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Heuristic Driven Biases in Investment Decision Making. A study using Structural Equation Modelling

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Abstract

Purpose – The purpose of this research is to analyze the influence of heuristics driven biases on investor decision making in Indian stock market.

Design/methodology/approach– The primary data for the study was gathered using a structured questionnaire. The questionnaire was distributed online for 6 months from march 2022 to September 2022.The tests in this study were conducted using SEM by using AMOS 23.0 software and began with a model measurement test followed by confirmatory factor analysis to determine the suitability of endogenous and exogenous constructs in this study to the model fit test. The tests were also carried out to evaluate the path and testing hypothesis of the proposed research work.

Findings –The study find out that among the heuristics driven biases such as availability, representativeness and anchoring biases availability and representativeness has a significant effect on investors decision making. The results also support the idea that behavioural biases lead to irrationality in investors decisions in Indian stock market. Investors feel secure in their attitudes regarding financial decision-making, even if their decisions are not always rational as they are affected by biases.

Originality/value – This article explains the influence of heuristics on investors' decision-making in Indian stock market.

Keywords -Investment decision-making, Behavioral finance, Heuristics, Availability, Anchoring, Representativenss.

1.Introduction

The existence of a sizable number of participants who exhibit different emotions and behavioral patterns while making investment decisions is one of the main causes of the complexity of investment decisions (Zahera and Bansal 2018). Market efficiency and investor rationality were the cornerstones of traditional financial theory. The effectiveness of the stock markets has come into question with the rise of behavioral finance because there are still many anomalies that need to be resolved. According to research by Tversky and Kahneman (1974), De Bondt and Thaler (1995), Statman (1995, 1999), Gao and Schmidt (2005), and Evans (2006), people do not make rational decisions while investing because they do not take all the facts into account.

The influence of psychology on the behavior of investors and financial analysts is studied in behavioral finance. It emphasizes the fact that investors' decisions are influenced by their prejudices (Jainetal.2021, 2022; Pandit2021; Gupta et al. 2022). Investors frequently exhibit irrational behavior because they lack self-control. Effective financial advice can help people overcome these biases and make better informed and logical decisions (Ben-David and Sade 2001; Mugerman et al. 2020), according to research by Scholz et al. 2021). Even robo-advice recommendations are not immune to behavioral biases.

Heuristics are a general rule of thumb that people adopt to guide their decisions in challenging situations. Instead of gathering and analyzing all the pertinent data, investors frequently make irrational decisions utilizing mental shortcuts (Kahneman and Tversky 1979). People frequently employ heuristics when making decisions when time is restricted. Heuristics are useful in decision-making, yet they frequently lead to poor choices. Overconfidence, representativeness bias,

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anchoring bias, availability bias, and gambler's fallacy bias are heuristic-related illusions (Waweruetal. 2008). Initially, representativeness, availability, and anchoring were the three behavioral biases that Tversky and Kahneman (1974) included when defining heuristics. Overconfidence and the gamblers' fallacy were added to the list of heuristics by Waweru et al. (2008) (Jain et al., 2021).

Heuristics are techniques that direct information search and alter the representation of a problem to make answers more accessible, according to Gestalt psychologists Max Wertheimer, Wolfgang K€ohler, Karl Duncker, and a few other later philosophers, like Simon (1955). Since its inception, the term "heuristics" has been used to characterize important and practical methods for finding answers to issues that defy logic and probability theory (Groneretal., 1983). The heuristics definition changed almost to the point of inversion in the late 1960s and early 1970s. Heuristics are referred to as techniques that prevent one from finding the right answers to issues posed by the probability theory in an examination on thinking, judgment, and decision-making (Goldstein and Gigerenzer, 2002). In these streams of thought research, the focus is mostly on broad generalizations and the behavioral biases—or departures from a reasonable calculation—that they frequently produce. So, according to Piattelli-Palmerini (1994), heuristics have even come to be associated with irrationality and inevitable cognitive illusions. Hertwig and Pachur (2009) referred to heuristics as mental shortcuts or general rules of thumb. One of their main purposes is to reduce the complexity of the issue by ignoring part of the information that is readily available or by simply looking at a portion of all potential solutions. Heuristics are defined by Gigerenzer and Gaissmaier (2011) as "a strategy that disregards part of the information with the goals of making decisions more swiftly, cheaply, and/or accurately than more comp lex methods."

According to Shah and Oppenheimer (2008), all heuristics area form of effort reduction, using one or more of the following, analyzing only a few clues, reducing the effort of recovering cue values, integrating less information or analyzing only a few alternatives. . Heuristics are "rules of thumb" or mental shortcuts that financial practitioners (at both the individual and organizational level) utilize to simplify and expedite decision-making in complicated and unpredictable situations. In order to make decision-making easier, business actors and finance professionals frequently use heuristics (Waweru, Munyoki, and Uliana, 2008). However, these heuristics can occasionally result in systematic errors in judgment (Ritter, 2003; Tversky and Kahneman, 1974). Heuristics have always been regarded as important and useful tools, but ones that only result in second-best solutions.

Additionally, as Gigerenzer and Gaissmaier (2011) convincingly contend, people and organizations frequently rely on quick and economical heuristics in an adaptive manner, and ignoring part of the information rather than adding and weighing all information can result in more accurate judgments, such as small samples and low predictability. Similar to this, Gigerenzer and Goldstein (1996) claim that using just one of the strongest arguments (while disregarding the rest) can result in predictions that are more accurate than those made using linear multiple regression. Therefore, the less-is-more effect applies.Fast and economical heuristics can also be more effective and are the only potential opportunity for making the right decisions in specific circumstances, according to Gigerenzer and Marewski (2015). As a result, a more fast and frugal investment strategy has the potential to produce better returns than a similar strategy that relies on a complex strategy. Researchers in the field of psychology have noted that people frequently used heuristics because of their limited information, lack of time to make decisions, and uncertainty. Fast and economical heuristics may be helpful in this situation for making an adaptive decision with fewer resources and may even outperform more sophisticated strategies (Hertwig and Pachur, 2015). This school of thought, the less-is-more effect, is rejected by some academics. They show that using quick and inexpensive rules as part of an investment strategy would not consistently result in higher returns. The risk of making systematic mistakes and serious logical fallacies is the price of relying on these short cuts. Shah et al.'s (2018) paper aims to show how investors use heuristics to ostensibly lower the risk of losses in unpredictable circumstances. Investors who rely on heuristics make poor decisions because their technical knowledge and reasoning skills are compromised.

Investors consequently make irrational decisions, which have a negative impact on their investment performance. The research found that the use of heuristics by financial professionals and other business actors results in a number of behavioral biases by reducing the mental effort required for decision-making. The effect of heuristic-driven bias such as availability bias, representativeness bias and anchoring bias on short- and long-term investment decision-making is measured in this article. Below is a brief review of earlier research on heuristic-driven bias and its impact on investment decisions.

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2.1 Literature Review and Hypothesis Formulation

Behavioural finance

Behavioral finance theory studies the influence of financial, psychological, and social aspects on investors' decision-making processes and the subsequent effects on the market. Analyzing psychological aspects linked to human behavior has become a critical field. To identify how and why investors' decisions sometimes deviate from noneconomic factors (Lucena et al., 2013), behavioral finance includes more realistic behavioral assumptions that consider aspects of human nature and psychology theories and develops a new paradigm.

The influence of financial, psychological, and social factors on investors' decision-making processes and the market's subsequent effects are studied by behavioral finance theory. It has become crucial to examine psychological factors connected to human behavior. Behavioral finance incorporates more realistic behavioral hypotheses that take into account facets of human nature and psychology theories and develops a new paradigm to explain how and why investors' decisions occasionally deviate from noneconomic factors (Lucena et al., 2013).

Furthermore, it is well known that behavioral finance does not disregard economic principles. Since it acknowledges that markets typically present results less effectively than in theory (Olsen, 1998; Feldman and Liu, 2023), it builds on its core concepts while incorporating additional knowledge to improve market analysis models and explain discrepancies between expected and actual behavior.

Understanding the relationship between rationality and irrationality and observing how investors' decisions deviate from noneconomic factors require an analysis of the psychological aspects of human behavior (Lucena et al., 2013; Parveen et al., 2021). Investors act irrationally and make biased decisions, which leads to an unbalanced financial market, according to Tversky and Kahneman (1981). Behavioral finance can be used to comprehend investor behavior and define how excess or a lack of confidence can cause inconsistencies in the financial market as well as influence financial decisions. By doing this, one helps to develop strategies for reducing the risks brought on by the agents' limited rationality when they operate in such markets. The following subsections present the adverse effects of individuals' behavior that determine non rational decision-making.

2.1 Investment decision making

The action or process of investing money in the anticipation of a future gain is known as investing. Researching your investments and keeping a clear head can help you succeed. Every investor seeks the highest possible return on their investment. To compare decisions made from a benchmark position, Sharpe (1964) explained the maximum level of risk for a particular level of return. The ability to make rational decisions is dependent on financial knowledge, according to some research from the last few decades; the more financial knowledge a person possesses, the more rational decisions they will make (Merton, 1987).

Although "cognitive unconsciousness," which refers to having perceptions, memories, and thoughts without awareness, has been used in research over the past 20 years to highlight the behavioral phenomenon of the investor's psyche and describe the reason why rational investors make mistakes in their investment decisions (Hilton, 2001). Investors' emotions and thoughts have the power to turn rational decision-making into irrational behavior (Baker and Nofsinger, 2002). The conventional theories of finance claim that investors make perfectly rational decisions, but in reality, many factors, including psychological and behavioral ones, affect their ability to do so. According to some findings from behavioral finance, which links various facets of human nature with financial models (Barber and Odean, 1999), investors occasionally do not exhibit informational efficiency. Due to these factors, investors are not always rational and their decisions are influenced by behavioral preconceptions. It is crucial to study investment decision making in accordance with behavioral finance theories in order to better understand investors in the real world.

2.1 Representative bias and investment decision making

According to DeBondt and Thaler (1995), representativeness can be defined as the degree to which an event is similar to its parent population. When someone is willing to generalize about another person or phenomenon, such as stocks, based

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on just a few attributes, this heuristic can be seen (Bazerman and Moore, 2012; Nisbett and Ross, 1980). This is due to the fact that investors make decisions about their investments using mental shortcuts and rules of thumb, and they are only permitted to invest in a company based on certain traits, such as the management style, past performance, or level of popularity.

The absence of any supporting data, however, can result in weak pattern recognition. Investors who are prone to representativeness may make skewed decisions, such as putting too much emphasis on recent experience and disregarding the average long-term rate (Ritter, 2003). Focusing on recent increases can also lead investors to infer incorrectly the company's long-term growth rate due to representativeness (Waweru et al., 2008).

Representativeness also causes investors to overreact, which results when they try to buy "hot" stock instead of that which is underperforming (DeBondt and Thaler, 1995).With the advent of behavioral finance in the middle of the 20th century, research has given investors ways to base investment decisions on facts rather than probability.

In reality, investors consider the likelihood of a specific outcome based on their prior experience (Gold and Kraus, 1964), leading them to draw the incorrect conclusion that large firms with historically high levels of returns will continue to produce high returns in the future (Jacobson, 1994). Instead, investors should calculate financial ratios to calculate future expected returns from the investment. Intuition plays a key role in the majority of financial decisions, and complex decision making in high uncertainty environments frequently relies on it (Kahneman and Riepe, 1998).

Nevertheless, decisions made based solely on intuition are frequently irrational and biased because they are not supported by a thorough examination of all relevant data, but rather by gut instincts and heuristics (Simon, 1987). Investors tend to get stuck in the same investment patterns over and over again as a result of not keeping a close eye on the current situation because they believe that their past experiences and decisions were generally sound and that they will continue to make rational decisions based on those experiences in the future (Rosman et al., 1994).

Although rational investors are aware that thorough research must be done before making an investment decision, they still have an alarming propensity to rely on past performance (Shimizu, 2007). Investors on the stock market do not behave as they ought to, that is, logically and without taking prior experience into account (Filbeck et al., 2005). Researchers have been attempting to draw attention to some of the factors that contribute to investors' representativeness behavior and how this results in irrationality over the past few years. The celebrity effect and a company's reputation are two factors that greatly tempt investors in the modern era (Pfarrer et al., 2010). Looking backwards rather than forward is a common phenomenon, but investors frequently do so without realizing that future outcomes may differ from their past experiences (Arrfelt et al., 2013). Additionally, the reputation of the companies in which investors are considering investing can sometimes influence their decision-making by influencing them to base their choices on the past performance of the company (Petkova et al., 2014). All of these phenomena are caused by representativeness and often lead investors to select a suboptimal alternative. Hence it is proposed that:

H1. Representative bias is significantly and positively associated with the degree of irrationality in investment decisions.

2.3 Availability bias and investment decision making

The bias known as availability bias occurs when a decision-maker ignores other options and processes in favor of relying on information that is easily accessible. Because of this, irrational decisions are made (Folkes, 1988). It can be seen in investors when they choose to invest in local businesses that they are more familiar with or where it is simple to find out information about them (Waweru et al., 2008). Decision-makers in the caputal markets are also influenced by information, and they place more importance on information that is focused on people (Haley and Stumpf, 1989). Another effect of availability bias is that it can lead investors to make poor decisions by deceiving them into thinking that a stock perceived to have a good return will have a low risk and that a security perceived as bad will be judged to have a high risk and low return (Ganzach, 2000). Since the latter part of the 20th century, researchers have looked into significant variables that may lead to availability bias, a condition where investors change their investment decisions based on only partial information. Information such as the appointment of a new company CEO, a change in the executives and management of businesses, Investors sometimes make decisions without taking into consideration the correct and relevant information (Scharfstein

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and Stein, 1990). Due to their availability bias-based reactions, investors also have to suffer more during financial crises than the market (Marcus and Goodman, 1991). This is due to the fact that when hearing announcements about layoffs and securities, investors tend to overreact negatively (Worrell et al., 1991), which causes them to make irrational decisions.

According to research by Barber and Odean (2008), investors tend to select only those stocks that have recently caught their attention in the news, are trading abnormally, or offer extremely high returns. Sometimes the actions and news that are leaked by stock exchange representatives cause investors' decisions to change (Stearns and Mizruchi, 1993), leading to an over or undervaluation of that information. Investor decisions are influenced by information about gains and losses on the stock market as well as the overall economy (Bulmash, 2001). The manner in which information about the financial market is reported as well as the function of intermediaries both significantly impact investment choices and the mindset of investors (Healy and Palepu, 2001).

Investor preferences shift in response to the information that is available (Harris and Raviv, 2005), resulting in a specific investment pattern. In some cases, even irrelevant information can have an impact on investment choices (Kirchler et al., 2005). Investors' risk-taking behavior and decisions regarding a particular security change based on newly available information (Grable et al., 2004). Investor's act based on information about the performance of securities and compare a given firm's performance to that of a peer (Brauer and Wiersema, 2012). According to Wang et al. (2014), this information may cause investors to choose liabilities for their portfolios rather than assets that will benefit them. This is because they will use the most recent or available information rather than accessing and analyzing all the information available (Wang et al., 2014). Investors must respond quickly to information that is available due to investor competition (Bowers et al., 2014), and instead of making rational decisions, they rely on heuristics like the availability heuristic that will cause them to make irrational choices. Hence it is proposed that:

H2. Availability bias is significantly and positively associated with the degree of irrationality in investment decisions.

3. Anchoring bias and investment decision making

Investors may experience anchoring bias in the same way as everyone else. Many stock ordering decisions, according to Bolton et al. (2010), are motivated more by instinct than by logic. Investors base their decisions on a variety of factors when choosing which investments to make, including the stock price that sticks in their memory the most, unreliable information from friends and family, outdated news, etc. Investors are most likely to base their decisions on prices they have recently remembered, according to Shiller (2015). Changes in previous prices may also be used if investors' attention is drawn to them. A psychological theory that storytelling and justification are the main components of human thought that influence behavior is also supported by moral anchoring. In other words, people consider the story in relation to the observed amount of their financial wealth.

The fact that investors' reasoning does take this form, however, is supported by a wealth of evidence. Similar to stock promotion, good stories about a company's history, its products, and how people use those products are told to persuade potential investors. More often than not, during sales calls, there is no discussion of quantitative issues, such as whether or not the price is at the right level, because narrative-based decision-making, which people naturally prefer, is seen as more conducive to quantitative considerations. Following the sensational study by Tversky and Kahneman (1974), numerous empirical studies have reported the impact of anchoring bias on the decisions made by investors. For instance, Nakazono (2012) studies anchoring bias in the diverse Japanese financial markets. The majority of market participants, including institutional investors, the author finds, anchor on previous forecast values. Strong evidence was also found by Nakazono to support the 2008 financial crisis; however, evidence of anchoring bias on foreign securities firms was found to be less strong. Additionally, Anderson and Zastawniak (2016) deduce that American glamour investors overestimated the likelihood that the price-earnings ratio (P/E) would change and instead anchored on the initially high P/E. The impact of anchoring bias on the trading behavior of foreign institutional investors in Taiwan is examined by Liao et al. (2013).

They discover that foreign investors' profits from momentum trading are suffering because of an anchoring on the previous level of foreign ownership. The effects of anchoring and adjustment, representativeness, and leniency heuristics on analysts' forecast errors in Australia are also examined by Marsden et al. (2008) using international evidence. They demonstrate that Australian analysts set their sights on lowering EPS forecast adjustments**.**Additionally, to explain the stock price

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momentum on the German stock market, Burghof and Prothmann (2009) look into the possibility of anchoring bias. They discover that profits from the momentum strategy are the result of anchoring on German past prices.

Furthermore, in order to provide an exact solution for arbitrary price distributions, Andersen (2010) created a trading algorithm to examine anchoring bias in financial markets. Their data demonstrate that market participants' judgments contained an anchoring bias.The empirical findings of Centeal. (2013) also support the impact of anchoring bias in investment decisions. Dowie and Willows (2015), however, found no support for this theory in South Africa. Due to investor competition, investors must act swiftly on information that becomes available (Bowers et al., 2014). Rather than using logic, they rely on heuristics like anchoring, which will lead them to make irrational decisions. Therefore, it is proposed that:

H2. Anchoring bias is significantly and positively associated with the degree of irrationality in investment decisions.

Data and methodology

Survey Instrument and Sampling

A structured questionnaire was used to collect the primary source of data. Online distribution of the questionnaire took place for six months, from March 2022 to September 2022. The survey investigates the relationship between heuristic driven bias and investor decision making in the Indian stock market, as well as demographic characteristics. Using a five-point Likert scale, where 1 denotes Strongly Disagree, 2 denotes Disagree, 3 denotes Neutral, 4 denotes Agree, and 5 denotes Strongly Agree, the survey instrument is divided into two sections, the first of which is concerned with the demographic profile of respondents, and the second of which focuses on questions on individual investor characteristics and their relation with the non-economic goals while making investments.

In order to ascertain whether the endogenous and exogenous constructs in this study were suitable for the model fit test, the tests in this study were carried out using SEM with the aid of the AMOS 23.0 software. They started with a model measurement test and were followed by confirmatory factor analysis. Additionally, tests were run to assess the direction and testing hypothesis of the proposed research work.

Variables and measurement

The description of items used to find out role of heuristic driven biases on investment decision making are given in Table 1. Investors heuristic driven bias such as availability bias, representativeness bias and anchoring bias etc were selected for the study . The current study looks at how heuristic driven biases effect investment decisions of investors in Indian stock market.

Variables	Measuring items	code
Investment Decision making	When making an investment ,I trust my inner feelings and reactions	ID1
	I generally make investments that feel right to me	ID 2
	When making investments, I rely upon my instincts	ID3
Availability bias	I prefer to invest in local stocks than international stocks because the information of local stocks is more available.	AV1
	I prefer to buy local stocks than trade in international stocks.	AV2
	I consider the information from my close friends and relatives as the reliable reference for my investment decisions.	AV3
Representativeness bias	I usually buy ‘hot stocks’ which provided most return recently and avoid stocks that have performed poorly in the recent past	R1
	I consider past performance of stocks before investing in it.	R2

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	Before investing I use trend analysis of some representative stocks to make investment decisions for all stocks.	R3
Anchoring bias	I usually invest in a stock that has fallen considerably from its previous closing or all times high	AN1
	I rely on my previous experiences in the market for making next investment	AN2
	I forecast the changes in stock prices in the future based on recent stock prices.	AN3

Table 1: Variables and measuring items of the study

Results

3.1 Respondent description

The demographic details of the sample respondents are shown in Table 2. The sample's 77% male respondents and 23% female respondents show that men continue to outnumber women in terms of stock market investment in India. The majority of investors are middle-aged, as shown by the fact that 34% of respondents are under the age of 30, 59% are between the ages of 30 and 45, and the remaining respondents are over the age of 60. The majority of the 350 respondents, which included graduate, postgraduate, and professional students, had a good education. The majority of respondents (55,7%) are employed by the private sector, followed by the public sector (25%) and self-employment (12%).

Respondent profile	Number of respondents	% of respondents
Gender		
Male	268	77
Female	82	23
Age		
<30 years	120	34.2
30-45 Years	206	59
>45 years	24	6.8
Education		
Graduation	130	37.1
Post-Graduation	196	56
Doctoral	14	4
Others	10	2.85
Occupation		
Govt job	88	25
Private job	195	55.7
Self Employed	45	12
others	22	6.8

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Table 2 : Demographic profile of respondents

Reliability and Validity measures

The value of construct reliability (CR) and average variance extracted (AVE) can be used to determine validity. After calculating the value of the standardised regression weights, the CR and AVE are computed**.** If the value of standardised loading is greater than 0.50, it is deemed to have strong validity to explain the construct. While construct reliability measures the consistency of indicators that represent the degree in the variable, variance extracted measures the amount of indicator variance extracted by the variable.

Variables	Measuring items	Item Loadings	CR	AVE
Investment Decision making	When making an investment, I trust my inner feelings and reactions	ID1	0.78	0.54
	I generally make investments that feel right to me	ID 2		
	When making investments, I rely upon my instincts	ID3		
Availability bias	I prefer to invest in local stocks than international stocks because the information of local stocks is more available.	AV1	0.76	0.51
	I prefer to buy local stocks than trade in international stocks.	AV2		
	I consider the information from my close friends and relatives as the reliable reference for my investment decisions.	AV3		
Representativeness bias	I usually buy 'hot stocks' which provided most return recently and avoid stocks that have performed poorly in the recent past	R1	0.78	0.54
	I consider past performance of stocks before investing in it.	R2		
	Before investing I use trend analysis of some representative stocks to make investment decisions for all stocks.	R3		
Anchoring bias	I usually invest in a stock that has fallen considerably from its previous closing or all times high	AN1	0.75	0.5
	I rely on my previous experiences in the market for making next investment	AN2		
	I forecast the changes in stock prices in the future based on recent stock prices.	AN3		

Table 3: Measurement of endogenous and exogenous constructs

The value of CR is regarded good if it is greater than 0.70, whereas the value of AVE is considered good if it is greater than 0.50 (Hair et al., 2010). The coefficient values of the loading factor for each indicator in Table 3 show the result of the measurement model test for exogenous and endogenous constructs. The value of CR is regarded good if it is greater than 0.70, whereas the value of AVE is considered good if it is greater than 0.50 (Hair et al., 2010). The coefficient values of the loading factor for each indicator in Table 3 show the result of the measurement model test for exogenous and endogenous constructs.

The standardised loadings of all items in this research construct were greater than 0.50, indicating that the construct was valid. The CR and AVE values for all constructions were also valid because they were all greater than 0.70 and greater

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than 0.50. Based on the computation, the standardised loading, CR, and AVE requirements were met, resulting in adequate construct validity and reliability for all exogenous and endogenous constructs (Hair et al., 2010).

Goodness of fit Indices of SEM

The model was measured to determine the degree of conformity between the four constructs, namely availability bias, representativeness bias, anchoring bias, and investment decision making. The goodness of fit criteria values for this structural equation model were calculated using the AMOS 23.0 programme.

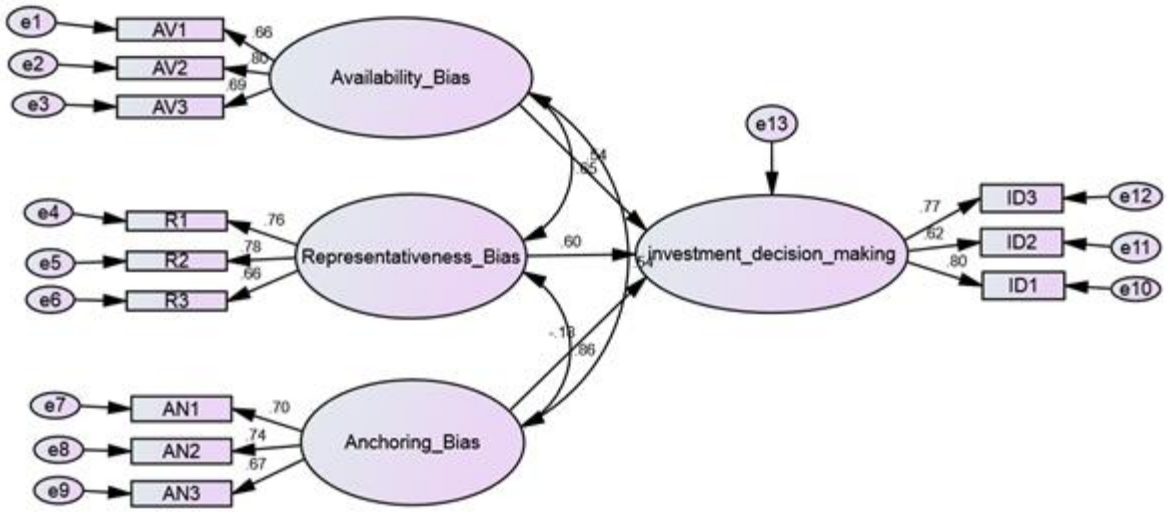

Figure1: Structural Equation Modelling of the relationship between individual investors characteristics and their non-economic goals.

Based on the calculation, the result of chi-square = 79.902 with p-value = 0.174, the model was considered fit because the p-value was greater than 0.05; Goodness of Fit Index (GFI) = 0.905, the model was also considered fit because the value of CFI was greater than 0.90 and the Root Mean Square Error of Approximation (RMSEA)=0.064, the model was considered fit due to the RMSEA value less than 0.08. Based on the literature all values of the fit model are in an acceptable range.

Sl. No	Fit indices	value	suggested value
1	CMIN/DF	2.48	<5
2	SRMR	0.054	<0.08
3	GFI	0.905	>0.90
4	CFI	0.92	>0.90
5	RMSEA	0.064	<0.08

Table 4: Table showing Fit indices of SEM

Table 5 shows the direct effect of heuristic driven biases such as availability bias, representativeness bias and anchoring bias on investment decision making. Results showing that the values of path coefficients of availability bias and representativeness are supporting and highly significant whereas path coefficients of anchoring bias with their investment decision making are not supported. Thus, the following hypothesis are accepted for the study.

H1: Representative bias is significantly and positively associated with the degree of irrationality in investment decisions

H2: Availability bias is significantly and positively associated with the degree of irrationality in investment decisions.

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Hypothesis	Path	Beta	P value	Result
H1	Investment Decision Making<--- Availability Bias	0.743	***	Supported
H2	Investment Decision Making <--- Representativeness Bias	0.547	***	Supported
H3	Investment Decision making<--- Anchoring Bias	0.086	0.387	Not Supported

Table 5: Table showing Estimation of path parameters

Discussion and conclusion

Heuristics are a general rule of thumb that people adopt to guide their decisions in challenging situations. People frequently employ heuristics when making decisions when time is restricted. Heuristics are useful in decision-making, yet they frequently lead to poor choices. Initially, representativeness, availability, and anchoring were the three behavioral biases that Tversky and Kahneman (1974) included when defining heuristics.

In an attempt to analyze the influence of heuristics driven biases on investor decision making, the study has comprehensively investigated the investment behaviours of investors in Indian stock market and how their decision making is affected by heuristic biases such as anchoring, availability and representativeness. Based on this, we have conducted an extensive literature review and presented a research framework. Following the review of literature, a questionnaire was developed, data were collected and analyses were performed on the data collected.

This study provided a structural model with a good level of fit. The study finds out that among the heuristics driven biases such as availability, representativeness and anchoring biases availability and representativeness has a significant effect on investors decision making. The results also support the idea that behavioural biases lead to irrationality in investors decisions in Indian stock market. Investors feel secure in their attitudes regarding financial decision-making, even if their decisions are not always rational as they are affected by biases.

References

1. Antony, A. and Joseph ,A.I.(2017), “Influence of behavioural factors affecting investment decision – an AHP Analysis”, Metamorphosis, Vol. 16 No. 2, pp. 107-114.
2. Barber, M. and Odean, T. (2001), “Boys will be boys: gender, overconfidence, and common stock investment”, The Quarterly Journal of Economics, Vol. 116 No. 1, pp. 261-292.
3. Barberis, N. and Huang, M. (2001), “Mental accounting, loss aversion, and individual stock returns”JournalofFinance,Vol.56No.4,pp.1247 1292,availableat:https://doi.org/10.1111/0022-1082.00367
4. Bashir, T., Azam, N., Butt, A.A., Javed, A. and Tanvir, A. (2013), “Are behavioural biases influenced by demographic characteristics & personality traits? Evidence from Pakistan”, European Scientific Journal, Vol. 9 No. 29, pp. 277-293.
5. Blavatsky, P. and Poremba, G. (2008), “Risk aversion when gains are likely and unlikely: evidence from a natural experiment with large stakes”, Theory and Decision, Vol. 64 Nos 2-3, pp. 395-420, available at: https://doi.org/10.1007/s11238-007-9056-0
6. Buckley, J.J. (1985), “Fuzzy hierarchical analysis”, Fuzzy Sets and Systems, Vol. 17 No. 3, pp. 233-247, available at: https://doi.org/10.1016/0165-0114(85)90090-9
7. Caparrelli ,F., D’Arcangelo’s ,A.M .and Cassuto, A.(2004), “Herding in the Italian stock market: a case of behavioural finance”, Journal of Behavioural Finance, Vol. 5 No. 4, pp. 222-230.
8. Chan, F.T.S. and Kumar, N. (2007), “Global supplier development considering risk factors using fuzzy extended AHP-based approach”, Omega, Vol. 35 No. 4, pp. 417-431, available at: https://doi.org/ 10.1016/j.omega.2005.08.004

9. Chandra, A. (2008), "Decision making in the stock market: incorporating psychology with finance", National Conference: FFMI 2008 IIT Kharagpur.
10. Chandra, P. (2016), Behavioural Finance, 1st ed., McGraw-Hill, Noida. Chen, G., Kim, K.A., Nofsinger, J.R. and Rui, O.M. (2007), "Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors", Journal of Behavioral Decision Making, Vol. 451, February, pp. 425-451, available at: https://doi. org/10.1002/bdm
11. Daniel, K., Hirshleifer, D. and Subrahmanyam, A. (1998), "Investor psychology and security market under- and overreactions", The Journal of Finance, Vol. LIII No. 6, pp. 1839-1885.
12. De Bondt, W. and Thaler, R.H. (1995), "Financial decision-making in markets and Örms: a behavioral perspective", in Jarrow, R.A., Maksimovic, V. and Ziemba, W.T. (Eds), Finance, Handbooks in Operations Research and Management Science, Vol. 9, North Holland, Amsterdam, pp. 385-410.
13. Dennis, P.J. and Strickland, D. (2002), "Who blinks in volatile markets, individuals or institutions?", The Journal of Finance, Vol. LVII No. 5, pp. 1923-1949.
14. Grether, D.M. (1980), "Bayes rule as a descriptive model: the representativeness heuristic", The Quarterly Journal of Economics, Vol. 95 No. 3, pp. 537-557, available at: https://doi.org/10.2 307/1885092
15. Grinblatt,M.andHan,B.(2005),"Prospecttheory,mentalaccounting,andmomentum",JournalofFinancial Economics, Vol. 78 No. 2, pp. 311-339, available at: https://doi.org/10.1016/j.jfineco.2004.10.006
16. Grinblatt, M. and Keloharju, M. (2009), "Sensation seeking, overconfidence, and trading activity", The Journal of Finance, Vol. LXIV No. 2, pp. 549-578.
17. Gupta, S., Dawar, V. and Goyal, A. (2018), "Enhancing the placement value of professionally qualified students in marketing: an application of the analytic hierarchy process", Academy of Marketing Studies Journal, Vol. 22 No. 3, pp. 1-10.
18. Harris, M. and Raviv, A. (2005), "Allocation of decision-making authority", Review of Finance, Vol. 9 No. 3, pp. 1-47.
19. Hassan, T.R., Khalid, W. and Habib, A. (2014), "Overconfidence and loss aversion in investment decisions a study of the impactofgenderandageinPakistaniperspective",ResearchJournalof Finance and Accounting, Vol. 5 No. 11, pp. 148-158.
20. Ip, C., Law, R. and Lee, H.A. (2012), "The evaluation of hotel website functionality by fuzzy analytic hierarchy process", Journal of Travel and Tourism Marketing, Vol. 29 No. 3, pp. 263-278.
21. Kabir, G. and Hasin, A.A.M. (2012), "Modified Fuzzy analytical hierarchy process for multiple criteria inventory classification", Suranaree Journal of Science and Technology, Vol. 18 No. 4, pp. 255-265.
22. Kahneman, D., Knetsch, J.L. and Thaler, R.H. (1991), "Anomalies the endowment effect, loss aversion , and status quo bias", Journal of Economic Perspective, Vol. 5 No. 1, pp. 193-206.
23. Kahraman, C., Cebeci, U. and Ulukan, Z. (2003), "Multi-criteria supplier selection using Fuzzy AHP",LogisticsInformationManagement,Vol.16No.6,pp.382394,availableat:https://doi.org/10.110 8/09576050310503367
24. Kaufmann, A. and Gupta, M.M. (1991), Introduction to Fuzzy Arithmetic: Theory and Application, International Thomson Computer Press, London, available at: www.find.org.tw/find/home.aspx
25. Kilincci, O. and Onal, S.A. (2011), "Fuzzy AHP approach for supplier selection in a washing machine company", Expert Systems with Applications, Vol. 38 No. 8, pp. 9656-9664.
26. Kristensen, H. and Tommy, G. (1997), "Acta psychologica adoption of cognitive reference points in negotiations", Acta Psychologica, Vol. 97, pp. 277-288. Kumar, S. and Goyal, N. (2015), "Behavioral biases in investment decision making – a systematic literature review", Qualitative Research in Financial Markets, Vol. 7 No. 1, pp. 88-108, available at: https://search.proquest.com/docview/1647135679?accountid=32499
27. Rehan, R. and Umer, I. (2017), "Behavioral biases and investor decisions", Market Forces, Vol. 12 No. 2, pp. 12-20.
28. Ritter, J.R. (2003), "Differences between European and American IPO markets", European Financial Management, Vol. 9 No. 4, pp. 421-434, available at: https://doi.org/10.1111/1468-036X.00230 Saaty, T.L. (1980), The Analytic Hierarchy Process, McGraw-Hill, New York, NY.

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29. Shefrin, H. and Statman, M. (1985), “The disposition to sell winners too early and ride losers too long”, Journal of Finance, Vol. 40, pp. 777-792.
30. Statman, M., Thorley, S. and Vorkink, K. (2006), “Investor overconfidence and trading volume”, The Review of Financial Studies, Vol. V19 No. 4, pp. 1531-1565, available at: https://doi.org/10.10 93/rfs/hhj032