Influence of Heuristics on the Trading Decisions of Equity Derivative Traders in Kerala

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Abstract: *Behavioural finance is the application of psychology to financial behaviour. Behavioural factors impact the process of investors' decision - making. The primary focus of this study is to examine the influence of heuristics biases on the trading decisions of equity derivative traders in Kerala. The influence of heuristic variables has been examined using four variables such as gambler's Fallacy, overconfidence, anchoring, and representativeness. This study found that the heuristic variables strongly influence the trading decision of equity derivative traders in Kerala, and there is no significant difference in the influence of heuristic variables between different demographic groups of equity derivative traders in Kerala.*

Keywords: Heuristics, Equity Derivative, Behavioural Biases, Trading Decisions

1. Introduction

Heuristics are defined as the rules of thumb, which make decision - making easier, especially in complex and uncertain environments. However, they can sometimes lead to biases, especially when things change and can lead to suboptimal investment decisions *(Ritter, 2003)*. *Kahneman and Tversky* seem to be one of the first writers to study the factors belonging to heuristics when introducing three factors namely *representativeness, availability bias, and anchoring (Tversky & Kahneman*, 1974). *Waweru et al., (2014)* also list two factors named *Gambler's fallacy and Overconfidence* in heuristic theory. Four factors under the heuristic theory were chosen for this study based on the literature mentioned above. They are as follows: Gambler's Fallacy, overconfidence, anchoring, and representativeness.

2. Literature Review

Behavioural finance is the study of how psychological influences affect market results. Behavioural finance can be used to better understand various outcomes in a range of sectors and companies. The impact of psychological biases is one of the most important parts of behavioural finance research. The research in behavioural finance has grown recently. The most influential study by *Tversky & Kahneman, (1974)* examined the cognitive biases that stem from the reliance on judgmental heuristics. They describe three heuristics used in making decisions under uncertainty: i) *representativeness*, (ii) the availability of instances; and (iii) anchor adjustment. *Daniel et al., (2002)* examined a large body of information on how psychological biases influence investor behaviour and prices. The study points out that systematic mispricing most likely results in significant resource misallocation and restricted attention and overconfidence leading to investor trust in educated market players' strategic incentives. *Frijns et al., (2010)* looked into behavioural heterogeneity in the options market. This study presented an alternate pricing approach. *Luong & Ha, (2011)* conducted a study to investigate the behavioural aspects affecting individual investors' decisions at the Ho Chi Minh

Stock Exchange. The findings reveal that five behavioural factors influence individual investors' investing decisions at the Ho Chi Minh Stock Exchange: herding, market, prospect, overconfidence - fallacy, gamble's and anchoring - ability bias. *Y. Gupta, (2016)* investigated the impact of behavioural biases on investor decision - making. It was discovered that four out of seven behavioural biases, namely regret aversion bias, herding bias, overconfidence bias, and representativeness bias, influenced both groups of investors equally likely. *Antony & Joseph, (2017)* examined the cognitive biases and heuristics of derivative market investors. The study also looked into the impact of behavioural factors on investment decisions. The decision - making process is considered cognitive in nature because investors must make a choice based on the various options available to them. Based on the review of literature, this study selected four factors under the heuristic theory which influence the trading decisions, they are*: Representativeness, Anchoring, Overconfidence and Gamblers fallacy.*

After reviewing the literature it is identified that research on behavioural biases of equity derivative traders is not available. As a result, there is a research gap that the author has observed, which inspires the current work. This research is being carried out to explain Influence of heuristics biases on the trading decisions of Equity Derivative traders in Kerala.

3. Research Problem

A thorough knowledge of market and trading strategies are essential for earning consistent speculative profit from derivative market. Behavioural factors impact the process of investors' decision - making. Rational and irrational behaviour of traders may influence their trading decision and thereby trading performance. It is known that behavioural biases exist among investors in the Indian stock market. But so far, no studies have examined the influence of behavioural factors on the trading decisions of equity derivative traders in India. In this background, it is very relevant to study the influence of behavioural factors on trading decisions. This

study examines the influence of heuristics on the trading decisions of equity derivative traders in Kerala.

4. Research Methodology

This research is conducted based on a quantitative research strategy. Quantitative is usually associated with studying behaviours rather than meanings, which is in line with the topic of behavioural finance. In order to achieve the valid results, the reliable and adequate sample size is chosen through the questionnaire. Primary data were collected from a sample of 300 equity derivative traders in Kerala by using self - completion questionnaire send through Google forms. The responses collected were automatically stored as Excel (CSV) file in Google forms which is exported to SPSS Version 22 for further coding. The 5 - point Likert scale item responses are accordingly coded as values 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree and 1 for Strongly Disagree. Descriptive statistics including frequencies, mean and standard deviation are used to identify the pattern of responses apart from the basic profile of the respondent. Since the distributions found normal parametric tests (ANOVA, t - test, etc) were used for data analysis.

5. Results and Discussions

Representativeness occurs when the similarity of objects or events confuses people's thinking regarding the probability of an outcome. People frequently make the mistake of believing that two similar things or events are more closely correlated than they actually are. Representativeness refers to the degree of similarity that an event has with its parent population *(DeBondt & Richard H. Thaler, 1995)* or the degree to which an event resembles its population *(Tversky & Kahneman, 1974)*. Representativeness may result in some biases such as people putting too much weight on recent experience and ignoring the average long - term rate *(Ritter, 2003)*. For example, share prices often rise when a company reports increased earnings several quarters in a row because investors tend to infer a high long - term earnings growth rate *(Waweru et al., 2008)*. In this study in order to examine the *representativeness bias* among equity derivative traders the statement *"Once I win a strategy, then I try more similar strategy next time"* is asked to sample respondents with a five - point Likert scale.

Anchoring is a phenomenon used in the situation when people use some initial values to make estimations, which are biased toward the initial ones as different starting points yield different estimates *(Tversky & Kahneman, 1974)*. In the financial market, anchoring arises when a value scale is fixed by recent observations. Investors always refer to the initial purchase price when selling or analysing. Thus, today's prices are often determined by those of the past. Anchoring makes investors define a range for a share price or company's income based on historical trends, resulting in under - reaction to unexpected changes. Anchoring has some connection with

representativeness as it also reflects that people often focus on recent experiences and tend to be more optimistic when the market rises and more pessimistic when the market falls *(Waweru et al., 2008)*. Anchoring arises when investors place too much weight on recent performance. Investors assume that current prices are right and usually use their purchase price as a reference point *(Kahneman & Riepe, 1998)*. In this study to examine the *anchoring* bias among equity derivative traders the statement *"I have a tendency to trade in F&O based on the indications given by technical charts"* is asked to sample respondents with a five - point Likert scale.

When people overestimate the reliability of their knowledge and skills, it is the manifestation of overconfidence *(De Bondt & Richard H. Thaler, 1995)*). Many studies show that excessive trading is one effect of overconfidence on investors. There is evidence showing that financial analysts revise their assessment of a company slowly, even in case there is a strong indication proving that the assessment is no longer correct. Investors and analysts are often overconfident in areas in which they have knowledge *(Evans, 2006)*. Overconfidence is believed to improve persistence and determination, mental facility, and risk tolerance. In other words, overconfidence can help to promote professional performance. It is also noted that overconfidence can enhance others' perception of one's abilities, which may help to achieve faster promotion and greater investment duration *(Oberlechner & Osler, 2008)*. In this study to examine the *overconfidence* bias among equity derivative traders the statement *"I always believe that my skills and knowledge of the stock market can help me to make a profit from the F&O market"* is asked to sample respondents with a five - point Likert scale.

Gamblers' fallacy is associated with the situation where investors tend to predict a reversal of a particular trend. In most situations, it leads investors to anticipate the end of good or bad market performance. Thus investors who are biased toward a status tend to choose an alternative regardless of whether or not the choice is optimal *(Kempf & Ruenzi, 2006)*. The belief that a small sample can resemble the parent population from which it is drawn is known as the "law of small numbers" *(Statman, 1999)* which may lead to a Gamblers' fallacy *(Barberis & Thaler, 2003)*. More specifically, in the stock market, Gamblers' fallacy arises when people predict inaccurately the reverse points which are considered the end of good (or poor) market returns *(Waweru et al., 2008)*. In this study in order to examine the gamblers' fallacy bias among equity derivative traders the statement *"When a trade results in a loss, I always believe that my next trade will be a gain and I increase the position size"* is asked to sample respondents with a five - point Likert scale.

The influence of heuristic variable on derivative traders are examined using the above four variables on a five - point scale and analyzed using one sample t - test with a test value of '3', which is the mean of the 5 - point response scale. The test results of the influence of four heuristic variables are summarized in Table 1.

Table 1: Influence of the heuristic variables on the trading decisions of equity derivative traders in Kerala
(n=300)

Statement / Variable	Responses[#]	Frequency	%	Mean ± SD	t[*]	p - value

Once I win a strategy then I try more similar strategy next time (Representativeness)	SD	19	6.3	3.71±1.13	10.826	<.01***
	D	18	6.0			
	N	80	26.7			
	A	98	32.7			
	SA	85	28.3			
I have a tendency to trade in F&O based on the indications given by technical charts (Anchoring)	SD	15	5.0	3.77±1.07	12.550	<.01***
	D	15	5.0			
	N	77	25.7			
	A	109	36.3			
	SA	84	28.0			
I always believe that my skills and knowledge of the stock market can help me to make a profit from the F&O market (Overconfidence)	SD	10	3.3	3.88±1.06	14.385	<.01***
	D	17	5.7			
	N	77	25.7			
	A	91	30.3			
	SA	105	35.0			
When a trade results in a loss, I always believe that my next trade will be a gain and I increase the position size (Gambler's Fallacy)	SD	76	25.3	2.72±1.34	- 3.649	<.01***
	D	61	20.3			
	N	71	23.7			
	A	56	18.7			
	SA	36	12.0			

Source: Primary data # (SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)
*One sample t - test, Average=3 ***The Difference is significant at 1% level

Table 1 presents the influence of heuristic variable on trading decisions of equity derivative traders. The result shows that the mean value obtained for representativeness bias is 3.71, which is significantly above the mean score of the response scale i. e., 3, and the one - sample t - test shows that the mean score is statistically significantly higher than the population average score. Hence, it can be inferred that representativeness bias strongly exists among equity derivative traders in Kerala. The mean score of anchoring bias is 3.71, the result of one - sample t - test indicates that the mean score is statistically significantly higher than the population average score and hence, it can be concluded that anchoring bias strongly exists among equity derivative traders in Kerala. In the case of overconfidence bias the one sample t - test shows that the mean score is statistically significantly higher than the population average score, therefore it can be concluded that overconfidence bias strongly exists among equity derivative traders in Kerala. The t - test result of gamblers fallacy shows that the mean score is statistically significantly lower than the population average, and the influence of gamblers' fallacy bias is less among equity derivative traders in Kerala.

The overall influence of the heuristic variables on derivative traders is measured by combining the above four variables and the data is analyzed using one sample t - test with a test value of '2'. The test result is presented in Table 2.

Table 2: Influence of the Heuristic on the trading decision of equity derivative traders

Variable		Frequency	Per cent	Mean ± SD	t*	p - value
Influence of Heuristic Variables	Low	23	7.7	2.50 ± 0.64	13.61	<.01***
	Medium	104	34.7			
	High	173	57.6			
	Total	300	100.0			

Source: Primary data ***Difference is significant at 1% level,
*One sample t - test, Average=2

Table 2 indicates that the mean score obtained for measuring the influence of heuristic variables is 2.50, which is significantly above the mean score of the response scale i. e., 2, the one sample t - test shows that the mean score is statistically significantly higher than the population average. Hence, it can be concluded that influence of heuristics strongly exists among equity derivative traders in Kerala.

The influence of heuristic variables on the trading decision of equity derivative traders are compared concerning three demographic variables such as*, educational qualifications, trading experience and trading capital.* The results are discussed below.

Table 3: Descriptive statistics of Education qualification - wise analysis of Influence of heuristic variables

Test Variable	Education Group	N	Mean ± SD
Influence of heuristic variables	SSLC	13	13.15 ± 2.54
	Higher Secondary	10	13.40 ± 1.96
	Graduate	130	14.08 ± 2.88
	Post Graduate	92	14.15 ± 2.70
	Professional	55	14.29 ± 2.77
	Total	300	14.08 ± 2.76

Source: Primary data

From table 3, it is found that there is no significant differences in the mean score of influence of heuristic variables among traders with different educational qualifications. ANOVA is applied to test the significance of differences in the influence of heuristics among traders of different educational qualification groups and the result is summarised in Table 4.

Table 4: Result of One - way ANOVA: Education - wise analysis of Influence of heuristic variables on the trading decision of equity derivative traders

	Sum of Squares	Df	Mean Square	F	p – value
Between Groups	18.699	4	4.675	0.611	.655
Within Groups	2258.538	295	7.656		
Total	2277.237	299			

Source: Primary data

The one - way ANOVA reveals that there is statistically no significant difference in the mean score of influence of heuristic variables among traders of different educational

qualification groups, therefor it can be inferred that there is no difference in the influence of heuristics variables among different age groups of equity derivative traders in Kerala.

The number of years of trading experience of equity derivative traders may affect the influence level of heuristic variable. To test the same, the descriptive analysis has been done which shows the mean score of influence of heuristic variables on traders with different years of trading experience. To find out the statistical significance of the difference in mean score One - way Analysis of Variance (ANOVA) is performed. The result of descriptive analysis is summarized in Table 5.

Table 5: Descriptive statistics of trading experience - wise analysis of Influence of Heuristic variables

Test Variable	Trading experience	N	Mean ± SD
Influence of heuristic variables	2 years and below	161	14.16 ± 2.67
	3 - 5 years	81	14.22 ± 3.07
	5 - 10 years	32	13.75 ± 2.59
	Above 10 years	26	13.54 ± 2.58
	Total	300	14.08 ± 2.76

Source: Primary data

From table 5 it is found that there is a very small difference in the mean score of influence of heuristic variables among traders with different years of trading experience. The ANOVA is applied to test the significance of differences in the mean influence of heuristic variables among traders with different years of experience and the result is summarised in Table 6.

Table 6: Result of One - way ANOVA: Trading experience - wise analysis of Influence of heuristic variables on the trading decision of equity derivative traders

	Sum of Squares	Df	Mean Square	F	p – value
Between Groups	13.657	3	4.552	0.595	.619
Within Groups	2263.580	296	7.647		
Total	2277.237	299			

Source: Primary data

The one - way ANOVA result reveals that there is no significant difference in the influence of heuristic variables among traders with different trading experience. Therefore, it can be concluded that trading experience of equity derivative traders have no influence on the level of heuristics bias.

The amount of trading capital may affect the level of influence of heuristic variables on the trading decisions of equity derivative traders. Hence this study examined whether there is any difference in the influence of heuristic variables among traders with different trading capital. On the basis of trading capital, the respondents are classified into five groups such as *Below 1 lakh (group1), 1 - 5 lakhs (group2), 5 - 10 lakhs (group3), 10 - 20 lakhs (group4)* and *Above 20 lakhs (group5).* To examine the relationship between trading capital and the influence of heuristic variables, descriptive analysis has been done which shows the mean score of the influence of heuristic variables on traders with different amounts of trading capital. To find out the statistical significance of the difference in mean score One - way Analysis of Variance (ANOVA) is performed. The result of the descriptive analysis is summarized in Table 7.

Table 7: Descriptive statistics of trading capital - wise analysis of influence of Heuristic variables

Test Variable	Trading capital	N	Mean ± SD
Influence of heuristic variables	Below 1 lakh	74	14.04 ± 2.87
	1 - 5 lakhs	136	14.24 ± 2.93
	5 - 10 lakhs	29	13.79 ± 2.27
	10 - 20 lakhs	24	13.58 ± 2.76
	Above 20 lakhs	37	14.11 ± 2.26
	Total	300	14.08 ± 2.76

Source: Primary data

From table 7, it is found that there is a very small difference in the mean score of influence of heuristics variables among traders with different amounts of trading capital. The ANOVA is applied to test the significance of differences in the mean influence of heuristic variables among traders with different amounts of trading capital and the result is summarised in Table 8.

Table 8: Result of One - way ANOVA: Trading capital - wise analysis of the influence of heuristic variables on the trading decision of equity derivative traders

	Sum of Squares	Df	Mean Square	F	p – value
Between Groups	11.728	4	2.932	0.382	.822
Within Groups	2265.508	295	7.680		
Total	2277.237	299			

Source: Primary data

The one - way ANOVA result reveals that there is no significant difference in the mean score of influence of heuristic variables among traders of different trading capital. Hence, it can be inferred that the trading capital has no effect on the influence of heuristic variables.

6. Conclusion

This study looked at the impact of heuristic biases on the trading decisions of equity derivative traders in Kerala. Heuristics are general guidelines that simplify decision - making, particularly in unpredictable and complex situations. They can, however, occasionally result in biases, particularly when circumstances change, and they can also cause suboptimal investment decisions. The distribution of found normal and therefore parametric tests were applied to examine the relationship between variables. The influence of heuristic variables has been examined using four variables (Gambler's Fallacy, overconfidence, anchoring, and representativeness) and it is found that the heuristic variables strongly influence the trading decision of equity derivative traders in Kerala, and there is no significant difference in the influence of heuristic variables between different demographic groups of equity derivative traders in Kerala.

Author Contribution statement
The authors confirm their contribution to the paper as follows:

Study conception and design: Subeesh V. K. and Liya K. Data collection: Subeesh V. K.; analysis and interpretation of results: Subeesh V. K. Draft manuscript preparation: Subeesh V. K and Liya K. . All authors reviewed the results and approved the final version of the manuscript.

Conflict - of - interest statement

The authors have no conflicts of interest to declare. All authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication

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