Socio-economic, Trading Sophistication and Self-reflection on Investors’ Herding Bias: Evidence from Colombo Stock Exchange

Kawshala, B.A.H¹, Anuradha, P. A. N. S², Mohamed M. Shamil³

¹Lecturer, University of Kelaniya, Sri Lanka, ²Senior Lecturer, University of Sri Jayewardenepura, Sri Lanka, ³Senior Lecturer, University of Kelaniya, Sri Lanka.

Email: ¹hirindu@kln.ac.lk, ²anuradha@sjp.ac.lk, ³shamil@kln.ac.lk

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Abstract

Purpose of the study: Individual investor's behavior is extensively influenced by biases that are highlighted in the growing discipline of behavioral finance. The present study sought to investigate the influence of socio-economic factors (i.e., investors’ age, gender, education, profession, and income), trading sophistication factors (i.e., trading experience and trading frequency), and self-reflection on herding bias in investment decision-making in Colombo Stock Exchange (CSE).

Methodology: The study adopted descriptive and explanatory research designs. It was a census of all 243 individual investors registered with CSE as of September 2020. Sampling was done applying proportionate stratified random sampling technique and data was gathered using self-administered semi-structured questionnaires. The analysis was conducted using means, standard deviations, and regression.

Main Findings: The results show that herd behavior is mostly seen among females, having less educational qualifications, who are engaged in the finance field professions, those who are with a very low monthly income, low experience, and who trade less frequently. Self-reflection can be seen in herding bias. On the other hand, age does not impact on herding bias of investors.

Applications of this study: This study will be helpful to financial intermediaries to advise their clients. Moreover, the results of the present study facilitate individual investors to realize their herding bias by its’ determinants in the pursuit of making sensible and effective financial decisions.

Novelty/Originality of this study: This study gives a unique insight into the investors’ profile corresponding to herding bias under consideration. It not only updates the evidence on herding bias but also highlights which factors are the most influential on herding bias in the Sri Lankan context. With the peculiar scenario in Sri Lanka, this paper contributed to the behavioral finance field as a reference for individual investors and financial advisors.

Keywords: Herding, Self-reflection, Socio-economic, Trading Sophistication, Trading Experience.

INTRODUCTION

Traditional finance theory explains that the financial market and market agents are efficient, systematic and investors are rational (Kumar & Goyal, 2016). Even though the modern finance discipline has grown gradually, it is still hard to justify on the scientific grounds that why people behave non-rationally while dealing with money. While traditional finance assumes people are rationalized, the concept of behavior finance was initially introduced in 1980 by the psychologists, Daniel Kahneman and Amos Tversky. They were known as fathers of behavioral finance (Gill & Bajwa, 2018). Behavioral finance focuses on the psychological aspects of financial decision-making and discusses the irrational behavior of investors in decision-making on investment. This is affected by different behavioral biases which allow investors to move away from rationality and make irrational investment decisions (Bakar & Yi, 2016). Behavioral biases require reasons for the asymmetry between the way humans make decisions concerning gains and decisions involving losses (Kahneman & Tversky, 1979). Disposition, overconfidence, herding, anchoring, cognitive dissonance, availability bias, self-attribution, mental accounting, framing, representative bias, are few biases that are viewed as building blocks of behavioral finance that significantly impact the individual investor decision making (Shefrin, 2007).

Here, in the present study, the researcher reviews the herding bias, which is one of the investment biases that has been broadly explored in behavioral finance over the past few decades (Kumar & Goyal, 2016). Herding bias can be described as investors' tendency to pursue other investors' activities by disregarding their own personal details and expectations (Nofsinger & Sias, 1999). History discloses that irrationalities in investment is the cause for major blasts and busts in the marketplace. Herding is one of those behavioral discrepancies that challenge the effective market hypothesis (EMH) (Prosad et al., 2012). There are several studies by Guney et al. (2017) Spyrou (2013), Hirshleifer et al. (2006) and Bikhchandani (2000) that reveal the nature of herding, causes of herding, and its consequences for the functioning of markets. Several researchers argued that market volatility and market instability were exaggerated by herding bias (Guney et al., 2017; Spyrou, 2013; Bikhchandani, 2000).

There are many factors that impact on individual investors’ herding bias in the international share market. These factors vary according to cultural differences among countries (Arshad & Sharif, 2018). In CSE, as individuals live in a collective...
culture, their values may play a vital role in investment decisions. Therefore, it is essential to recognize the specific factors that determine individual investors’ herding bias in the Sri Lankan context (Shantha et al., 2018). Several socio-economic factors were used to define investor profiles in both primary and secondary equity markets. Among the socioeconomic factors, investors’ age, gender, education, their profession and the income earned by the investors play an important role in determining herding bias among investors (Tekçe et al., 2016). Moreover, as Baker et al. (2019) pointed out there are limited academic research efforts to unravel how socio-economic variables determine herding bias (Kumar & Goyal, 2016). This study aims at testing the influence of socio-economic variables on herding bias exhibited by individual investors residing in Sri Lanka.

Sophistication in trade also plays a major role in shaping herding bias (Feng et al., 2015). Trading experience and trading frequency fall under trading sophistication (Prosad et al., 2015). Individuals with more investment and experience in life/business to be more sophisticated investors (Chen et al., 2003). Sophistication in trade also has an important role to play in shaping herding bias (Feng et al., 2015). This study drives at testing the impact of trading sophistication variables on the herding bias exhibited by individual investors residing in Sri Lanka.

Further, the importance of self-reflection term is increasingly recognized by the studies of Shantha (2019), Woer kom (2004), and Kember et al., (2000). Self-reflection which is also known as reflective learning, which is the procedure of investigating a matter of concern internally, started with an experience that generates and explains the meaning in aspects of itself (Boud, 1985). Shantha (2019) emphasized and tested foremost this term in determining herding bias. Hence, the problem statement of this study can be depicted as follows:

“Do socio-economic, trading sophistication and self-reflection factors influence on individual investors’ herding bias?”

LITERATURE REVIEW

Theoretical Review

Traditional Finance Paradigm

The first decision-making model “Homo Economicus” investors are considered to Rational Economic Man (REM) was formulated in the 19th century (Nair & Antony, 2015). This model assumes investors are fully informed about investment alternatives and the possible outcomes and financial markets are considered to be efficient, economic agents who are rational and accepted Efficient Utility Theory (EUT) to make decisions (Baker et al., 2019).

Two fundamental aspects were developed in the theory of finance: rationality and irrationality. In other words, standard finance, and behavioral finance (Nair & Antony, 2015). The essence of traditional financial theories can be grouped into four basic blocks: markets are efficient; investors are rational; returns are a risk and risk function alone; investors create their own portfolio according to the mean-variance portfolio (Shefrin & Statman, 2012).

Standard finance has two branches: Traditional finance and Modern finance. Traditional finance describes investor rationality and decision-making is built on the EUT. Whereas the underlying concept of modern finance is maximizing the utility function of wealth based on the informal efficiency of the market (Pimenta & Fama, 2014). When review the traditional finance theories, concepts, and models respectively, the term of economic man/ homo economicus was introduced in 1844 by Mill. This refers to investors as rational and self-interested actors who use objective decisions to maximize their utility. This definition is the fundamental assumption of most economic theories. Then the EUT was introduced by Bernoulli, (1954), Von Neumann and Morgenstern (1944) which reports that market participants make their risky decisions by comparing the expected value of the available alternatives and make a balanced decision (Kumar & Goyal, 2016).

Rational investors take action to optimize their expected utility. It categorizes decision-makers into individuals who love risk, risk-averse, and risk-neutral. This suggested that a risk-averse individual would prefer to consider taking less risk for the same amount of value than a risk-loving person. Markowitz (1952) introduced Markowitz Portfolio Theory (MPT) which can select multiple risky securities and a risk-free asset, it determines the optimum portfolio building process. a defined amount of risk or reducing the risk for a specified amount of expected return. Through selecting securities with the most optimal risk-return potential, it helps in asset diversification. Subsequently, the Capital Assets Pricing Model (CAPM) is one of the most important asset pricing models in finance, was based on the MPT (Copur, 2015). This model was developed by Treynor (1961), Sharpe (1964), Lintner (1965), and Mossin (1966). This provides the relationship to be observed between both the assets’ risk and their expectations. CAPM determines the relation between the assets’ risk and its expected return. An assets’ expected return from this model provides a realistic or benchmark estimate of return. Moreover, when CAPM created anomalies incompatible with market efficiency, traditional theorists discarded the CAPM in favor of a three-factor model.

Further, the Efficient Market Hypothesis (EMH) by Fama (1970) suggested that, when calculating the prices of financial assets, all available information is integrated in an efficient market. EMH is built on the assumption that in the financial market, investors behave rationally. In the world of uncertainty, investors must select a course of action among different alternatives (Kumar & Goyal, 2016). It also recognizes that all investors are well-informed, rational individuals who are willing to increase their profits in an efficient market. It implies that if the EMH is accurate, investors can’t expect to
outperform the market, so no amount of research can assist to create abnormal profits. Degusis & Novickyté (2014) stated that in economics there is no other suggestion that has more strong evidence to assist it than the EMH. The key assumption of all these rational theories is that the activities of an investor is rational, risk-averse, and his/her main target is profit maximization (Pompián, 2015). The underpinnings of these theories are based on how retail investors should act instead of how they actually act (Copur, 2015). These theories have been considered the interpretation for investor and market behavior for a very long period. Empirical studies of Kahneman & Tversky (1979) presented findings those were incompatible with EMH and EUT after the energy crisis of the 1970s (Kumar & Goyal, 2016).

In the 1980s, behavioral finance originated as a novel phenomenon throughout economic and financial decision-making that incorporates behavioral and psychological elements. Behavioral finance challenges the efficient market standpoint and makes it easier to realize why investors look to invest in financial assets in a specific way (Kumar & Goyal, 2016).

**Behavioral Finance Paradigm**

Researchers have discovered that traditional models were significantly violated because of the various irregularities and shortfalls in the stock markets (Zabera & Bansal, 2018). By the year 1980s behavioral finance has emerged and it provides each of these blocks a substitute. The two psychologists are Kahneman & Tversky (1979) laid the groundwork for the prospect theory which was one of the most fundamental and important works in the field of behavioral finance. Prospect theory has been developed as a substitute to the EUT, Rational Expectations Theory, and an EMH. Being a philosopher of finance, he claims that individuals do not always behave rationally, but almost always make errors when making investment decisions. Hence Kahneman, Tversky, and Thaler are therefore known to be the fathers of behavioral finance (Hammond, 2015).

Behavioral finance strongly criticizes the rational approach and claims that investors tend to diverge from rationality if investment decisions are taken (Copur, 2015). This new finance concept describes individual behavior and collective behavior through the integration of sociology, psychology, and other behavioral sciences. It also predicts financial markets (Nair & Antony, 2015). Behavioral finance is not a substitution for the traditional financial model, but an innovative approach to explain investors’ market inefficiency and irrational behavior (Nair & Antony, 2015). As stated by Hammond (2015), behavioral finance has begun to evolve as a branch of social psychology exploring the human aspect of the decision-making process. In the 18th century research studies in this field started with the greatest works such as Moral Sentiments Theory (1759) and Wealth of Nations (1776) of Adam Smith. Such researchers highlight the role of psychology in economic behavior, and over the next decade, their agreement has been lost. Kumar (2009) recognizes that stock price fluctuations on the transactions rely on investors’ mental approach (Chandra & Kumar, 2012).

The theories of rational finances were along with several other important contributions are been discussed hereinafter. Behavioral finance is based on the notion of “Bounded Rationality” by Simon in 1955 (Joo & Durri, 2018). This concept is a more comfortable version of the standard EUT. This theory states that individuals’ rationality is limited by two factors at their disposition that are information and the behavioral boundaries of their minds (Copur, 2015). Bounded rationality is a simpler form of the traditional EUT. It is also more realistic for its standard counterpart as it incorporates limitations of human judgment. Subsequently, in 1956 the theory of cognitive dissonance was introduced by Scharfstein and Stein. That arises when two cognitions are contradictory at the same time (Copur, 2015). Therefore, this dissonance gives a sense of discomfort or unrest in individuals so that by modifying their views they try to avoid it or minimize it. Various experts have investigated the cognitive processes that are an aspect of cognitive psychology regarding decision making under ambiguity.

Then heuristic biases were introduced namely availability representativeness, anchoring, and adaptation by Kahneman & Tversky (1979). Subsequent, prospect theory by Kahneman and Tversky in 1970 is known as the foundation of behavioral finance. It has been developed as an alternative EUT model (Ahearne et al., 2004). Framing Bias, Mental Accounting Bias, and Theory of Overreaction were developed by Tversky and Kahneman (1981), Richard Thaler (1985), and De Bondt and Thaler (1985) respectively. In 1999, Behavioral Asset Pricing Theory (BAPM) and Behavioral Portfolio Theory (BPT) was introduced by Meir Statman. BAPM illustrates the interaction with the market between two types of traders, i.e. information traders and noise traders. Information traders are moral traders following the CAPM, whereas noise traders do not pursue the CAPM and commit mental failures. Hence, BPT provides an alternative to the theory of portfolios by Markowitz, called the theory of behavioral portfolios (BPT). The investors are constructing a mean-variance portfolio in the Markowitz model, thus attempting to maximize their trade in risk-return. The portfolio is measured here and the shareholders’ risk behavior is also consistent.

**Empirical Review**

As stated by Shusha & Touny (2016), literature review in the field of herding bias has been focused on three main fields. The first field focuses on in which financial markets herding bias has existed. Most of these studies confirmed that herding bias is typically common in emerging markets. Several empirical studies examined the existence of herding bias in both developed and emerging stock markets. (Vo & Phan, 2016; Lakshman et al., 2013; Lao & Singh, 2011) observed the existence of herding bias in India and China and found that herding is more prevalent in the bearish market condition in China compared to a bullish market condition in India. Besides, the Indian market detected lower level of herding as compared to the Chinese market (Lakshman et al., 2013).
In emerging Asian economies such as South Korea and Taiwan, calibration with this herding has been recognized as one of the dominant biases (Chang et al., 2000). Prosad et al. (2015) has discovered that this is because these markets are deemed more competitive and less mature than developed countries. Herding can be expected to be more prominent in frontier markets (Guney et al., 2017). Thus, greater attention has focused on the study of herd phenomenon in frontier stock exchanges (Prosad et al., 2012). And also, Christie & Huang (1995) also found that emerging markets exhibit more herding bias, but these findings are in contrary to what Sewwandi (2016) found that the estimated model for bull and bear phases of the stock market provides no evidence of herding in either phase and argued that herding does not present in Sri Lanka. The second research focus is on the differences between individuals and institutional investors in adopting herd behavior. Lee et al (2004) recognized that individual investors are much more prone than institutional investors to show herding behavior. According to Prosad et al. (2015), the reason for this is because individual investors follow the decisions of a large group or noise trader.

The third research focus is on empirical studies that explain exactly what causes herding. There is no coherent explanation in the empirical literature of the triggers of herding (Spyrou, 2013). The theoretical underpinnings of herding prevail in the theory of Keynes (1930), which identifies the motivation of the individual to imitate other people’s behavior in response to uncertainty and their own belief of ignorance. In the studies of Wang, (2008), Bikhchandani and work(s); (2000), Avery and Zemsky, (1998) revealed that people display herding behavior by undervaluing their relevant information and overvaluing widely available information by thinking that superior information has with the crowd. Due to extreme two motives, one is societal pressure and the other is the common logic that crowds can’t be mistaken and know more than individual investors.

But there is still extensive research among individual investors on herding bias (Lee et al., 2004; Choi, 2016), and most studies are based on institutional and analyst’s forecasts. Herding bias on the financial market has increased awareness among practitioners and academics throughout time (Economou et al., 2018), Chang et al., (2000) strong evidence of herd creation in all sectors contributes to impressive results. They also notice that during times of market decline, the herding bias is more pronounced. There are several studies experimented the role of age of investor in determining herding bias; these include; Wubie et al. (2015). This study typically reports that age has a negative relationship with herding bias. But, Prosad et al. (2015) study emphasized a contradictory view towards this as herd behavior is seen in relatively old investors. There are several studies conducted to study the influence of gender on herding bias. Most of the research articles argued that women investors are more influenced than their male counterparts by herding bias. It can be proved by studies done by Hon-Snir et al. (2012), Jureviceni & Jermakova (2012), and Eagly and Carli (1981). The influence of education on the degree of herding has been examined by scholars. Menkhoff et al. (2006) argued that individuals with no college degree are more likely to be herded. And it is stated that the profession does not create any difference in herding bias (Prosad et al., 2015).

Several studies investigated the role of investors’ income in determining herding bias. The studies of Lin (2011) and Prosad et al. (2015) typically report that the income doesn’t influence herding bias while Bodnaruk & Simonov (2015) argued that wealthy investors tend to invest on their own instead of asking for advice. Individual investors’ trading experience also impacts herd bias. There are several empirical studies resulted that inexperienced investors are interested in investing on their own rather than being advised by consultants (Bodnaruk & Simonov, 2015) (Menkhoff et al., 2006). This implies that the herding bias is diminished by the experience. Chen et al., (2007) argued in the opposite way indicating that inexperienced investors are less prone to biases. There is another notable view presented by Prosad et al. (2015) is seen in relatively very low or very high experience. Herding behavior is seen relatively with intraday investors (Prosad et al., 2015).

To achieve the purpose of the study in line with the reviewed literature, the following conceptual framework and hypotheses were developed:

**Figure 1: Conceptual Framework**

**Source:** Author Compiled based on Literature
H₁: There is a significant relationship between socioeconomic factors and individual investors’ herding bias in CSE.

H₂: There is a significant relationship between trading sophistication factors and individual investors’ herding bias in CSE.

H₃: There is a significant relationship between self-reflection and individual investors’ herding bias in CSE.

METHODOLOGY

The current study is a cross-sectional study and the quantitative method was used for data analysis. A questionnaire was designed, and a survey method is applied to obtain responses. The actual sample size for the study was 400 out of all individual investors in Sri Lanka, but few questionnaires were found which were not adequately filled. Therefore, only 243 questionnaires were found useful and selected as sample size. A stratified random sampling technique was used to collect data from investors in the Colombo Stock Exchange. The purpose of this research analysis is to interpret and draw a conclusion from the collected data. Inferential statistics, as well as descriptive statistics, are applied for data analysis. SPSS software was used for statistical computation. Firstly, Cronbach Alpha is applied to check the reliability of data. The range from 0.70 - 0.90 is acceptable. Then, One-way ANOVA and Independent sample t-Test are applied to identify the influence of socio-economic and trading sophistication on herding bias. Finally, regression analysis is conducted to identify the influence of self-reflection on herding bias.

RESULTS AND DISCUSSION

This section is included of outcomes and interpretation of the data. First, the Cronbach's alpha test for measurement of reliability was done. The outcomes of the reliability test (Table 1) showed that the value of Cronbach Alpha is 0.888. Therefore, the scale is reliable as the value of Cronbach alpha is more significant than 0.7.

Table 1: Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | No of Items |
|------------------|---------------------------------------------|-------------|
| .888             | .888                                        | 4           |

Source: Survey Data

Investor’s demographic profile

Descriptive statistics show that 83.5 percent of the respondents fall in the age group of 25-54 years (with 7.8 percent in the age group 17-24 years and in 55-64 years). The sample contains 84 percent male and 16 percent females. There are 32.1 percent respondents who have completed a bachelor’s degree and 12.3 percent respondents have completed a postgraduate diploma. More than half of respondents have completed their professional qualifications in the finance field (55.6 percent) with 34.6 percent have a monthly income between Rs. 40,000 and Rs. 79,999. Professionally, 39.5 percent of respondents are financial experts, 56.8 percent are in the private sector, 35.8 percent are in the government sector, 5.3 percent are self-employed, and the rest belong to the non-government sector (2.1 percent). The largest number of respondents have less than or equal to four years of work experience (39.5 percent). It is seen that the trading experience of 37.9 percent of respondents is 2 years or less than 2 years, 34.2 percent have an experience of three to seven years and 17.3 percent have an experience of eight years to twelve years. Finally, the frequency of trading of 48.6 percent is occasional, 19.8 percent have a trading frequency of initial public offerings/ special issues only and 5.3 percent are daily traders. The results are shown in Table 2.

Table 2: Investor’s demographic profile

| Summary Statistics                | Code | Count | %   | Cumulative (%) |
|-----------------------------------|------|-------|-----|----------------|
| **Gender**                        |      |       |     |                |
| Male                              | 1    | 204   | 84% | 84%            |
| Female                            | 2    | 39    | 16% | 100%           |
| **Age group in years**            |      |       |     |                |
| 17-24 years                       | 1    | 19    | 7.8%| 7.8%           |
| 25-54 years                       | 2    | 203   | 83.5%| 91.3%         |
| 55-64 years                       | 3    | 19    | 7.9% | 99.2%         |
| 65 years and over                 | 4    | 2     | 0.8%| 100%           |
| **Highest Academic Qualification**|      |       |     |                |
| Advanced Level                    | 1    | 61    | 25.1%| 25.1%         |
| Diploma                           | 2    | 43    | 17.7%| 42.8%         |
| Bachelor’s degree                 | 3    | 78    | 32.1%| 74.9%         |
| Postgraduate Diploma              | 4    | 30    | 12.3%| 87.2%         |
| Master’s degree                   | 5    | 26    | 10.7%| 97.9%         |
| Doctoral Degree                   | 6    | 5     | 2.1% | 100%          |
| **Fields of Professional Qualification**|  |       |     |                |
Summary Statistics

| Code | Count | %     | Cumulative (%) |
|------|-------|-------|----------------|
| Finance field | 1 | 108 | 44.4% | 44.4% |
| Non-finance field | 2 | 135 | 55.6% | 100% |

Current Employment Sector

| Code | Count | %     | Cumulative (%) |
|------|-------|-------|----------------|
| Government Sector | 1 | 87 | 35.8% | 35.8% |
| Private Sector | 2 | 138 | 56.8% | 92.6% |
| Self-employed | 3 | 13 | 5.3% | 97.9% |
| NGOs | 4 | 5 | 2.1% | 100% |

Work Experience in Current Profession

| Code | Count | %     | Cumulative (%) |
|------|-------|-------|----------------|
| Equal or Less than 4 Years | 1 | 96 | 39.5% | 39.5% |
| 5-9 Years | 2 | 61 | 25.1% | 64.6% |
| 10-14 Years | 3 | 48 | 19.8% | 84.4% |
| 15-19 Years | 4 | 18 | 7.4% | 91.8% |
| 20-24 Years | 5 | 13 | 5.3% | 97.1% |
| 25-29 Years | 6 | 02 | 0.8% | 97.9% |
| More than or equal 30 Years | 7 | 05 | 2.1% | 100% |

Monthly Income

| Code | Count | %     | Cumulative (%) |
|------|-------|-------|----------------|
| Less than Rs. 40,000 | 1 | 26 | 10.7% | 10.7% |
| Rs. 40,000 – Rs. 79,999 | 2 | 84 | 34.6% | 45.3% |
| Rs.80,000 – Rs. 119,999 | 3 | 31 | 12.8% | 58.1% |
| Rs.120,000 – Rs. 160,000 | 4 | 58 | 23.9% | 82% |
| More than Rs. 160,000 | 5 | 44 | 18% | 100% |

How long have you been investing in the stock market (in years)?

| Code | Count | %     | Cumulative (%) |
|------|-------|-------|----------------|
| 2 years or less | 1 | 92 | 37.9% | 37.9% |
| 3–7 years | 2 | 83 | 34.2% | 72.1% |
| 8–12 years | 3 | 42 | 17.3% | 89.4% |
| 13–17 years | 4 | 17 | 7% | 96.4% |
| 18 years or above | 5 | 09 | 3.6% | 100% |

How often do you buy or sell stocks?

| Code | Count | %     | Cumulative (%) |
|------|-------|-------|----------------|
| Occasionally | 1 | 118 | 48.6% | 48.6% |
| Once a month | 2 | 23 | 9.5% | 58.1% |
| Once a week | 3 | 09 | 3.7% | 61.8% |
| 2-3 times a week | 4 | 32 | 13.2% | 75% |
| Daily | 5 | 13 | 5.3% | 80.3% |
| Initial public offerings/ Special issues only | 6 | 48 | 19.7% | 100% |

Source: Survey Data

Table 3: Independent Sample t-Test Results

| Levene’s Test for Equality of Variances | t-test for Equality of Means (sig.) |
|----------------------------------------|----------------------------------|
| Gender | 6.335 | .000* |
| Profession | 6.575 | .000* |

Source: Survey Data

The analysis mentioned above (Table 3) shows whether herding bias is different between male and female investors. As well as whether herding bias is different between the finance field profession and non-finance field profession of investors. The results show gender and profession vary with herding bias.

Table 4: Independent Sample t-Test - Gender & Profession Group Mean Statistics

| Male |
|------|
| Gender |
| Male | 3.19 |
| Female | 3.83 |
| Profession |
| Finance Field Profession | 3.61 |
| Non-finance Field Profession | 3.08 |

Source: Survey Data
The present study results (Table 4) conveyed that female investors are more prone to herd bias than their male counterparts. This phenomenon is also confirmed by Hon-Snir et al. (2012), Jureviciene & Jermakova (2012), and Eagly and Carli (1981). And also, it is seen that finance field professions investors more tend to herd bias than non-finance investors. This is contradicted the results of Prosad et al. (2015). It conveyed that profession does not create any difference in herding bias.

### Table 5: One-Way ANOVA Results

| Socio-economic Variables | Value  |
|--------------------------|--------|
| Age                      | .054   |
| Education                | .000*  |
| Income                   | .000*  |
| Trading Experience       | .000*  |
| Trading Frequency         | .000*  |

**Source:** Survey Data

The One-way ANOVA test reveals that the respondents belonging to only levels of education, income, trading experience and trading frequency are highly vulnerable as they are prone to herding bias. Further, the findings (Table 5) of the current study convey that age is not an important factor for individual investors’ herd bias when making stock selections in CSE. These findings do not conform to those of previous studies. For example, Wubie et al. (2015) revealed that age has a negative relationship with herding while Prosad et al. (2015) revealed that herd behavior is seen in relatively old investors.

### Table 6: One-Way ANOVA - Education Group Mean Statistics

| Education Levels       | Mean Value |
|------------------------|------------|
| A/L                    | 3.95       |
| Diploma                | 3.80       |
| Bachelor’s Degree      | 3.37       |
| Postgraduate Diploma   | 3.04       |
| Master’s Degree        | 2.52       |
| Doctoral Degree        | 2.40       |

| Income Levels          |            |
|------------------------|------------|
| Less than Rs.40,000    | 3.92       |
| Rs.40,000-Rs.79,999    | 3.60       |
| Rs.80,000-Rs.119,999   | 2.69       |
| Rs. 120,000-Rs. 160,000| 2.53   |
| More than Rs. 160,000  | 2.24       |

| Experience Levels      |            |
|------------------------|------------|
| 2 Years or Less        | 3.51       |
| 3 - 7 Years            | 3.41       |
| 8 – 12 Years           | 2.87       |
| 13 – 17 Years          | 2.44       |
| 18 Years or above      | 1.67       |

| Frequency Levels       |            |
|------------------------|------------|
| Occasionally           | 3.78       |
| Initial public offerings/special issues only | 3.23 |
| Once a month           | 2.39       |
| Once a week            | 2.66       |
| 2-3 times a week       | 2.58       |
| Daily                  | 3.63       |

**Source:** Survey Data

According to the results (Table 6), investors who are more educated are less prone to herding behavior while less educated investors are more prone to herding behavior. Similarly, Menkhoff et al. (2006) also pointed out, that people who do not have a college degree are more prone to herding. And herd bias can be seen more with investors who get less income than more income earners. It implied that wealthy investors prefer to invest on their own rather than seeking the help of advisors (Bodnaruk & Simonov, 2015). There are some different results from various studies carried out by Lin (2011) and Prosad et al. (2015) which conclude that the income has no significant relation with herding bias. While this study result has shown that, when investors gain more experience, it lowers the bias of herding behavior. This finding is consistent with the study carried out by Prosad et al. (2015), Menkhoff et al. (2006), and Chen et al. (2007). But
contradicted with the research finding of Bodnaruk & Simonov (2015) as they suggested that less experienced investors try to invest on their own instead of having the assistance of advisors.

Further present study results (Table 6) revealed that investors who trade less frequently are more prone to herding. In contrary to the study, Prosad et al. (2015) argued that herd behavior is seen relatively with intraday investors.

Regression Analysis
A regression describes and evaluates the impact of self-reflection on herding bias.

\[ DB = \beta_0 + \beta_{SR} + e \]

\[ DB = 0.559 - 0.684SR + e \]

The study results (Table 7) confirmed that, when self-reflection increases by one-unit, herding bias will decrease by 0.684 as a result. It confirmed that investors who are self-reflecting about their own past are not prone to herding when making investment decisions. Therefore, the findings of this study confirm that the investors’ learning from their past experiences is the main reason for herd bias to decrease. Accordingly, investors have understood from their past experiences the irrationality of herding. Therefore, when trading stocks, they tend to move away from such irrational behavior. This is in line with the research findings of Shantha (2019).

CONCLUSION
Behavioral finance is a rapidly growing arena, but in developing countries, such as Sri Lanka, it is still at an emerging stage. This study has certain relevant implications for financial practitioners in making stock selection decisions. It can be suggested that a good grasp of this area will equip the practitioners not just to recognize other mistakes but their own mistakes as well. It facilitates financial advisors to become more effective by understanding their clients’ psychology. It will aid them in developing behaviorally modified portfolios, which best suits their clients’ predisposition. It helps investment bankers in understanding the market sentiments as they make public issues for their companies. It assists the financial strategists in making better forecasts and security analysts for recommending stocks. Finally, the knowledge of herding bias is required for individual investors in the pursuit of making sensible and effective financial decisions.

The results show that herd behavior is mostly seen among females, having less educational qualifications, who are engaged in the finance field professions, those who are with a very low monthly income, low experience, and who trade less frequently. Self-reflection can be seen in herding bias. On the other hand, age does not impact on herding bias of investors.

LIMITATION AND STUDY FORWARD
The following limitations are identified which are relevant to the study; the study does not test causality, but the only association between variables. Also, this study was restricted to investment decisions made by individual investors only and does not consider institutional investors. It is therefore not possible to generalize the findings of this research study to predict the investment behavior of institutional investors. The study has used a proportionate stratified random sampling technique as well as this study used only socio-economic, trading sophistication factors, and self-reflection to analyze the individual investors' herding bias.

As any methodology, the present study survey also has potential limitations. The respondents, for example, may refuse to accept their biases and may give socially acceptable responses. A further concern is that the responses were given under stressful market conditions in a calm environment that might vary from their real responses. And also, this study has been conducted on a frontier market focusing a period over which its trading environment is highly uncertain (Shantha, 2019). Hence, in terms of the type of the market and its environmental conditions, it is an ideal context for studying the significance of biases. This study’s findings may not be generalizable to developed and emerging markets due to differences in investment and regulatory environment operating in those markets. This study is only considering the herding bias to which investors are exposed when trading stocks. Future works can therefore contribute by extending similar studies to overcome these limitations.

The Research review and analysis of work have raised some questions for future research. These are going to be discussed below. First, future research studies should concentrate on emerging stock markets. It was also observed that after globalization, emerging economies have higher growth potential, and investors are more likely to invest in the share market, leaving a wide range of potential for future research. The emphasis should also be placed on other sectors, such as the money market, the derivatives market, and the stock market. Second, secondary data-based quantitative work
should be given attention to evaluating shareholder biases during investment decision-making. Hence, most of the herding bias is studied in Sri Lanka using survey-based techniques. On the other hand, in the Sri Lankan context, the possibility of investigating this field with the aid of secondary information is still untapped. Secondary data can therefore be used to identify the effect on herding bias. Third, research can be carried out by combining different types of investors such as individuals, institutional (mutual funds, hedge funds, pension funds, investment consultants, etc.) to determine the difference in their actions and the influence of herding bias.

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AUTHORS’ CONTRIBUTION

Kawshala, B.A.H developed the study, wrote the first draft, and conducted a statistical analysis of the data. P. A. N. S. Anuradha and Mohamed M. Shamir read the draft, corrected design errors, and contributed to the discussion section. All the authors read and approved the final draft.

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