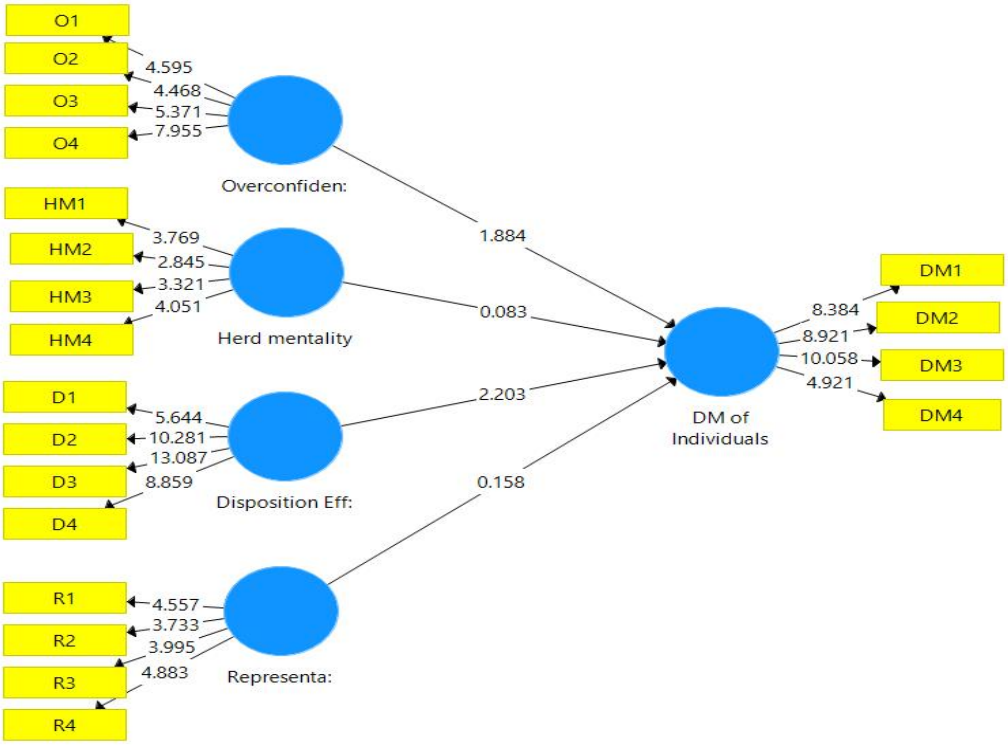

Figure 1. **Structural Model with Path Coefficients-(Individual)**

Source: Smart-PLS output.

The applicable statistical rule is, t values > critical t values (p value should be less than 5% or 10% level at the confidence levels of 95% and 90% respectively). Accordingly, H_1 and H_3 were supported, with H_1, p value of 0.067 and H_3, p value of 0.026, while H_2 and H_4 not supported with individual investors. Thus, the overconfidence bias and disposition effect significantly and positively effects on individual investors' decision making.

4.2.2 Direct Structural Model – Institutional Investors

The path regression coefficients (Figure 2) of institutional investors for those relationships are positive 1.133, 0.715, 12.486 and 0.867 for overconfidence (OC), representativeness (RB), disposition effect (DE) and herd-mentality bias (HM) respectively. The results of hypothesis testing at 90% level and are shown in table 5.

Only H_3 hypothesis was supported from the bootstrapping analysis while all H_1, H_2 and H_4 are not supported. i.e. disposition effect with t value of 12.464 is significant at 1% level. Thus, we conclude that that the disposition effect significantly and positively effects on institutional investors' decision-making.

Table 5

Survey findings on institutional investors

Relationships	Coefficient	Standard Deviation	T Statistics	P Values
Overconfidence> DM of Ins	0.061	0.061	1.134	0.257
Representativeness > DM of Ins	0.026	0.038	0.704	0.481
Disposition -> DM of Ins	0.921	0.073	12.464	**0.000**
Herd mentality-> DM of Ins	0.018	0.022	0.918	0.359

Source: Survey finding

Note: This table shows the results under the direct structural model relating to institutional investors. It reports the coefficient, standard deviation, t-statistics and the p-value. The hypothesis testing under bootstrapping method was carried out at 90% level and the values in bold in p-value column shows they are significant at 10% level.

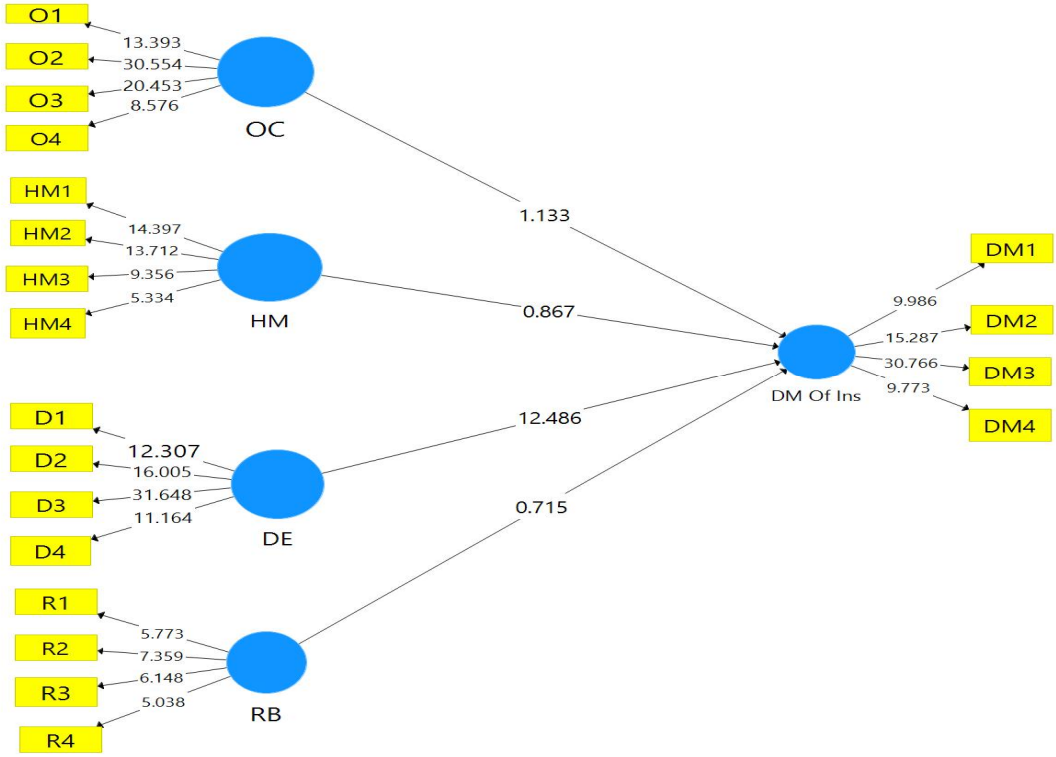

Figure 2. **Results of the Structural Model with Path Coefficients (Institutional)**

Source: Smart-PLS output.

4.2.3 Discussion

In our study, herd-mentality and representativeness biases are not significant, while overconfidence bias and disposition effect being significant, showing individual investors are not exposed to herd-mentality and representativeness biases, but exposed to overconfidence and disposition effect. Siraji (2019); Mahanthe and Sugathadasa (2018) and Menike, Dunusinghe and Ranasinghe (2015) concluded that individual investors are exposed to overconfidence bias. So, our finding on overconfidence bias matched with the previous in Sri Lankan studies. Even though, Shiraji (2019) and Menike, Dunusinghe and Ranasinghe (2015) argued that individual investors are exposed to representativeness bias, which are contradictory to our findings. This may be due to the adverse impact from corona pandemic. During this time, share movements were not attractive to investors as prevailing turbulent market conditions, where individuals might not rely on the available information as the future trends are difficult to forecast. If investors invest based on past trends and patterns, sometimes investors are to tolerate massive losses, Simon (1987). Our findings also not supported with herd-mentality bias. Bikhchandani and Sharma (2001) recommended that to examine herd behavior, selected market participants have to be from a group in which all members are trading actively and similarly. Similar to our findings, Parveen and Siddiqui (2018) identified individual investors of Karachchi Stock Exchange exposed to disposition effect and overconfidence. Those investors were not risk takers. With effects of corona pandemic, high level of uncertainty prevailing in the market has led individual investors not taking risks.

Barber et. al. (2007) identified a negative relationship among overconfidence bias and disposition effect. i.e. Once the institutional investors' overconfidence bias increases, it weakens the disposition effect. Cici (2012) also concluded that disposition effect is arisen due to over experience and overconfidence. However, institutional investors do not expose to overconfidence bias, but exposed to disposition effect. The extant literature in studying the effect of representativeness bias and herd mentality bias on institutional investors' decision-making is low. Bikhchandani and Sharma (2001) discovered that to identify herd behavior, the selected institutional investors should be from the same institution. In our study, the selected professionals are from different institutions, thereby not showing a herd behavior among the investors. Similar to our study, the effect of disposition effect on institutional investors is identified in other countries as well. However, the disposition effect found is comparatively weaker in institutional professional investors due to professional training and experience, Shapira and Venezia (2001) based on Israeli professionals. Chen, Kenneth, Nofsingr and Oliver (2007) based on Chinese investors revealed that individual investors are more exposed to behavioral biases than institutional investors. Our findings match with the Chinese individual and institutional investors, showing that individual investors are making decisions based more on behavioral biases than institutional investors.

5. Conclusion & Recommendations

Our study contributes to the literature by examining the effect of four behavioral biases; overconfidence bias, representativeness bias, herd-mentality bias and

disposition effect on financial investment decision-making of individual investors and institutional investors. Additionally, this study provides a comparison between the behavioral studies on individual and institutional investors. This extensively contributes to the extant literature as there are a limited number of studies found on this area in Sri Lankan context. Most of the previous studies have identified some behavioral biases affecting individual investors, but not identified the differences in behavioral biases affecting both individual and institutional investors in a similar context.

The overconfidence bias and disposition effect are identified as significant to individual investors' financial investment decision-making. However, only the disposition effect is identified as significant to the financial investment decision-making of institutional investors. This may be due to the experience, knowledge and training that institutional investors obtained from the investment activities. As our study was conducted during the corona pandemic season, it is justifiable that disposition effect affects the decision-making of both individual and institutional investors, since the financial market activities could not predictable in a turbulent market. Lin (2011) also found that during Asian financial crisis in 1997, disposition effect was noticed in both Taiwan and Chinese stock markets. Similarly, global financial crisis in 2008, Lin found disposition effect only in Chinese stock market.

Understanding potential behavioural biases is very important for both individual and institutional investors to understand the market sentiments. Institutional investors could advise their clients when they are in a difficuilty in making financial investment decisions, enabling investors to make good profits on their investment. If the behavioural factors do ot properly understood by the clients, they might be exposed to behavioural biases thereby not making profits on investments. Having disposition effects in capital markets, the effect is very harmful for the clients as it directs the clients get caught to capital gains taxes. That would reduce the client's returns. Therefore, the investment managers should advise their clients for reducing the potential losses and maximizing return on their long-term investment strategies. This allows the clients to follow a disciplined investment strategy.

Heuristics are considered by the individual investors as a cognitive instrument for making their life easy in making investment decisions. But heuristics such as overconfidence bias and representativeness bias affect negatively on investment performance resulting over trading. Furthermore, if managers utilize heuristic factors and say that female investors are comparatively less risk tolerant than male investors, financial advisors may suggest a conservative approach for investments. However, if the female does not fall into that same conservative investor category, the advisor may provide a wrong advice resulting in bad investment performance. Thus, application of such applying such a heuristic in decision making would result in serious miscalculations, inaccurate categorizations of investors, and bad investment advice, Grable (2008). Thus, understanding the heuristics is essential for financial planners in achieving both ends' objectives of maximizing returns.

Nevertheless, the findings of the study are significant; there are some limitations as well. We consider only four behavioral biases affecting the decision-making of investors. Also, the impact of behavioral biases on foreign individual and institutional investors is ignored in our study. Further, we had to use convenient sampling technique as the investors' data was difficult to obtained due to the confidentially nature of data.

Instead of a cross sectional study, longitudinal studies could provide better insight of behavioral biases on investors as biases would change from time to time. Further, there is a need for future studies across socio economic segments to understand possible variations in behavioral biases on different segments in the overall capital market. Similarly, the effect of other behavioral biases should also be incorporated into studies in the future to understand the effect of other behavioral biases on investor decisions.

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