

Effect of Socio-demographic Factors (Age, Occupation and Education) on Behavioral Biases of Individual Investors' Decision-making - Evidence from The Colombo Stock Exchange

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Abstract

The purpose of this paper is to investigate the effect of age, occupation and education on the relationship between behavioral biases and financial decision-making of individual investors based on The Colombo Stock Exchange (CSE). This study considers overconfidence bias, representativeness bias, disposition effect and herd-mentality bias on the financial investment decision-making of individual investors, taking steps to fill the empirical gap and practice gap in Behavioral Finance context. A questionnaire was utilized to collect data and the sample consisted of 114 individual respondents. Finally, data of 100 investors was analyzed by using Partial Least Square-Structural Equation Modeling approach. The study revealed that age moderates the relationship between disposition effect and investment decisions of individual investors. Further, occupation also moderates the relationship between herd-mentality bias and individual investors' investment decisions. This study is one of the pioneering studies examining the effect of socio-demographic factors of age, occupation and education on the relationship between behavioral biases and individual investors' decision-making. Further, this study sheds light on the rare prior studies that relate socio-demographic factors to behavioral biases of individual investors' decision-making, particularly in emerging markets context while expanding the extant literature in Behavioral Finance.

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

Introduction

Traditional financial theorists argue that investors are rational when making investment decisions. Markowitz (1952) enlightened how investors would increase their individual returns while minimizing risk by creating optimal asset portfolios. However, Sharpe introduced the Capital Asset Pricing Model (CAPM) by integrating the idea of efficient market with Markowitz's mean and variance optimization in 1964. CAPM assumes that all investors are rational in their financial investment decision making. Efficient Market Hypothesis of Fama (1970) also assumes that investors are rational. In an efficient market, it is assumed that security prices give proper and exact signal for the allocation of resources. According to, Guzavicius, Vilke and Barkauskas (2014), an efficient market relates to rational expectations, including all information assessments of a security.

As individual investors are people who invest their excess funds in securities and assets based on their own decisions. Such investors may tend to invest in smaller quantities while some involve in buying and selling in larger quantities. Since, they are making their decisions on their own, they would be subject to behavioral biases

because of emotions. Fuller (1998) described that how investors make mental mistakes and errors when they are investing their excess funds. Khajavi and Ghasemi (2006) suggested that behavioral finance comprises of psychology and social sciences, opposing the efficient market hypothesis. Behavioral finance adds behavioral characteristics of investors to decision making processes. At present, behavioral finance is considered as a vital part of the decision-making process because of its impacts on investment performance. Further, it supports to escape from the same costly mistakes that may happen in the future. Behavioral Finance mainly influences investment decisions due to personality, culture and judgment of investors. Thus, in the recent past behavioral finance has been identified as a new phenomenon consisting of methodical understanding and expectation of general mechanisms and decision making.

Some researchers have investigated that for investors to become aware of how potential biases affect their investment decisions and how to avoid the potential losses in return, a comprehensive knowledge on behavioral finance is required. Behavioral finance theorists debate that individual investors are not rational. As revealed by Sewell (2007), behavioral finance gives clarifications for investors to identify the effect of emotional biases and cognitive errors on stock prices, thereby investors themselves develop several protections in order to control mental mistakes and psychological barriers. Ricciardi and Simon (2000) also stated that behavioral finance allows investors to escape from common mental mistakes. It is vital for individual investors to have a disciplined trading strategy. The way to control mental mistakes is to adopt a specific investment strategy. For that, investors are required to keep complete records pertaining to the reasons for buying a specific stock for their portfolio.

Whether to buy, sell, or hold a specific stock should be decided by investors based on specific criteria. In doing so, understanding the effect of socio demographic factors such as age, occupation and education on behavioral biases and investment decision making helps investors to achieve better performance out of investment activities. Because of that importance, some scholars have incorporated the effect of demographic factors such as age, gender, income, education, knowledge and experience on behavioral biases of individual investors. Beatrice, Murhadi and Herlambang (2021) analyzed the effect of age, education, occupation, income and investment experience. Similarly, Katper, Azam, Karin and Zia (2019) investigated the moderating effect of education and occupation in their study. Siraji (2019) also identified the effect of age on behavioral biases in Sri Lankan context. Baker, Kumar, Goyal and Gaur (2018) incorporated the effect of gender, age, education level, occupation and investment experience in relation to behavioral biases of investors. All these studies associated the demographic information for their studies and identified important demographic variables affecting the decision making of individual investors. Prosad, Kapoor and Sengupta (2015) investigated overconfidence bias, herd behavior and disposition effect of Indian investors and found that age and occupation are more influencing the behavioral biases of investors. Nevertheless, the moderating effect of demographic factors of age, occupation and education have not been incorporated together in examining the relationship between

behavioral biases (overconfidence bias, representativeness bias, disposition effect & herd mentality bias) and individual investors' decision making in one study.

However, the extant literature does not resolve the problem of identifying the specific psychological factors and their moderating effects on financial investment decisions of individual investors. Thus, the problem of this study is to assess the moderating impact of socio demographic factors of age, occupation and education on the relationship between behavioral biases and investor decision making of individual investors. Therefore, this study tries to answer how socio-demographic variables namely education, occupation would moderate the relationship between behavioral biases and the investors' financial decision-making. Therefore, this research study fills the empirical gap in the emerging market context. By examining the moderating effects of age, occupation and education on the relationship between the behavioral biases (overconfidence bias, representativeness bias, disposition effect and herd mentality bias) and financial investment decisions, this study intends to enrich the existing literature, contributing to the general body of knowledge considering Colombo Stock Exchange in Sri Lanka as an emerging financial market.

The objective of this research is to identify possible impacts of demographical factors (age, occupation and education) on the relationship between behavioral biases and financial decision making of individual investors of the Colombo Stock Exchange. Since there are very few studies examining the effect of demographic factors on behavioral biases and decision making of individual investors attached to the Colombo stock Exchange. This study would be one of the pioneering studies in the domain of behavioral finance. Similarly, this study contributes to finance theory and also guide investment advisors on how individual differences influence investor behavior, adding new attributes to the extant knowledge in behavioral finance phenomenon.

Literature Review and Hypotheses Development

Literature Review

Behavioral Finance helps to identify the possible behavioral biases affecting investors' financial decision making. Kumar and Goyal (2015) showed that financial decision making 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, the researcher presents the empirical studies related to the selected behavioral biases.

a. Overconfidence Bias

People think that they are very much knowledgeable than they 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 revealed a negative substantial influence of overconfidence on investment performance,

Kengatharan and Kengatharan, (2014). A positive relationship between overconfidence bias and investment decision making was found by Mahanthe and Sugathadasa, (2018). Menike, Dunusinghe and Ranasinghe, (2015) argued that the investment performances were directly proportional to the heuristic factors due to overconfidence.

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, Dhingra and Wadhwa (2019) also found that representativeness bias has a positive impact on investment decision making of individual investors at National Stock Exchange of India. Latest performance is very representative of a fund 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).

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 (2010), 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.

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). Lee, Jang

and Indro (2004) argued that to protect reputations and get reward advancements, analysts seek others' previous familiarities/experiences or decisions. 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 extremely high. Further, Katper et. al. (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. Similarly, Menike, Dunusinghe and Ranasinghe (2015) had found that Sri Lankan investors depend more on combined information than private information, therefore they are likely to adopt the performance of others.

The next section presents the hypotheses developed based on the extant literature relevant to the study.

Hypotheses Development

Age

Most of the scholars have examined how age affects differently on the relationship between behavioral biases (overconfidence bias, representativeness bias, disposition effect and herd mentality bias) and individual investors' financial investment decisions. Beatrice, Murhadi and Herlambang (2021) investigated that disposition effect and herding bias are influenced by age. Based on the investors of CSE, Siraji (2019) identified a significant moderating effect of age on the relationship between heuristics biases of overconfidence and representativeness over stock investment performance. Metawa, Hassan, Metawa and Safa (2018) identified that age significantly affect positively on investment decisions of individual investors of the Egyptian stock market. The greater the investors' experience in investment activities, the greater the tendency to overlook overconfidence, over reaction and herd-behavior. Chen, Kim, Nofsinger and Rui (2007) observed trading mistakes from Chinese individual investors where 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.

Baker et al. (2018) identified age as a vital demographic factor on overconfidence bias, disposition effect and herding. Similarly, Elizabeth, Murhadi and Sutejo (2020) found that disposition effect was affected by age of the Indonesian stock investors. Therefore, these findings support the view that investors do not always act rationally in making investment decisions. Fuertesa, Muradoglu and Ozturkkalc (2014) concluded that older investors have a better information collection and processing ability, resulting in well diversified portfolios and displaying better financial decision making than other investors. Sarkar and Sahu (2018) concluded that age has a significant effect on herding bias. Prosad et al. (2015)

also identified that age impacts on overconfidence bias, disposition effect and herding bias. They found that age has a stronger association with behavioral biases. Chithra and Jayashree (2014) concluded that there is a significant difference between age group with respect to investor behavior related to representativeness bias and overconfidence bias. Further, Tekçe, Yilmaz and Bildik (2016) found that overconfidence bias among individual investors decreases as age increases. which is consistent with Lewellen et al. (1977), Barber and Odean (2001), Bhandari and Deaves (2006), Lin (2011) and Kumar and Goyal (2016). Thus, all over the world, researchers investigated and concluded that age differently affects the relationship between behavioral biases and investment decision making of individual investors.

Therefore, based on the extant literature, author formulated the first hypothesis as;

H₁: Age moderates differently the relationship between behavioral biases (overconfidence bias, representativeness bias, disposition effect and herd-mentality bias) and individual investors' financial investment decisions.

Occupation

Among different studies on investigating the effect of socio-demographic factors, Katper et al (2019) investigated the interaction effect of occupation on investors' decision-making in the Pakistan Stock Exchange. They finally identified that representativeness bias interacting with occupation shows an inverse effect on investors' decision. Beatrice, Murhadi and Herlambang (2021) investigated that herding bias is influenced by occupation. Similarly, Elizabeth, Murhadi and Sutejo (2020) also found that herding bias is influenced by occupation.

Similarly, Chavali and Mohanraj (2016) discovered that occupation of Indian investors effects on the risk tolerance (disposition effect) and perception of risk. Prosad et al. (2015) investigated that one's profession has a stronger association with overconfidence bias and the disposition effect than herding bias. Chitra and Jayashree (2014) found that occupation makes a significant impact on overconfidence bias of investors. Chin and Li (2012) also proved that based on occupation of individual investors, investment choices may vary. Dhar and Zhu (2006) found that non-professional individual investors are more disposed to disposition effect. Sarkar and Sahu (2018) concluded that occupation has a significant impact on herding bias and disposition effect, but not identified a significant relationship between overconfidence bias and representativeness bias.

Based on the given rationale, author proposed the second hypothesis as;

H₂: Occupation moderates differently the relationship between behavioral biases (overconfidence bias, representativeness bias, disposition effect and herd mentality bias) and individual investors' financial investment decisions.

Education

During the last few decades, researchers have examined the effect of education on financial decision-making of individual investors. Well-educated investors are sometimes unable to make favorable investment decisions, Barber and Odean (2001).

However, investors tend to show overconfident behavior with increases in their education level, assuming that they know a lot on investment activities. Further, Chin and Li (2012) proved that individual investment choices may vary based on the level of education. Sarkar and Sahu (2018) concluded that education has a significant relationship with stock volume and herding bias. Metawa et al. (2018) suggested that level of education significantly affect positively on investment decisions of individual investors of the Egyptian stock market. Further, the greater the investors' experience in investment activities, the greater the tendency to overlook overconfidence, over reaction and herd behavior. Chitra and Jayashree (2014) found that investors rely on past performance to buy shares and they also try to avoid investing in companies with poor earnings, concluding education significantly affect investors' representativeness bias. Investors believe that gains are based on their own specific skills in investment decision making. Goo, Chen, Chang and Yeh (2010) concluded that investors with better education have a lower disposition effect. Bhandari and Deaves (2006) argued that, overconfidence bias is associated with education. Deaves, Luders and Schroder (2006) found that overconfidence increases when individuals have more education. Similarly, Ates, Coskun, Sahin and Demircan (2016) suggest that representativeness bias is more associated with investors having less education. The findings of Calvet, Campbell and Sodini (2009) revealed that educated individuals are less inclined to being influenced by disposition effect and can more efficiently rebalance their portfolio. Fuertesa, Muradoglu and Ozturkkalc (2014) concluded that better information collection and processing ability is displayed among well-educated individual investors having well diversified portfolios and their financial decision-making is better than other investors. Based on the extant empirical evidence, author formulated the third hypothesis as;

H 3: Education moderates differently the relationship between behavioral biases (overconfidence bias, representativeness bias, and disposition effect and herd-mentality bias) and individual investors' financial investment decisions

Conceptual Framework

According to the aforementioned hypotheses developed based on the extant literature on the relationship between demographic variables and individual investors' decision making, the conceptual framework for the study is presented in *figure 1*.

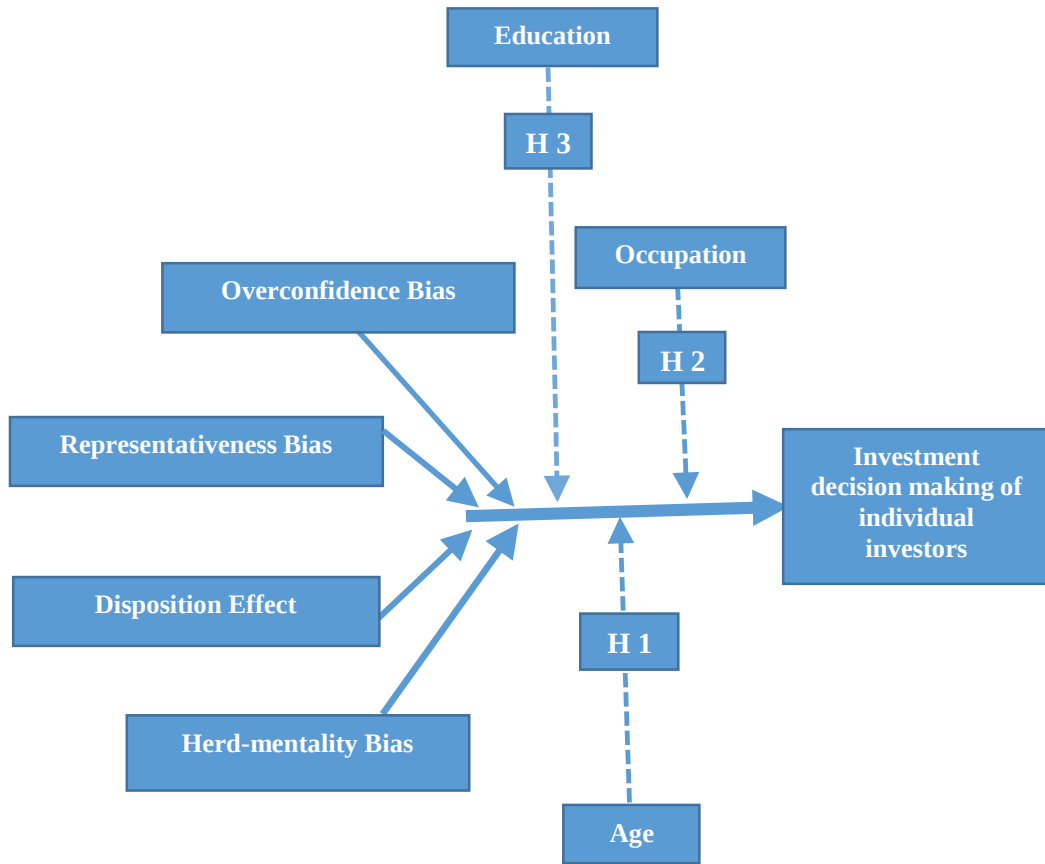


Figure I-Conceptual framework (Source: Author generated framework)

Methodology

Data and Sample

This study used quantitative research approach. The population of the study consisted of individual investors investing in the Colombo Stock Exchange in Sri Lanka. The researcher used data obtained from individual investors through a survey web link following convenient sampling technique¹. 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. 100 questionnaires were selected for the final analysis after removing 14 questionnaires being extreme outliers. Those were

¹ 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.

eliminated to enhance the accuracy of the study. 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, Black, Babin, Anderson and Tatham (2010). Descriptive statistics, PLS algorithm and bootstrapping approaches were used in arriving at a conclusion of this study.

Empirical Model

The empirical model used for the study is as follows.

Model: To test the effect of four behavioral biases on individual investors' investment decisions with moderating effect

$$Y = \alpha + \beta_1(\text{Overconfidence} * \text{Age}) + \beta_2(\text{Representativeness} * \text{Age}) + \beta_3(\text{Disposition} * \text{Age}) + \beta_4(\text{Herding} * \text{Age}) + \beta_5(\text{Overconfidence} * \text{Occupation}) + \beta_6(\text{Representativeness} * \text{Occupation}) + \beta_7(\text{Disposition} * \text{Occupation}) + \beta_8(\text{Herding} * \text{Occupation}) + \beta_9(\text{Overconfidence} * \text{Education}) + \beta_{10}(\text{Representativeness} * \text{Education}) + \beta_{11}(\text{Disposition} * \text{Education}) + \beta_{12}(\text{Herding} * \text{Education}) + \varepsilon$$

Where;

Y = Investment decision making

α = Intercept (constant)

β = Coefficient of each parameter

ε = Is the error term

Analysis and Discussion

Descriptive Statistics

Demographic information of respondents

The table I summarizes the demographic characteristics of the selected sample. Out of the individual investor's sample, 91% of investors are male and 9% female, showing a high degree of male domination in the stock market investment decision making. Only 16% of investors have no higher education and balance 84% of investors have obtained higher education, from which 49% have a bachelor's degree and 35% with a master or doctoral degree. From individual investors invested less than Rs 50,000 category, 23.3% of individuals fall into 18 – 25 age category and 50% in 26- 35 category. Where, percentage of investors representing above 36 years age categories is 26.7%. With regard to Rs 50,001 to Rs. 100,000 investment category, 13.3% of investors fall into the age category of 18 - 25 years age category, while 60 % of investors in 26 - 35 years and 26.7% of investors in 36 to 45 years age categories. However, there were no individual investors of more than 46 years of age, investing Rs 50,001 to Rs 100,000.

No investors are found in the age categories of 18 - 25 years and 56 years or older years categories in relation to investments of Rs 100,001 to Rs 500,000. Where, 66.7% of investors are in the age group of 26 - 35 years and 26.7% in 36 to 45 years. Only 6.7% of investors are found in the age category of 46 to 55 years category. In

the investment category of Rs 500,001 to Rs 1,000,000, 12% of individuals fall in the age group of 18 to 25 years and 41 % of investors in the 26 to 35 years age category. 23% of investors fall in the age group of 36 to 45 years. 12% of investors fall separately for age groups of 46 to 55 years and 56 or older years categories.

With regard to higher amounts of investments (Rs 1,000,001 or above), none of the individuals are in the age group of 18 to 25 years and 33.3 % in 26-35 years group. 51.9% of investors fall in the age category of 36 - 45 years. However, the balance 14.8% of investors represents the age category of above 46 years, proving older investors invest around Rs. 1,000,001 or above. Further, 64% of individual investors are from private sector, 20% from the public sector and the balance 16% self-employed. A higher interest for investments in the share market is visible from those who are occupied in the private sector than the public sector and self-employed.

This study attempts to identify whether there is a moderating effect of age, occupation and education on the relationship between selected behavioral biases and financial decision-making of investors. Overconfidence bias, representativeness bias, disposition effect and herd mentality bias are considered in this particular study.

Table I: Demographic Information: Individual Investors

Gender	
Male	91%
Female	9%
	100%
Education	
Bachelor's Degree	49%
Masters/Doctoral Degree	35%
No higher education	16%
	100%
Amount of Investment relating to age categories	
Under Rs. 50, 000	
18-25 Years	23.30%
26-35 Years	50.00%
36-45 Years	13.30%
46-55 Years	6.70%
56 or older Years	6.70%
	100.00%
Rs 50,001-100,000	
18-25 Years	13.30%
26-35 Years	60.00%
36-45 Years	26.70%
46-55 Years	0
56 or older Years	0
	100%
Rs 100,001-500,000	
18-25 Years	0

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

Source: Author compiled data

Note: This table shows the demographic characteristics (Gender, education, amount of investments and occupation) of the respondents representing individual investors at the CSE.

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 II.

Table II: 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

Source: Survey findings

Table II shows the descriptive statistics including minimum, maximum, mean and standard deviation relating to the questions on four behavioral biases (overconfidence bias, representativeness bias, disposition effect and herd-mentality bias,) and the decision-making variable under the individual investor category.

The constructs named as overconfidence bias, representativeness bias, disposition effect, herd mentality 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 each variable, 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, 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.

PLS Results

Direct Structural Model

The results achieved by the researcher under the direct structural model, are mentioned in the following table II. The path analysis is also shown in figure II.

Table II: Survey findings on individual investors

Relationships	Sample Mean	Standard Deviation	T Statistics	P Values
Overconfidence > D/making	0.220	0.116	1.836	0.067
Representativeness > D/making	0.041	0.165	0.154	0.877
Disposition > D/making	0.278	0.125	2.222	0.026
Herd mentality > D/making	0.033	0.143	0.008	0.994

Source: Survey findings

As per the path analysis (shown in figure II) related to individual investors, the path regression coefficients for those relationships were found to be positive 1.884, 0.158, 2.203 and 0.083 for overconfidence bias, representativeness bias, disposition effect and herd mentality bias respectively. Where, t value 1.836 was higher than the p value of 0.067 for overconfidence bias and t value of 2.222 higher than the p value of 0.026 for disposition effect. the researcher found that overconfidence bias and disposition effect significantly and positively affect the individual investors' decision making. Thus, it is said that the overconfidence bias and disposition effect significantly and positively effects on individual investors' decision making.

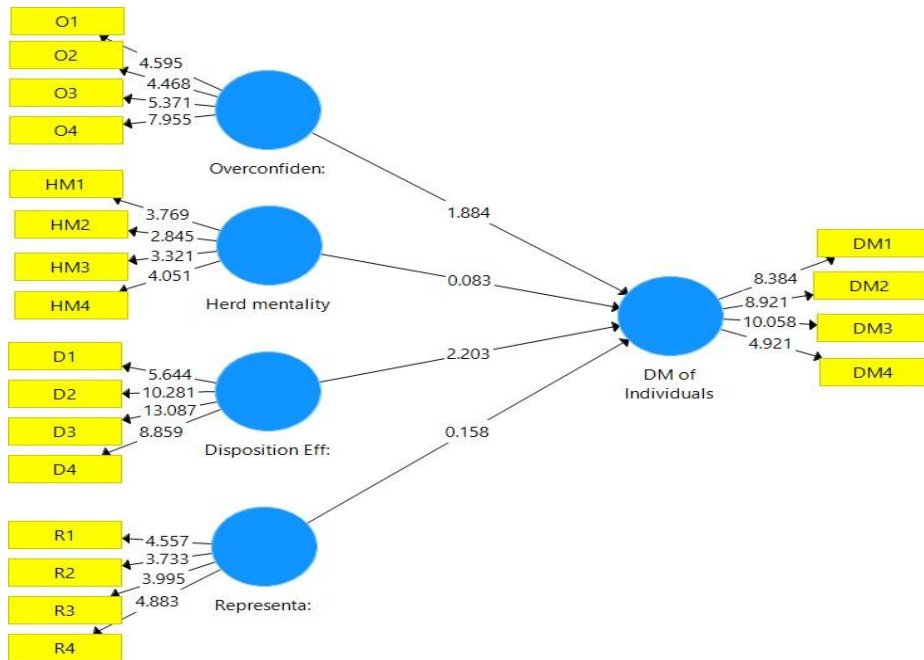


Figure II: Structural model with path coefficients (Source: Smart-PLS output)

Structural Model for Moderator Effect

The researcher tries to examine the moderating effect of age, occupation and education on behavioral biases of individual investor's decision making. The moderating effects could be tested in many ways with Structural Equation Method. With large number of items in both independent and moderator variables, many complexes would arise in the identification of the interaction effect on the basic relationship. The researcher used the product indicator approach (Chin,1998) in testing the moderating effects. Bootstrapping procedure is followed in the determination of the moderating impact on investment decision making of both categories of investors. The figure III shows the path analysis in the event of identifying the moderating impact on individual investors' decision making.

As per the table III, H 1 (Age) hypothesis is supported in respect of the relationship between the investors' disposition effect and financial decision-making of investors. Further, H 2 (Occupation) is also supported in respect of the relationship between herd mentality bias and the financial decision making of investors, while all other relationships not supported. With regard to H 1, t value of 1.901 and the p value of 0.057. Similarly, with regard to H 2, t value has been 1.731 with the p value of 0.084 (as per table 3). Thus, it is said that the age of individual investors moderates the relationship between individual investors' disposition effect and the investment decision making. Similarly, it is evident that occupation moderates the relationship between herd-mentality bias and investment decision making of individual investors. However, no moderating effect of education was found in this study.

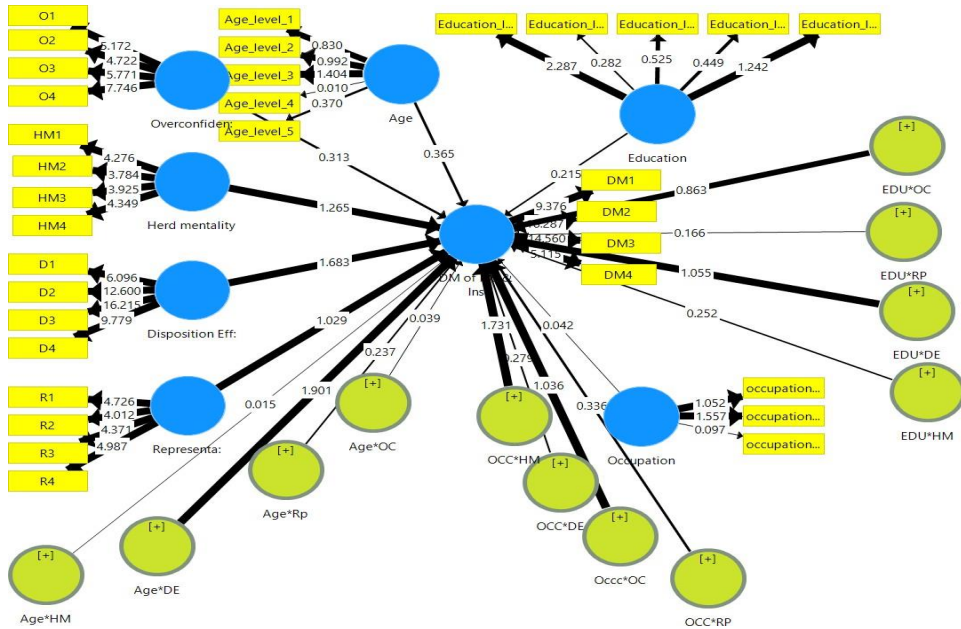


Figure III: Moderating impact of age, occupation & education (Source: Smart-PLS output)

Table III: Survey findings

Relationships	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Age*DE -> Decision making	-0.285	0.171	1.901	0.057
Age*HM -> Decision making	-0.021	0.195	0.015	0.988
Age*OC -> Decision making	-0.043	0.171	0.039	0.969
Age*Rp -> Decision making	0.043	0.278	0.237	0.813
EDU*DE -> Decision making	-0.274	0.212	1.055	0.292
EDU*HM -> Decision making	-0.015	0.210	0.252	0.801
EDU*OC -> Decision making	0.036	0.278	0.863	0.388
EDU*RP -> Decision making	0.009	0.244	0.166	0.868
OCC*DE -> Decision making	-0.063	0.132	0.279	0.781
OCC*HM -> Decision making	-0.193	0.151	1.731	0.084
OCC*RP -> Decision making	0.012	0.209	0.336	0.737
OCC*OC -> Decision making	0.013	0.172	1.036	0.300

Source; Survey findings

Note: This reports sample mean, standard deviation, t-statistics and the p-value. The hypothesis testing under bootstrapping method was carried out at 90% level and the values in green & bold show that they are significant at 10% level.

Discussion

In our study, age factor showed a moderating impact on the relationship between disposition effect and individual investors' investment decisions. As per the study of Shiraji (2019) on the individual investors of Colombo Stock Exchange, age had showed a moderating impact on the decision making and investment performance of individual investors. Similarly, Alshamy (2019) also revealed that age has a moderating impact on the decision making of individual investors based on research done using SMART PLS software. Further, the study of Chithra and Jayasree (2014), age has shown an interaction effect on the decision making of individual investors behavior. So, our finding matched with the previous studies in Sri Lankan context and global context.

Further, occupation factor also showed a moderating impact on the relationship between herd mentality bias and individual investors' investment decisions. Similar to our study, Beatrice, Murhadi and Herlambang (2021) investigated that herding bias is influenced by occupation. Again, Sarkar and Sahu (2018) concluded that occupation has a significant impact on herding bias but not identified a significant relationship between overconfidence bias and representativeness bias. Further, Prosad et al. (2015) also concluded that one's profession has a stronger association with herding bias. Thus, the extant literature would justify the findings of the researcher.

Conclusion & Recommendations

This study contributes to the literature by examining the moderating effect of age, occupation and education on four behavioral biases; overconfidence bias, representativeness bias, disposition effect and herd-mentality bias of financial investment decision-making of individual investors. Most of the previous studies have identified the moderating effect of few socio-demographic factors such as age in Sri Lankan context, but not identified the moderating effect of age, occupation and education in one study. Therefore, this study enriches the extant literature, as there is a limited number of studies in Sri Lankan context and emerging market context.

Age and occupation have been identified as factors which moderate the relationship between behavioral biases and decision making of individual investors. Age acts a moderator on the relationship between disposition effect and financial decision making of individual investors. Similarly, occupation moderates the relationship between the herd mentality bias and financial decision making of individual investors. However, education does not play a moderating role in this study. It may be due to the fact that the majority of investors included in the sample had a very good education. Understanding the effect of socio demographic factors on behavioral biases is very important for individual investors to understand the market sentiments, since there are some forces beyond financial fundamentals. If the behavioral factors as well as the socio demographic factors would not be properly understood by the

clients, they might be exposed to behavioral biases thereby not making profits on their investments. This study provides better insights to stock brokers in forecasting the direction of the stock market, since behavioral biases may affect investment decision-making of individual investors, enabling stock brokers to formulate better investment policies and strategies. So that, they can attract more and more investors towards the financial market.

Nevertheless, the findings of the study are significant; there are some limitations as well. The researcher has considered only four behavioral biases and three socio demographic factors. Also, the demographic factors of foreign investors have been ignored in this study. Further, the researcher had to use convenient sampling technique as the investors' data was difficult to obtain due to the confidentially nature of data. Instead of a cross sectional study, longitudinal studies could provide better insights of behavioral biases on investors as biases and some demographic factors 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 and demographic factors on different segments in the overall capital market. Moreover, there is a need to examine behavioral effects on institutional investors as well. Similarly, the effect of other behavioral biases and other socio-demographic factors should also be incorporated into future studies.

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