Thailand and The World Economy
P-ISSN: 2630-0931
E-ISSN: 2651-0529
Homepage : https://www.tci-thaijo.org/index.php/TER
Vol. 41, No.2, May – August 2023 **Page [156-183]**

Behavioral Finance: A Critical Literature Review using Pareto Analysis

Shilpi Gupta[*]
Amity Business School, Amity University Chhattisgarh, India

Monica Shrivastava
Faculty of Management Studies, Shri Shankaracharya Technical Campus, Bhilai, Chhattisgarh, India

Received 5 April 2022, Received in revised form 21 October 2022,
Accepted 25 October 2022, Available online 8 May 2023

Abstract

Behavioral finance, a field that combines the psychology of investors with economics and other social sciences, has gained huge popularity in the recent past due to the volatility and complexity of the stock market. Therefore, the aim of the study is to review the literature on behavioral finance and suggest areas for future research. To conduct a systematic literature review, research papers published between 1990 and 2021 were considered for the study. They were assessed on different parameters, such as time frame, journal, country, type of data, statistical tool, sampling techniques, behavioral biases, and their impact. Further, the proposed research model was established using Pareto analysis. Behavioral biases and their impact have been identified. Also, the gaps and the future research area have been proposed. Based on the identified biases, a model has been proposed depicting the relationship between behavioral biases and investment decisions. The study will help academicians and future researchers develop an understanding of behavioral finance in different dimensions of the work done in last two decades. Despite the copious literature available on the subject, the study is distinctive in its nature of conducting a literature review using a quality tool, "Pareto Analysis"

Keywords: Behavioral finance, Behavioral biases, Investment decision, Pareto Analysis
JEL Classifications: G40, G41

[*] **Corresponding author:** ICWA, MBA (Finance), Assistant Professor at Amity Business School, Amity University Chhattisgarh, INDIA. Phone: 9009401146, Email: shilpi.sg29@gmail.com

1. Introduction

The market is not ruled by an individual but by the collective actions of individuals called investors, whose inherent behavioral biases based on their unique experiences control the direction of the market to a large extent (Elhussein & Abdelgadir, 2020). The basic objective is to find the right balance between client expectations and market returns.

Traditional theories of finance were prominent in the 1960s. The first traditional theory was Modern Portfolio Theory (MPT) given by Markowitz in 1952. The Efficient Market Hypothesis (EMH), though proposed by Louis Bachelier in 1900, gained popularity only after the mid-1960s when the theory was used by economists due to technological advancements. Another traditional theory of finance, the Capital Asset Pricing Model (CAPM), introduced in the 1960s by Jack Treynor, was built on the work of Markowitz in his Modern Portfolio Theory. Several others contributed their own version of CAPM, like William F. Sharpe, and John Lintner & Jan Mossin. All these theories were based on the proposition of efficient and stable financial markets, as well as completely rational decision-making on the investors' end.

Economic theories have been evolving, but these theories are always influenced by the assumption that humans act rationally while making decisions. What these theories fail to consider is the ever-changing behavioral aspect of the human decision-making process. The ever-changing human psychology plays an important role in the decision-making process. What might influence their decision-making process today may not be equally significant tomorrow. The same is reflected in the field of finance, and this is where behavioral finance theories come into play. **Behavioral finance is the study of how psychology affects investor attitudes and behavior.** It is based on the belief that the investment decisions of at least a substantial share of investors, if not all, are influenced by behavioral biases, which leads to a lack of rationality behind their investment decisions (Valaskova *et al.*, 2019; Xu, 2014). Behavioral finance gives a clear idea of the different behavioral biases in the psychological aspect of financial decision-making.

Behavioral finance has gained a solid foundation in mitigating the assumption of a perfect market and rational investors (Madaan & Singh, 2019). Individuals, when faced with uncertainty and complexity, have difficulty devising rational approaches for a proper course of action. Individuals in this state strive to simplify the available choices by adopting shortcuts based on their experience and rules of thumb to filter the choices among the possible alternatives (Boda & Sunitha, 2018). This is the first step towards biased decision-making. Behavioral biases can be studied from various perspectives. The basic objective is to understand the psychology of certain financial choices and how they impact the market. By analyzing how and when people deviate from rational expectations, behavioral finance provides a blueprint to help us make better, more rational decisions when it comes to financial matters (Dickason & Ferreira, 2018; Javed et al., 2017).

The scheme was devised to develop a model to understand the behavioral biases prevalent today. To develop an understanding of the same, it was important to find the answers to the following questions:

- What behavioral biases have previous researchers reported?
- What are the impacts of these behavioral biases?
- How can the impact of behavioral biases be evaluated?

Motivation for present research: There is an abundance of past work in the field of behavioral finance available. Also, many researchers in the past have carried out literature reviews in the subject area, but in this study, the authors have conducted a

literature review in an empirical way by applying Pareto analysis for identifying the behavioral biases in the process of model development.

2. Research Methodology

There are many studies undertaken by the researchers in the field, and the subject has a huge body of literature available. A systematic literature review approach was adopted for the subject. In a systematic literature review, the criteria for how the review will be conducted and which articles will be included were decided before performing the review. The research papers for the review were sourced from the below mentioned online database:

- EBSCO Business source complete
- Inder-science
- Elsevier's Science Direct
- ProQuest ABI / inform Complete
- Taylor and Francis
- Scopus
- Emerald Management Extra

It was not feasible to incorporate all the research papers offered by the above-mentioned databases; therefore, only those research papers that meet the criteria listed below were included in the study.

- The articles published in journals during the time frame of 1990 -2021 were included in the study. The article published in journals where only considered, all types of conference papers, dissertation and non-published papers were excluded.
- The articles that encompassed the list of behavioral biases, the impact of these biases, the development of a framework of behavioral biases, and the relationship of behavioral biases with different factors of investment were included in the study.
- Only those research papers that reported behavioral biases and / or their impact on investment as their findings were included in the study.
- The search for articles based on the above-mentioned criteria for the assortment of articles in the study was accomplished. A total of 102 articles that fulfill the above-mentioned criteria were included in the study.

3. Result

The results of the literature review were examined under the following headings:

a. The period and nature of the study
b. Journal wise
c. Country wise
d. Type of data used in the study
e. Type of data collection method
f. Types of Sampling Techniques
g. Type of statistical tool applied.
h. Selection of Behavioral Biases and their impact

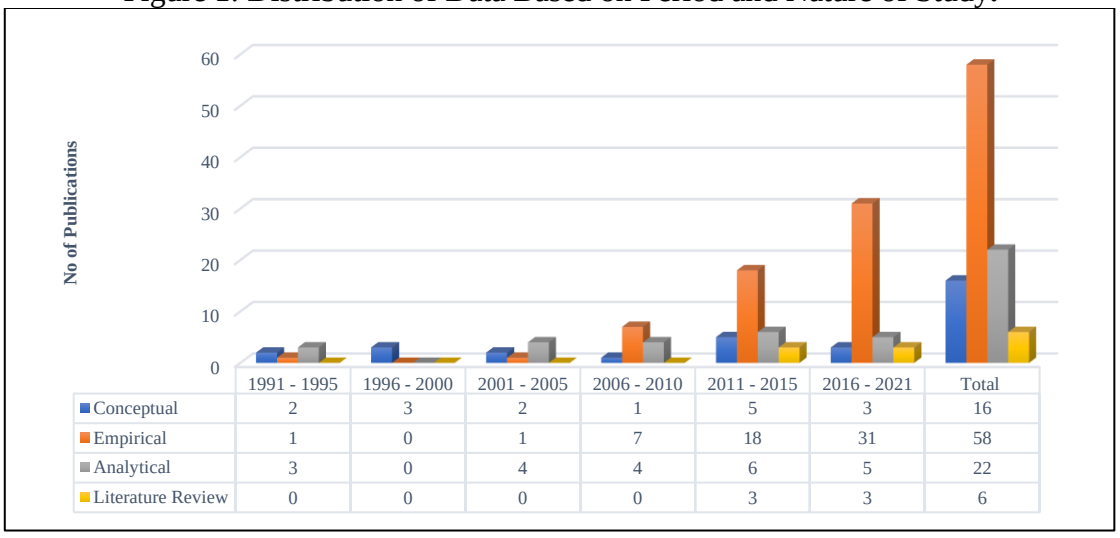
3.1 Distribution of data based on period and nature of study.

The papers included in the study were subcategorized as conceptual, empirical, analytical, and literature reviews. The 102 papers were also divided according to their dates of publication. The time period of 30 years was divided into the below-mentioned phases:

Phase 1: 1991 – 1995 (6 research papers)
Phase 2: 1996 - 2000 (3 research papers)
Phase 3: 2001 – 2005 (7 research papers)
Phase 4: 2006 – 2010 (12 research papers)
Phase 5: 2011 – 2015 (32 research papers)
Phase 6: 2016 – 2021 (42 research papers)

Based on the statistics presented in Figure 1, it is clear that behavioral finance has captured the attention of researchers and managers of the field for a long time. Also, it is evident that with time, the number of empirical and analytical studies in the field has increased tremendously.

Figure 1: Distribution of Data Based on Period and Nature of Study**.**



	1991 - 1995	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2015	2016 - 2021	Total
Conceptual	2	3	2	1	5	3	16
Empirical	1	0	1	7	18	31	58
Analytical	3	0	4	4	6	5	22
Literature Review	0	0	0	0	3	3	6

Source**:** Author's Calculations

3.2 Distribution of data based on journal of publication.

Table 1 represents the list of journals of publication for the included articles**.** The results state that a total of 102 articles was published in 75 journals of national and

international repute**.** The topic is so important that there are journals dedicated to the research related to behavioral finance, such as *The Journal of Behavioral Finance, Review of Behavioral Finance, Journal of Behavioral and Experimental Finance,*etc. Many journals were published more than one article on the subject under consideration. These figures clarify that the research attempted on the subject by academicians and industry experts will be accepted by the journals.

Table 1: Distribution of Articles based on Journal

Name of Journal	**No. Of Articles**
Afro-Asian Journal of Finance and Accounting	1
Andalas Management Review	1
Asia Pacific Journal of Research	1
Asian Journal of Finance & Accounting	1
Behavioral Finance and Decision Theory in Investment Management	1
Business, Education & Technology Journal	1
Cogent Economics & Finance	1
De La Salle University -Business & Economics Review	1
Decisions	1
Economic Letters	1
Economic Themes	1
Energy Policy	1
EPRA International Journal of Economic and Business Review	1
Eurasian Journal of Social Sciences	1
Finance Research Letters	1
Financial Markets and Portfolio Management	1
Frontiers in Finance and Economics	1
International Journal of Economics and Management	1
International Journal of Business and Emerging Markets	1
International Financial Markets, Institutions & Money	1
International Journal of Accounting, Finance and Risk Management	1
International Journal of Bank Marketing	2
International Journal of Business and Management	1
International Journal of Business and Management Studies,	1
International Journal of Economics and Empirical Research	1
International Journal of Economics and Financial Issues	2
International Journal of Financial Research	2
International Journal of Financial Management	1
International Journal of Management Research and business strategy	1
International Journal of Managerial Finance	1
International Journal of Pure and Applied Mathematics	1
International Journal of Research in Finance and Marketing	1
International Journal of Research in Humanities, Arts and Literature	1
International Journal of Management Research and Emerging Sciences	1
IOSR Journal of Business and Management	1
IOSR Journal of Economics and Finance	1
Jordan Journal of Economic Sciences	1
Journal Ilmiah Manajemen Bisnis Dan Inovasi Universitas Sam Ratulangi	1
Journal of Asian Finance, Economics and Business	2
Journal of Basic and Applied Scientific Research	1
Journal of Behavioral and Experimental Finance	1
Journal of Behavioral Decision Making	2
Journal of business & Economics Research	1

Name of Journal	No. Of Articles
Journal of Business and Tourism	1
Journal of Content, Community & Communication	1
Journal of Economic Behavior & Organization	4
Journal of Economic Perspectives	1
Journal of Finance and Investment Analysis	1
Journal of Financial Economics	2
Journal of financial Intermediation	1
Journal of Financial Planning	1
Journal of Financial Service Marketing	1
Journal of Global Economics	1
Journal of Independent Studies & Research: Management & Social Sciences & Economics	1
Journal of International Money and Finance	1
Journal of Pension Plan Investing	1
Journal of Property Finance	1
Kybernetes	1
Linguistica Antverpiensia	1
Management and Administrative Sciences Review	1
Management Science	2
Managerial Finance	3
Metamorphosis	1
Pacific Business Review International	1
Procedia Economics and Finance	1
Qualitative Research in Financial Markets	6
Research Communications in Psychology, Psychiatry and Behavior	1
Research in International Business and Finance	1
Review of Accounting and Finance	1
Review of Behavioral Finance	3
Review of Finance	1
Strategic Management Journal	2
System Engineering Theory & Practice	1
The Journal of Behavioral Finance	3
The Journal of Finance	2
The Journal of Socioeconomics	1
The Journal of Wealth Management	1
The Quarterly Journal of Economics	1
ZENITH International Journal of Business Economics & Management Research	1
TOTAL	102

Source**:** Author**'**s Calculations

3.3 Distribution of articles on the basis of Country:

The country was specified in almost all the articles, and a detailed country-wise representation of the articles is mentioned in Table 2**.** Only six out of 102 studies did not mention the country in which research was conducted, so they were grouped under the heading **"**General**"** and included in the Table**.** 102 studies took place in 31 countries**.** The sample for these studies was drawn from 10 developed countries and 21 developing and underdeveloped countries**.** The results in the Table indicates that research in the field of behavioral finance is not only prevalent in developed countries, but that developing and underdeveloped countries are also equally active in the area**.**

Table 2**:** Period Wise Dissemination of Articles based on Country

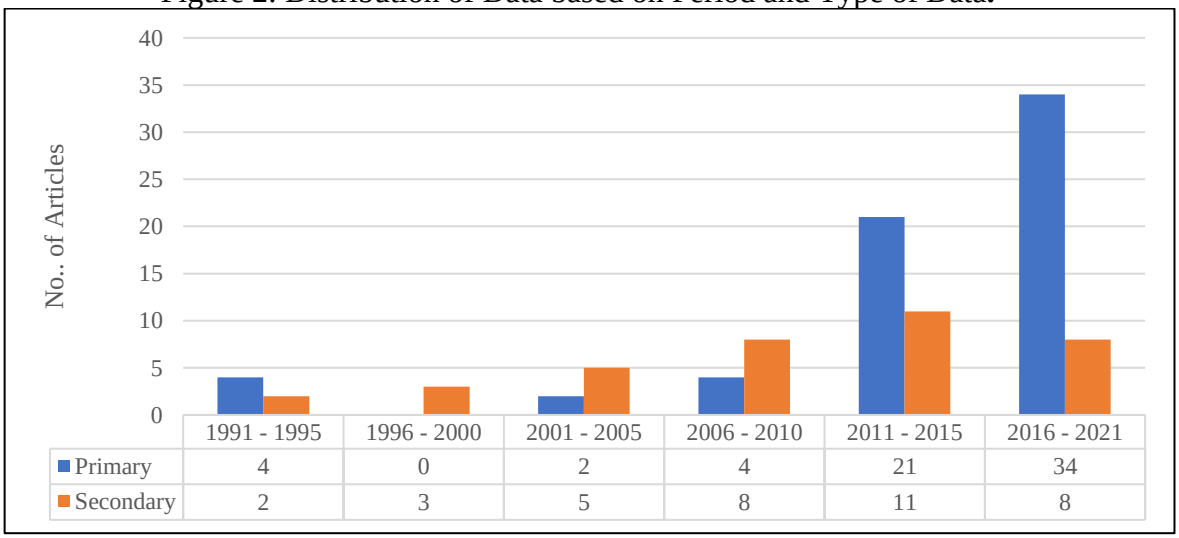
Country/State	**1991 - 1995**	**1996 – 2000**	**2001 - 2005**	**2006 - 2010**	**2011 - 2015**	**2016 - 2021**	***Total***	***Contribution***
United States of America	4	1	2	2	4	1	14	13.73%
England	1			1	1		3	2.94%
Austria		1			1		2	1.96%
Germany			2	1	2		5	4.90%
Italy			1				1	0.98%
Pennsylvania			1				1	0.98%
Sweden			1		1		2	1.96%
China				3		1	4	3.92%
France				1			1	0.98%
India				1	8	14	23	22.55%
Portugal				1			1	0.98%
Switzerland				1			1	0.98%
United Kingdom				1	1		2	1.96%
Brazil					1		1	0.98%
Finland					1		1	0.98%
Kenya					2		2	1.96%
Pakistan					2	11	13	12.75%
Qatar					1		1	0.98%
Sri Lanka					1		1	0.98%
Tunisia					1		1	0.98%
Turkey					2	1	3	2.94%
Vietnam					1	1	2	1.96%
Indonesia						3	3	2.94%
Egypt						1	1	0.98%
Jordan						1	1	0.98%
Malaysia						2	2	1.96%
Republic of Serbia						1	1	0.98%
South Africa						1	1	0.98%
Sudan						1	1	0.98%
Taiwan						1	1	0.98%
General	1	1			2	2	6	5.88%
Total	5	2	7	12	30	42	102	100.00

Source**:** Author**'**s Calculations

3.4 Distribution of articles based on type of data:

Period-wise distribution of research papers was done on the basis of the type of data used for the study. A Total of 102 articles were divided on the basis of the primary and secondary data used. 65 studies used primary data for the research, whereas 37 studies were conducted using secondary data. The use of primary data for the studies conducted in the field of behavioral finance has increased tremendously from 2011 to date. The results of the same are presented in Figure 2.

Figure 2: Distribution of Data based on Period and Type of Data.



Source: Author's Calculations

3.5 Distribution of articles based on data collection Method:

The research papers were divided period-wise based on the data collection method used in their study, as presented in Table 3. Out of 102 studies, only 60 specified the data collection method used. In 95% of the studies, the questionnaire method was used to collect data. The questionnaire method has been used by different researchers in different time frames, consistently proving its stability and validity across different methods of data collection.

Table 3: Period Wise Dissemination of Articles based on Data Collection Method

Data collection method	*1991 – 1995*	*1996 - 2000*	*2001 - 2005*	*2006 - 2010*	*2011 - 2015*	*2016 - 2021*	*Total*	*Contribution*
Questionnaire Method	1	0	1	4	18	33	57	95.00
Face to Face Interview					1	1	2	3.33
In-depth Interviews					1		1	1.67
Total	1	0	1	4	20	34	60	100.00

Source: Author's Calculations

3.6 Distribution of articles based on Sampling Technique used:

The period-wise distribution of articles on the basis of sampling techniques was done as presented in Table 4. A total of 102 research papers were considered for the study, of which only 31 papers reported the sampling technique adopted in the study. The results depict that Convenient Sampling *(*29.03*%)*, Purposive Sampling *(*19.35*%)*, Random Sampling *(*19.35*%)* and Snowball Sampling *(*16.13*%)* are the most common sampling techniques adopted by the researchers for the subject.

Table 4: Period Wise Dissemination of Articles based on Sampling Technique

Sampling Technique	*1991 – 1995*	*1996 - 2000*	*2001 - 2005*	*2006 - 2010*	*2011 - 2015*	*2016 - 2021*	*Total*	*Contribution*
Convenient Sampling				1	2	6	9	29.03 %
Snowballing Sampling					2	3	5	16.13 %
Purposive Sampling					3	3	6	19.35 %
Stratified Sampling					2	1	3	9.68 %
Random Sampling					1	5	6	19.35 %
Quota Sampling						1	1	3.23 %
Systematic Sampling						1	1	3.23 %
Total	**0**	**0**	**0**	**1**	**10**	**20**	**31**	**100**

Source: Author's Calculations

3.7 Distribution of articles on the basis of Statistical Technique used:

The period-wise distribution of the studies on the basis of the statistical method used is shown in Table 5. A total of 122 statistical tools was deployed in 80 articles of empirical and analytical nature; the number is higher than the total number of articles considered for the study, as some studies were conducted using more than one statistical tool. The most common statistical methods used in the studies concerning behavioral finance are Regression Analysis *(*14.75 *%)*, Correlation Analysis *(*10.66*%)*, and Descriptive Statistics *(*15.57*%)*. In the recent time, researchers have been adopting techniques such as Factor Analysis *(*12.30*%)* and Structural Equational Modeling *(*8.20*%)* while processing the data for the subject.

Table 5**:** Period Wise Dissemination of Articles based on Statistical Method

Statistical Method	***1991 - 1995***	***1996 - 2000***	***2001 - 2005***	***2006 - 2010***	***2011 - 2015***	***2016 - 2021***	***Total***	***Contribution***
Regression	2			4	1	11	18	14.75
Correlation	1		1		2	9	13	10.66
Descriptive Statistics	1		3	6	7	2	19	15.57
Experimental Design			2	2	2	1	7	5.74
Empirical Analysis			1				1	0.82
t- test				3		3	6	4.92
Chi Square			1	1	3	4	9	7.38
Cognitive reflection test (CRT)				1	1		2	1.64
Factor Analysis				1	7	7	15	12.30
Cluster Analysis				1	1		2	1.64
Econometric Analysis					2		2	1.64
Structural Equational Modeling					1	9	10	8.20
Multiple regression analysis					1	4	5	4.10
Confirmatory Factor Analysis					1	2	3	2.46
ANOVA					1	4	5	4.10
Discriminant analysis						1	1	0.82
Analytical hierarchy process (AHP)						1	1	0.82
Fuzzy Analytical Approach						1	1	0.82
Logistic Regression						2	2	1.64
Total	4	0	8	19	30	61	122	100.00

Source**:** Author's Calculations

3.8 Choice of variables:

The findings of the research papers considered for this study was classified into two sections**.** The first covers the behavioral biases reported by the researchers, and the second covers the impact of these biases on the investment decisions of individual investors**.** From time to time, distinct researchers have reported the behavioral biases prevailing during their time**.** All the biases reported by the past researchers have been noted, and the biases having common meaning were grouped under the same terminology**.** The same was attempted for the impact of these biases on the investment of individual investor**.**

3.9 Behavioral biases:

As mentioned earlier, the behavioral biases reported by the researchers fall under some theory**.** Therefore, the frequency distribution of these biases has been reported based on an underlying theory**.** Three major theories as reported in the literature are Heuristics, Prospect, and Others**.** Different Biases are reported under these theories as presented in Table 6**.** The behavioral bias is reported as a finding in 92 research papers out of 102 considered for this study**.** The biases to be considered for the development of the proposed research model are based on a quality tool called **"**Pareto analysis**."** The tool is an unpretentious and operative statistical tool that works on the 80**-**20 principle**.** The tool categorizes the biases into two categories*:* vital few *(*80*%)* and useful many *(*20*%)***.** The cumulative count of the number of times the bias has been reported is taken, followed by the cumulative percentage, and then the biases that constitute the vital few *(*80*%)* are considered for the development of the model**.** The frequency count of the biases under different theories is represented as Heuristic in Table 6 and the results of the Pareto analysis are presented in Tables 7, 8, 9 and Figures 3, 4, 5**.**

According to the Pareto analysis results in Table 7, vital few heuristic behavioral biases, five heuristics, namely overconfidence, anchoring, representativeness, gambler's fallacy, and confirmation bias, account for nearly 80% of the variance, while the remaining 13 variables account for the remaining 20%. Similarly, for the prospect biases, as shown in Table 8, three biases, namely loss aversion, regret aversion, and mental accounting, account for 80% of the total, while the other three account for 20%. Looking at these factors under umbrellas other than heuristic and prospect, the results depicted in Table 9 indicate only 1 factor, herd behavior, accounts for 80% of all. In all of these cases, the criteria for distinguishing between vital few and useful many have been the cumulative percentages that are closest to 80%, regardless of whether they are greater or lower than 80.

Table 6: Behavioral Biases as Reported in Past Literature

Behavioral Biases / **References**	**Heuristics**																		**Prospect**							**Others**								
	Representativeness	Framing	Availability	Overconfidence	Anchoring	Hindsight Bias	Overreaction	Gambler's Fallacy	Confirmation Bias	Sunk Cost fallacy	Conjunction	Base rate fallacy	Self-control bias	Categorization tendency	Budgeting tendency	Home Bias	familiarity bias	Biased self-attribution	Market information	Problem of Self Control	Loss Aversion	Mental Accounting	Regret aversion	Risk aversion	Endowment effect	Emotional Bias	Herding	Cognitive errors	Cognitive dissonance	Illusion of control bias	Socially responsible	Psychological factors	Remorse abhorrence	Recency
Keats (1991)	1			1																														
Grether (1992)	1			1																														
Schoemaker (1993)		1		1	1																													
Statman (1995)																				1			1				1	1						
Benartzi and Thaler (1995)																					1	1												
Fuller (1998)	1			1	1																													
Daniel *et al.* (1998)				1														1																
Ricciardi and Simon (2000)				1																			1				1		1					
Barberis and Huang (2001)																					1	1												
Jordan and Kaas (2002)	1	1	1	1	1			1																										
Caparrelli *et al.* (2004)																											1							
Rockenbach (2004)																						1					1							
Nevins (2004)				1	1		1	1														1	1				1							
Massa and Simonov (2005)																					1													
Demirer and Kutan (2006)																											1							
Dhar and Zhu (2006)																					1													
Chen *et al.* (2007)	1			1																	1													
Wen *et al.* (2007)				1			1	1													1		1				1							
Waweru et al. (2008)	1			1	1			1													1	1	1				1							
Chira *et al*., (2008)									1	1											1													
Michenaud and Solnik (2008)																							1											
Biais and Weber (2008)				1		1																												
Funfgeld and Wang, (2009)																						1												
Oechssler *et al.*, (2009)					1						1													1										
Cerqueira Leal *et al.*, (2010)																					1													

Table 6: Behavioral Biases as Reported in Past Literature

Behavioral Biases / **References**	**Heuristics**																			**Prospect**							**Others**								
	Representativeness	Framing	Availability	Overconfidence	Anchoring	Hindsight Bias	Overreaction	Gambler's Fallacy	Confirmation Bias	Sunk Cost fallacy	Conjunction	Base rate fallacy	Self-control bias	Categorization tendency	Budgeting tendency	Home Bias	familiarity bias	Biased self-attribution	Market information	Problem of Self Control	Loss Aversion	Mental Accounting	Regret aversion	Risk aversion	Endowment effect	Emotional Bias	Herding	Cognitive errors	Cognitive dissonance	Illusion of control bias	Socially responsible	Psychological factors	Remorse abhorrence	Recency
Salamouris and Muradoglu (2010)																											1								
Chandra and Kumar (2011)	1		1	1	1			1													1	1	1											
Hoppe and Kusterer (2011)				1	1							1												1										
Bailey *et al.*, (2011)				1				1																										
Furnham and Boo (2011)				1	1																													
Seiler *et al.*, (2012)																					1	1												
Sahi and Arora (2012)				1									1	1	1												1			1				
Muradoglu *et al.*, (2012)																					1													
Lakshmi *et al.*, (2013)	1			1					1												1			1			1							
Chaudhary (2013)				1	1																1						1							
Bashir (2013)				1				1	1												1								1					
Glaser *et al.*, (2013)				1																														
Li and Yang (2013)									1												1			1										
Bogan *et al.*, (2013)				1																	1			1										
Sahi *et al.*, (2013)																															1			
Jayaraj (2013)				1	1				1		1																				1	1		
Waweru *et al.*, (2014)	1			1	1			1													1	1	1				1							
Kengatharan and Kengatharan (2014)	1		1	1	1			1	1												1	1	1											
Ngoc (2014)	1			1	1		1	1									1		1		1	1	1				1							
Onsomu (2014)	1		1	1	1				1												1													
Kansal and Singh (2015)					1			1																										
Zaiane (2015)					1																													
Gazel (2015)																							1											
Farooq *et al.*, (2015)	1			1	1			1	1							1								1			1							
Aspara and Hoffmann (2015)																					1													

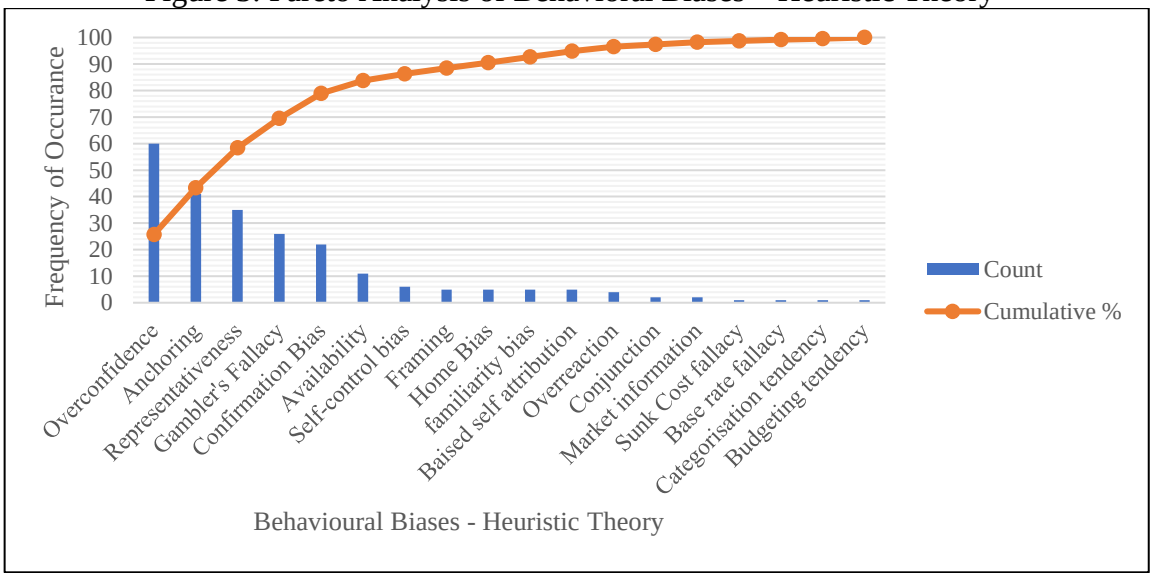
Table 6: Behavioral Biases as Reported in Past Literature

Behavioral Biases / **References**	**Heuristics**																		**Prospect**							**Others**								
	Representativeness	Framing	Availability	Overconfidence	Anchoring	Hindsight Bias	Overreaction	Gambler's Fallacy	Confirmation Bias	Sunk Cost fallacy	Conjunction	Base rate fallacy	Self-control bias	Categorization tendency	Budgeting tendency	Home Bias	familiarity bias	Biased self-attribution	Market information	Problem of Self Control	Loss Aversion	Mental Accounting	Regret aversion	Risk aversion	Endowment effect	Emotional Bias	Herding	Cognitive errors	Cognitive dissonance	Illusion of control bias	Socially responsible	Psychological factors	Remorse abhorrence	Recency
Stöckl *et al.,* (2015)								1																										
Baker and Ricciardi (2015)		1		1	1				1				1								1	1												
Kumar and Goyal (2015)				1												1					1						1							
Shabarisha (2015)	1		1	1	1			1					1								1	1	1											
Gupta and Ahmed (2016)					1																1		1				1							
Hunjra and Rehman (2016)																								1										
Humra (2016)	1			1	1			1	1				1								1	1	1				1							
Casavecchia (2016)																											1							
Aziz and Khan (2016)	1			1	1			1													1	1	1											
Shusha and Touny (2016)				1																							1							
Aren *et al.,* (2016)																1					1						1							
Irshad *et al.,* (2016)	1																																	
Bakar and Yi (2016)				1	1			1																			1							
Kumar and Goyal (2016)				1					1												1	1					1							
Javed *et al.,* (2017)	1			1	1																						1							
Antony and Joseph (2017)	1			1																		1	1				1							
Hassan *et al.,* (2017)	1			1	1				1														1	1			1							
Ul Abdin *et al.,* (2017)	1		1	1	1																													
Filiz *et al.,* (2018)								1																			1							
Dickason and Ferreira (2018)	1			1	1			1					1								1	1	1											
Hameed *et al.,* (2018)				1					1																									
Boda and Sunitha (2018)	1		1	1	1		1	1	1														1				1		1					
Khan *et al.,* (2018)	1			1																							1							
Alrabadi *et al.,* (2018)	1		1	1				1	1								1				1						1							
Zahera and Bansal (2018)	1	1		1	1	1		1	1							1	1	1			1	1	1		1		1							1
Shah *et al.,* (2018)	1			1	1																													
Baker *et al.,* (2018)	1			1	1	1		1									1	1			1	1				1	1							

Table 6: Behavioral Biases as Reported in Past Literature

Behavioral Biases / **References**	**Heuristics**																			**Prospect**							**Others**							
	Representativeness	Framing	Availability	Overconfidence	Anchoring	Hindsight Bias	Overreaction	Gambler's Fallacy	Confirmation Bias	Sunk Cost fallacy	Conjunction	Base rate fallacy	Self-control bias	Categorization tendency	Budgeting tendency	Home Bias	familiarity bias	Biased self-attribution	Market information	Problem of Self Control	Loss Aversion	Mental Accounting	Regret aversion	Risk aversion	Endowment effect	Emotional Bias	Herding	Cognitive errors	Cognitive dissonance	Illusion of control bias	Socially responsible	Psychological factors	Remorse abhorrence	Recency
Raheja (2019)				1	1																1		1	1			1							
Madaan and Singh (2019)				1	1			1													1						1							
Fahim *et al.,* (2019)				1																				1										
Mittal (2019)			1	1		1			1									1			1						1							
Saputra *et al.,* (2020)																					1													
Leković (2020)	1	1		1	1	1			1												1	1	1				1							
Hsu *et al.,* (2020)				1					1									1					1							1				
Sattar *et al.,* (2020)	1			1	1	1										1							1				1							
Elhussein and Abdelgadir (2020)	1			1	1												1				1	1	1				1							
Rahman and Gan (2020)				1	1			1	1				1														1							
Jain et al. (2020)	1			1	1				1												1	1	1				1							
Cao *et al.,* (2021)	1		1	1	1			1	1										1		1	1	1				1							
Kartini and Nahda (2021)	1			1	1																1						1		1					
Cuandra and Tan (2021)	1		1																															
Salman *et al.,* (2021)																						1		1										
	3	5	1	6	4	6	4	2	2	1	2	1	6	1	1	5	5	5	2	1	4	2	2	1	2	1	4	1	3	2	1	2	1	1
	5		1	0	1			6	2												2	5	7	0			2							

Figure 3: Pareto Analysis of Behavioral Biases – Heuristic Theory



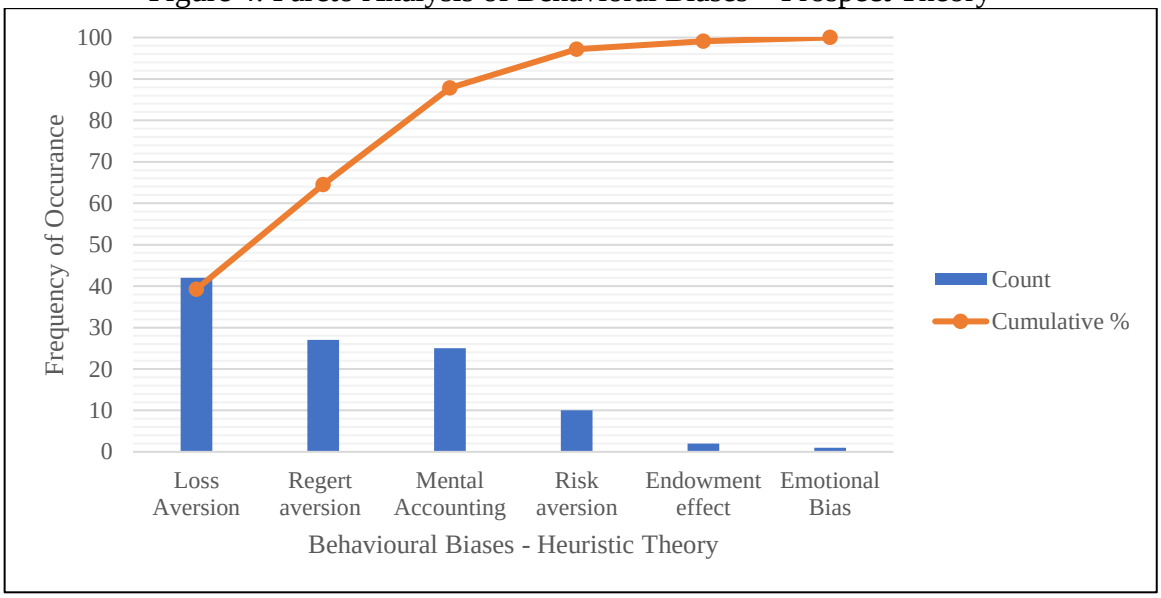
Source**:** Author**'**s Calculations

Table 7: List of Behavioral Biases**-** Heuristic Theory **"***Vital Few & Useful Many***"** **(**80/20 Percent**)**

S. No.	**Behavioral Bias – Heuristic Theory**	**Count**	**Cumulative Count**	**Cumulative Percentage**	**Category**
1	Overconfidence	60	60	25.75	Vital few
2	Anchoring	41	101	43.35	Vital few
3	Representativeness	35	136	58.37	Vital few
4	Gambler's Fallacy	26	162	69.53	Vital few
5	Confirmation Bias	22	184	78.97	Vital few
6	Availability	11	195	83.69	Useful Many
7	Self-control bias	6	201	86.27	Useful Many
8	Framing	5	206	88.41	Useful Many
9	Home Bias	5	211	90.56	Useful Many
10	Familiarity bias	5	216	92.70	Useful Many
11	Biased self-attribution	5	221	94.85	Useful Many
12	Overreaction	4	225	96.57	Useful Many
13	Conjunction	2	227	97.42	Useful Many
14	Market information	2	229	98.28	Useful Many
15	Sunk Cost fallacy	1	230	98.71	Useful Many
16	Base rate fallacy	1	231	99.14	Useful Many
17	Categorization tendency	1	232	99.57	Useful Many
18	Budgeting tendency	1	233	100.00	Useful Many

Source**:** Author**'**s Calculations

Figure 4: Pareto Analysis of Behavioral Biases – Prospect Theory



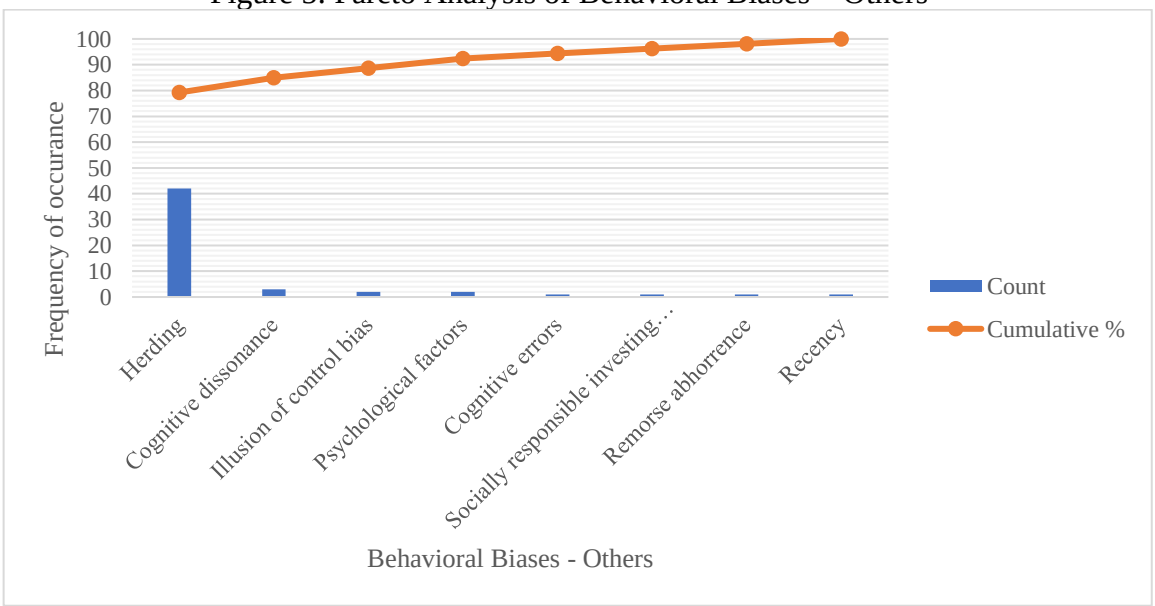
Source: Author's Calculations

Table 8: List of Behavioral Biases- Prospect Theory "*Vital Few & Useful Many*" (80/20 Percent)

S. No.	Behavioral Bias – Heuristic Theory	Count	Cumulative Count	Cumulative Percentage	Category
1	Loss Aversion	42	42	39.25	Vital few
2	Regret aversion	27	69	64.49	Vital few
3	Mental Accounting	25	94	87.85	Vital few
4	Risk aversion	10	104	97.20	Useful Many
5	Endowment effect	2	106	99.07	Useful Many
6	Emotional Bias	1	107	100.00	Useful Many

Source**:** Author's Calculations

Figure 5: Pareto Analysis of Behavioral Biases – Others



Source**:** Author's Calculations

Table 9**:** List of Behavioral Biases**-** Others **"***Vital Few & Useful Many***" (**80/20 Percent**)**

S. No.	Behavioral Bias – Heuristic Theory	Count	Cumulative Count	Cumulative Percentage	Category
1	Herding	42	42	79.25	Vital few
2	Cognitive dissonance	3	45	84.91	Useful Many
3	Illusion of control bias	2	47	88.68	Useful Many
4	Psychological factors	2	49	92.45	Useful Many
5	Cognitive errors	1	50	94.34	Useful Many
6	Socially responsible investing bias	1	51	96.23	Useful Many
7	Remorse abhorrence	1	52	98.11	Useful Many
8	Recency	1	53	100.00	Useful Many

Source**:** Author**'**s Calculations

3.10 Impact of behavioral biases

The impact of these biases on the investment of individual investors, as reported by past researchers, is presented in Table 10**.** The impacts with the same meaning but different terminology were grouped together, and a common representation was created**.** Frequency analysis was done for the three major outcomes; Investment Behavior ***(***Individual Investment behavior and intention***)***, Investment Decision Making ***(***Individual investment decision, investment pattern, investors personalities***)*** and Investment outcomes ***(***individual stock returns, individual investment performance***)*****.** Based on the results as presented in Table 10, 64 articles out of 102 reported the outcome in terms of the impact of the behavioral biases**.** The frequency analysis indicates that investment decision making was reported by most of the researchers**.** Thus, it can be perceived that behavioral biases have a greater impact on the decision**-**making of individual investors**.** So, it was considered for the model development process**.**

Table10**:** List of Impact of Behavioral Biases as Reported in Past Literature

Author / Year	Investment Behavior	Investment Decision Making	Investment Outcome
Adair et al. (1994)		1	
Barberis and Huang (2001)			1
Shiller (2003)		1	
Waweru et al. (2008)		1	
Chira et al. (2008)		1	
Michenaud and Solnik (2008)		1	
Cerqueira Leal et al. (2010)	1		
Chandra and Kumar (2011)		1	
Bailey et al., (2011)		1	
Masini and Menichetti (2012)		1	
Seiler et al. (2012)		1	
Chaudhary (2013)		1	
Bashir (2013)		1	

Author / Year	Investment Behavior	Investment Decision Making	Investment Outcome
Bogan et al. (2013)		1	
Sahi et al. (2013)	1		
Jayaraj (2013)	1		
Waweru et al. (2014)		1	
Kengatharan and Kengatharan (2014)		1	1
Ngoc (2014)	1		
Onsomu (2014)		1	
Ahmed (2014)			1
Kansal and Singh (2015)		1	
Gazel (2015)	1		
Islamoğlu et al. (2015)	1		
Farooq et al. (2015)		1	
Aspara and Hoffmann (2015)	1		
Bodnaruk and Simonov (2015)		1	
Baker and Ricciardi (2015)	1		
Kumar and Goyal (2015)		1	
Shabarisha (2015)		1	
Gupta and Ahmed (2016)		1	
Hunjra and Rehman (2016)		1	
Chavali and Mohanraj (2016)		1	
Humra (2016)		1	
Aziz and Khan (2016)		1	1
Irshad et al. (2016)		1	
Bakar and Yi (2016)		1	
Kumar and Goyal (2016)		1	
Javed *et al.* (2017)			1
Antony and Joseph (2017)		1	
Hassan et al. (2017)		1	
Ul Abdin et al. (2017)			1
Dickason and Ferreira (2018)		1	
Hameed et al. (2018)		1	
Boda and Sunitha (2018)		1	
Khan et al. (2018)		1	
Alrabadi et al. (2018)			1
Sarkar and Sahu (2018)	1		
Shah et al. (2018)		1	
Akhtar and Das (2018)	1		
Baker et al. (2018)		1	
Raheja (2019)		1	
Madaan and Singh (2019)		1	
Fahim et al. (2019)		1	
Mittal (2019)		1	
Saputra et al. (2020)		1	
Hsu et al. (2020)	1		
Sattar et al. (2020)		1	
Elhussein and Abdelgadir (2020)		1	
Shiva et al. (2020)		1	
Cao et al. (2021)		1	1

Author / Year	Investment Behavior	Investment Decision Making	Investment Outcome
Kartini and Nahda (2021)		1	
Cuandra and Tan (2021)		1	
Salman et al. (2021)		1	
Total	11	48	8

Source: Author's Calculations

4. Conclusion

The chapter provides significant groundwork and the foundation required for this study. This chapter provides an overview of traditional theories of finance, the areas where these theories lacked and the introduction of behavioral finance. Behavioral finance was developed to overcome the limitations of traditional theories. Further in the chapter, the researchers discuss in detail the different types of behavioral finance theories and the psychological factors that influence a retail investor's investment decisions. It also discusses the different industries for whom securities are available for investment purposes, as well as two of the biggest industries in this lot, i.e., pharmaceuticals and insurance stocks.

The objective of the present research was met by reviewing 102 research papers from 1991 to 2021. The data has been assessed on different parameters such as the nature of the study, the journal of publication, the country of research, type of data used, the data collection method, sampling, the statistical tool, and the selection of the variables, i.e., behavioral biases and their impact on individual investors.

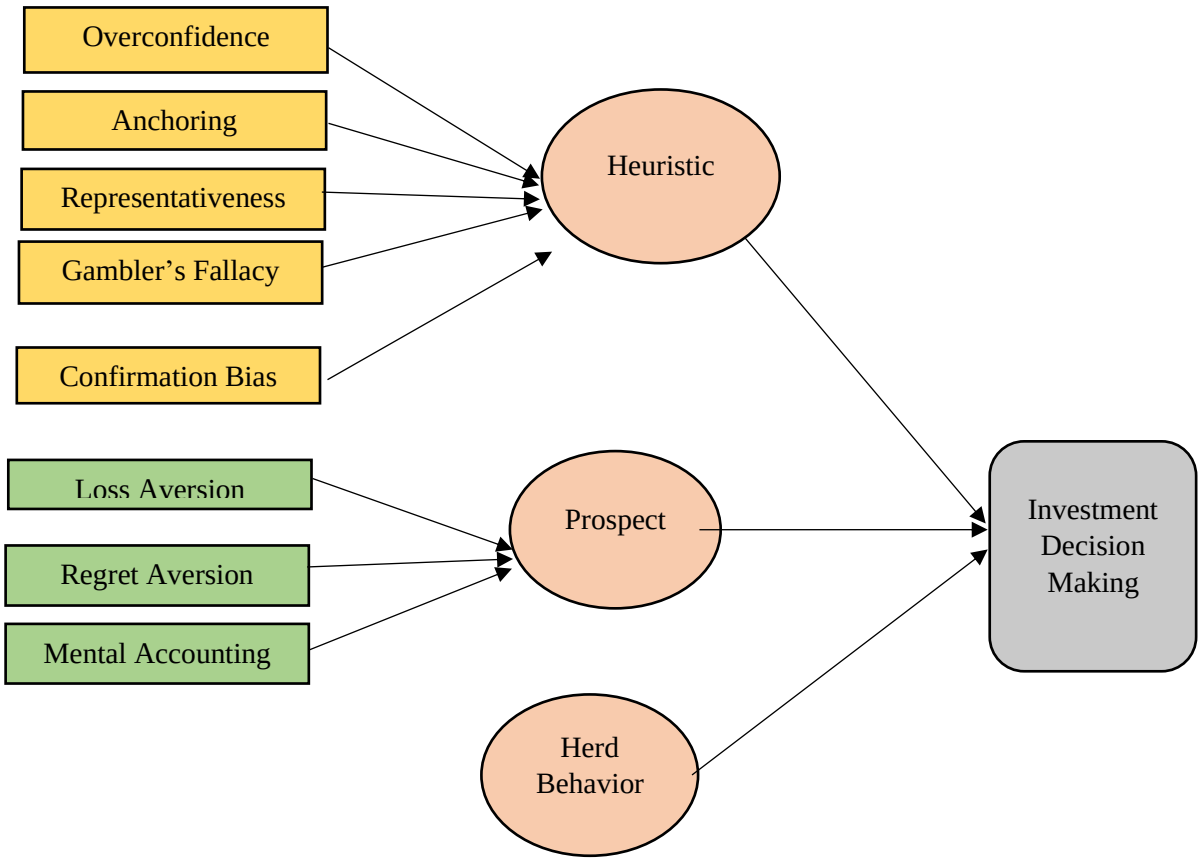
As it is evident from Figure 1 that empirical and analytical study in the subject area has increased over the last decade. The is apparent from Table 1 that the journals of national and international repute are open to accepting the studies conducted in this area, thus indicating the need for further study in this field. As shown in Table 2, the topic is more prevalent in developing countries, and the need for the study in developing countries is growing in recent years. The results of the different countries can be compared and validated. Future researchers can also conduct a comparative study of behavioral biases or behavioral finance in developed and developing countries. Also, the difference in the investment pattern due to these biases can also be studied in the future.

The results displayed in Figure 2 clearly indicate that during the 1990s, the studies conducted were based on the use of secondary data; however, the trend has changed tremendously in the last 10 years, where the researchers are relying more on the primary data in the subject matter. Table 5 clearly displays that although few research papers have used techniques such as Confirmatory Factor Analysis, Structural Equational Modeling, Analytical Hierarchy Process (AHP), Fuzzy Analytical Approach, more research using these techniques can be undertaken in the future. Researchers in the future can also use more advanced modeling techniques such as Interpretative Structural Modeling (ISM) and MICMAC analysis, as these techniques have not yet been considered by researchers in the area of behavioral finance.

A study done by Bajaj et al. (2018) asserted the need for empirical analysis for selection of variables in the model development process. Therefore, the researchers selected the same tool, Pareto analysis, for the selection of variables for the development of the model. The frequency count of the behavioral biases and the impact of these biases were reported in Tables 6 and 10 respectively. As reported in the past literature, the behavioral biases were categorized into three categories: heuristics theory, prospect

theory, and other biases**. The Pareto analysis results for the heuristics theory, as shown in Table 7, suggest five behavioral biases in the " vital few" category:** Overconfidence, Anchoring, Representativeness, Gambler's Fallacy, and Confirmation Bias under the "vital few" category. These biases were considered in the development of the model. Similarly, the Pareto analysis results of the biases reported under the prospect theory in Table 8 give the researchers three more biases: Loss Aversion, Regret Aversion, and Mental Accounting for the development of mode. The results of the other biases, as represented in Table 9, give Herd Behavior as another significant category. The impact of these biases was categorized into three categories as depicted in Table 10, and Investment Decision Making having the highest frequency, was considered for the development of the model. The proposed research model built using these variables is exhibited in Figure 6.

Figure 6: Proposed Research Model



Source: Author's Research Model

5. Agenda for Future Research

To the best knowledge of the researchers, this study is a unique attempt to develop the model from a literature review using some empirical techniques. The model can be validated by the future researcher using different statistical techniques and in different geographical areas with different types of investors to understand the difference in the outcomes. Future researchers can consider the biases reported under the many useful categories of this,as well as assess the impact of these biases . The paper provides a detailed analysis of the literature available from the past and provides insight into the gaps and the directions of future research. It also helps in developing an understanding among the researchers about the prevailing trends in the topic.

References

Adair, A. S., Berry, J. N., & McGreal, W. S. (1994). Investment decision making: A behavioural perspective. *Journal of Property Finance*. *5* (4), 32-32. https://doi.org/10.1108/09588689410080275

Ahmed, W. M. (2014). The trading patterns and performance of individual vis-à-vis institutional investors in the Qatar Exchange. *Review of Accounting and Finance.* 13(1),24-42.

Akhtar, F., & Das, N. (2019). Predictors of investment intention in Indian stock markets: Extending the theory of planned behaviour. *International Journal of Bank Marketing*.– *37*(1),97-119.

Alrabadi, D. W. H., Al-Abdallah, S. Y., & Aljarayesh, N. I. A. (2018). Behavioral biases and investment performance: Does gender matter? Evidence from Amman Stock Exchange. *Jordan Journal of Economic Sciences*, *5*(1), 77-92.

Antony, A., & Joseph, A. I. (2017). Influence of behavioural factors affecting investment decision—An AHP analysis. *Metamorphosis*, *16*(2), 107-114.

Aren, S., Aydemir, S. D., & Şehitoğlu, Y. (2016). Behavioral biases on institutional investors: A literature review. *Kybernetes*. *45*(10),1668-1684

Aspara, J., & Hoffmann, A. O. (2015). Cut your losses and let your profits run: How shifting feelings of personal responsibility reverses the disposition effect. *Journal of Behavioral and Experimental Finance*, *8*, 18-24.

Aziz, B., & Khan, A. (2016). Behavioral factors influencing individual investor's investment decision and performance, Evidence from Pakistan Stock Exchange. *International Journal of Research in Finance and Marketing*, *6*(7), 74-86.

Bailey, W., Kumar, A., & Ng, D. (2011). Behavioral biases of mutual fund investors. *Journal of Financial Economics*, *102*(1), 1-27.

Bakar, S., & Yi, A. N. C. (2016). The impact of psychological factors on investors' decision making in Malaysian stock market: A case of Klang Valley and Pahang. *Procedia Economics and Finance*, *35*, 319-328.

Baker, H. K., & Ricciardi, V. (2015). Understanding behavioral aspects of financial planning and investing. *Journal of financial Planning*, *28*(3), 22-26.

Baker, H. K., Kumar, S., Goyal, N., & Gaur, V. (2019). How financial literacy and demographic variables relate to behavioral biases. *Managerial Finance*,. *45*(1),124-146

Barberis, N., & Huang, M. (2001). Mental accounting, loss aversion, and individual stock returns. *The Journal of Finance*, *56*(4), 1247-1292.

Bashir, T., Rasheed, S., Raftar, S., Fatima, S., & Maqsood, S. (2013). Impact of behavioral biases on investor decision making: Male vs female. *Journal of Business and Management*, *10*(3), 60-68.

Benartzi, S., & Thaler, R. H. (1995). Myopic loss aversion and the equity premium puzzle. *The Quarterly Journal of Economics*, *110*(1), 73-92.

Biais, B., & Weber, M. (2009). Hindsight bias, risk perception, and investment performance. *Management Science*, *55*(6), 1018-1029.

Boda, J. R., & Sunitha, G. (2018). Investor's psychology in investment decision making: A behavioral finance approach. *International Journal of Pure and Applied Mathematics*, *119*(7), 1253-1261.

Bodnaruk, A., & Simonov, A. (2015). Do financial experts make better investment decisions?. *Journal of financial Intermediation*, *24*(4), 514-536.

Cao, M. M., Nguyen, N. T., & Tran, T. T. (2021). Behavioral factors on individual investors' decision making and investment performance: A survey from the Vietnam Stock Market. *The Journal of Asian Finance, Economics and Business*, *8*(3), 845-853.

Caparrelli, F., D'Arcangelis, A. M., & Cassuto, A. (2004). Herding in the Italian stock market: A case of behavioral finance. *The Journal of Behavioral Finance*, *5*(4), 222-230.

Casavecchia, L. (2016). Fund managers' herding and mutual fund governance . *International Journal of Managerial Finance*, *12*(3), 242-276

Cerqueira Leal, C., Rocha Armada, M. J., & Duque, J. C. (2010). Are all individual investors equally prone to the disposition effect all the time? New evidence from a small market. *Frontiers in Finance and Economics*, *7*(2), 38-68.

Chandra, A., & Kumar, R. (2012). Factors influencing Indian individual investor behaviour: Survey evidence. *Decisions*, 39(3), 141-167.

Chaudhary, A. K. (2013). Impact of behavioral finance in investment decisions and strategies–a fresh approach. *International Journal of Management Research and Business Strategy*, *2*(2), 85-92.

Chavali, K., & Mohan Raj, P. (2016). Impact of demographic variables and risk tolerance on investment decisions: An empirical analysis. *International Journal of Economics and Financial Issues*, *6*(1), 169-175.

Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of Behavioral Decision Making*, *20*(4), 425-451.

Chira, I., Adams, M., & Thornton, B. (2008). Behavioral bias within the decision-making process, *Journal of Business and Economics Research*,*8*(2), 11-20

Cuandra, F., & Tan, H. (2021). Analysis of factors that are considered by investors in stocks investment decision making in Batam city. *Jurnal Ilmiah Manajemen Bisnis dan Inovasi Universitas Sam Ratulangi* , *8*(1),1-31.

Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreaction. *Advances in Behavioral Finance*, *2*, 460-501.

Demirer, R., & Kutan, A. M. (2006). Does herding behavior exist in Chinese stock markets?. *Journal of International Financial Markets, Institutions and Money*, *16*(2), 123-142.

Dhar, R., & Zhu, N. (2006). Up close and personal: Investor sophistication and the disposition effect. *Management Science*, *52*(5), 726-740.

Dickason, Z., & Ferreira, S. (2018). Establishing a link between risk tolerance, investor personality and behavioural finance in South Africa . *Cogent Economics & Finance*,. *6*(1), 1519898

Elhussein, N. H. A., & Abdelgadir, J. N. A. (2020). Behavioral bias in individual investment decisions: Is it a common phenomenon in stock markets *International Journal of Financial Research*, *11*(6), 25.

Fahim, F., Ali, A., Khan, M. A., & Khan, R. A. (2019). Impact of overconfidence on investors investment decision: Moderating role of risk perception and religiosity -A survey of Pakistan stock exchange. *Journal of Independent Studies & Research: Management & Social Sciences & Economics*, *17*(2), 85-96

Farooq, A., & Sajid, M. (2015). Factors affecting investment decision making: Evidence from equity fund managers and individual investors in Pakistan. *Research Journal of Finance and Accounting*, *6*(9), 2222-1697.

Filiz, I., Nahmer, T., Spiwoks, M. (2018). Portfolio diversification: The influence of herding, status-quo bias, and the gambler's fallacy.*Financial Markets and Portfolio Management 32*(2), 167–205.

Fuller, R. J. (1998). Behavioral finance and the sources of alpha. *Journal of Pension Plan Investing*, *2*(3), 291-293.

Fünfgeld, B., & Wang, M. (2009). Attitudes and behaviour in everyday finance: Evidence from Switzerland. *International Journal of Bank Marketing*, *27*(2), 108-128

Furnham, A., & Boo, H. C. (2011). A literature review of the anchoring effect. *The Journal of Socio-Economics*, *40*(1), 35-42.

Gazel, S. (2015). The regret aversion as an investor bias. *International Journal of Business and Management Studies*, *4*(02), 419-424.

Glaser, M., Langer, T., & Weber, M. (2013). True overconfidence in interval estimates: Evidence based on a new measure of miscalibration. *Journal of Behavioral Decision Making*, *26*(5), 405-417.

Godoi, C. K., Marcon, R., & Barbosa daSilva, A. (2005). Loss aversion: A qualitative study in behavioural finance. *Managerial Finance*, *31*(4),46-56.

Grether, D. M. (1992). Testing Bayes rule and the representativeness heuristic: Some experimental evidence. *Journal of Economic Behavior & Organization*, *17*(1), 31-57.

Gupta, Y., & Ahmed, S. (2016). The impact of psychological factors on investment decision making of investors: an empirical analysis. *EPRA International Journal of Economic and Business Review*, *4*(11), 40-52

Hoppe, E. I., & Kusterer, D. J. (2011). Behavioral biases and cognitive reflection. *Economics Letters*, *110*(2), 97-100.

Hsu, Y. L., Chen, H. L., Huang, P. K., & Lin, W. Y. (2021). Does financial literacy mitigate gender differences in investment behavioral bias?. *Finance Research Letters*, *41*, 101789

Humra, Y. A. S. H. B. A. (2014). Behavioral finance: An introduction to the principles governing investor behavior in stock markets. *International Journal of Financial Management*, *5*(2), 23-30.

Hunjra, A. I., & Rehman, Z. U. (2016). Factors affecting investment decision mediated by risk aversion: A case of Pakistani investors. *International Journal of Economics and Empirical Research*, *4*(4), 169-181.

Irshad, S., Badshah, W., & Hakam, U. (2016). Effect of representativeness bias on investment decision making. *Management and Administrative Sciences Review*, *5*(1), 26-30.

Islamoğlu, M., Apan, M., & Ayvalı, A. (2015). Determination of factors affecting individual investor behaviours: A study on bankers. *International Journal of Economics and Financial Issues*, *5*(2), 531-543.

Jain, J., Walia, N., & Gupta, S. (2019). Evaluation of behavioral biases affecting investment decision making of individual equity investors by fuzzy analytic hierarchy process. *Review of Behavioral Finance*, *12*(3), 297-314

Javed, H., Bagh, T., & Razzaq, S. (2017). Herding effects, over confidence, availability bias and representativeness as behavioral determinants of perceived investment performance: Empirical evidence from Pakistan stock exchange (PSX). *Journal of Global Economics*, *6*(1), 1-13.

Jayaraj, S. (2013). The factor model for determining the individual investment behavior in India. *Journal of Economics and Finance*, *1*(4), 21-32.

Jordan, J., & Kaas, K. P. (2002). Advertising in the mutual fund business: The role of judgmental heuristics in private investors' evaluation of risk and return. *Journal of Financial Services Marketing*, *7*(2), 129-140.

Kansal, P., & Sing, S. (2015). Anchoring effect in investment decision making-A systematic literature review. *Asia Pacific Journal of Research 1*(32), 17-27.

Kartini, K., & NAHDA, K. (2021). Behavioral biases on investment decision: A case study in Indonesia. *The Journal of Asian Finance, Economics and Business*, *8*(3), 1231-1240.

Keats, B. W. (1991). An empirical investigation of strategic investment decision models. *Strategic Management Journal*, *12*(3), 243-250.

Kengatharan, L., & Kengatharan, N. (2014). The influence of behavioral factors in making investment decisions and performance: Study on investors of Colombo Stock Exchange, Sri Lanka. *Asian Journal of Finance & Accounting*, *6*(1), 1-23.

Khan, Y., Khan, A. W., Shah, M., & Rehman, D. S. U. (2018). Heuristic and biases related to financial investment and the role of behavioral finance in investment decisions: A case study of Pakistan Stock Exchange. *Journal of Business & Tourism*, *4*(2), 227-236.

Kumar, S., & Goyal, N. (2015). Behavioural biases in investment decision making–A systematic literature review. *Qualitative Research in Financial Markets*,. *7*(1), 88-108

Kumar, S., & Goyal, N. (2016). Evidence on rationality and behavioural biases in investment decision making. *Qualitative Research in Financial Markets*, *8*(4), 270-287

Bogan, V. L., Just, D. R., & Dev, C. S. (2013). Team gender diversity and investment decision-making behavior . *Review of Behavioral Finance*, *5*(2), 134-152

Lakshmi, P., Visalakshmi, S., Thamaraiselvan, N., & Senthilarasu, B. (2013). Assessing the linkage of behavioural traits and investment decisions using SEM approach. *International Journal of Economics & Management*, *7*(2), 221-241

Leković, M. (2020). Cognitive biases as an integral part of behavioral finance. *Economic Themes*, *58*(1), 75-96.

Li, Y., & Yang, L. (2013). Prospect theory, the disposition effect, and asset prices. *Journal of Financial Economics*, *107*(3), 715-739.

Madaan, G., & Singh, S. (2019). An analysis of behavioral biases in investment decision-making. *International Journal of Financial Research*, *10*(4), 55-67.

Masini, A., & Menichetti, E. (2012). The impact of behavioural factors in the renewable energy investment decision making process: Conceptual framework and empirical findings. *Energy Policy*, *40*, 28-38.

Massa, M., & Simonov, A. (2005). Behavioral biases and investment. *Review of Finance*, *9*(4), 483-507.

Michenaud, S., & Solnik, B. (2008). Applying regret theory to investment choices: Currency hedging decisions. *Journal of International Money and Finance*, *27*(5), 677-694.

Mittal, S. K. (2019). Behavior biases and investment decision: theoretical and research framework. *Qualitative Research in Financial Markets*, *14*(2), 213-228

Nevins, D. (2004). Goals-based investing: Integrating traditional and behavioral finance. *The Journal of Wealth Management*, *6*(4), 8-23.

Ngoc, L. T. B. (2014). Behavior pattern of individual investors in stock market. *International Journal of Business and Management*, *9*(1), https://doi.org/10.5539/ijbm.v9n1p1

Oechssler, J., Roider, A., & Schmitz, P. W. (2009). Cognitive abilities and behavioral biases. *Journal of Economic Behavior & Organization*, *72*(1), 147-152.

Onsomu, Z. N. (2014). The impact of behavioural biases on investor decisions in Kenya: Male vs Female. *IMPACT: International Journal of Research in Humanities, Arts and Literature (IMPACT: IJRHAL)*, *2*(6), 87-92.

Raheja, S., & Dhiman, B. (2019). Relationship between behavioral biases and investment decisions: The mediating role of risk tolerance. *DLSU Business & Economics Review*, *29*(1), 31-39.

Rahman, M., & Gan, S. S. (2020). Generation Y investment decision: An analysis using behavioural factors. *Managerial Finance*,. *46*(8), 1023-1041

Ricciardi, V., & Simon, H. K. (2000). What is behavioral finance?. *Business, Education & Technology Journal*, *2*(2), 1-9.

Rockenbach, B. (2004). The behavioral relevance of mental accounting for the pricing of financial options. *Journal of Economic Behavior & Organization*, *53*(4), 513-527.

Sahi, S. K., & Arora, A. P. (2012). Individual investor biases: A segmentation analysis. *Qualitative Research in Financial Markets*, *4*(1), 6-25.

Sahi, S. K., Arora, A. P., & Dhameja, N. (2013). An exploratory inquiry into the psychological biases in financial investment behavior. *Journal of Behavioral Finance*, *14*(2), 94-103.

Salamouris, I. S., & Muradoglu, Y. G. (2010). Estimating analyst's forecast accuracy using behavioural measures (Herding) in the United Kingdom. *Managerial Finance*,. *36*(3), 234-256.

Salman, M., Ullah, I., Ullah, R., Javed, A., Rehman, K., Nawaz, T., ... & Rehan, M. H. (2021). Moderated mediation role: Relationship between mental accounting and investment decision-making. (1), 1927-1947.

Saputra, S. E., Natassia, R., & Utami, H. Y. (2020). The effect of religiosity moderation with loss aversion on the investment decision of personal investors kind of stock security in Padang City. *AMAR (Andalas Management Review)*, *4*(1), 40-55.

Sarkar, A. K., & Sahu, T. N. (2018). Analysis of investment behaviour of individual investors of stock market: A study in selected districts of West Bengal. *Pacific Business Review International*, *10*(7), 07-17.

Sattar, M. A., Toseef, M., & Sattar, M. F. (2020). Behavioral finance biases in investment decision making. *International Journal of Accounting, Finance and Risk Management*, *5*(2), 69.

Schoemaker, P. J. (1993). Multiple scenario development: Its conceptual and behavioral foundation. *Strategic Management Journal*, *14*(3), 193-213.

Seiler, M. J., Seiler, V. L., & Lane, M. A. (2012). Mental accounting and false reference points in real estate investment decision making. *Journal of Behavioral Finance*, *13*(1), 17-26.

Shabarisha, N. (2015). Heuristic and biases related to financial investment and the role of behavioral finance in investment decisions–a study. *ZENITH International Journal of Business Economics & Management Research*, *5*(12), 82-101.

Shah, S. Z. A., Ahmad, M., & Mahmood, F. (2018). Heuristic biases in investment decision-making and perceived market efficiency: A survey at the Pakistan stock exchange. *Qualitative Research in Financial Markets*.. *10*(1), 85-110

Shiller, R. J. (2003). From efficient markets theory to behavioral finance. *Journal of Economic Perspectives*, *17*(1), 83-104.

Shiva, A., Narula, S., & Shahi, S. K. (2020). What drives retail investors 'investment decisions? Evidence from no mobile phone phobia (nomophobia) and investor fear of missing out (I–FOMO). *Journal of Content, Community and Communication*, *10*(6), 2-20.

Shusha, A. A., & Touny, M. A. (2016). The attitudinal determinants of adopting the herd behavior: An applied study on the Egyptian exchange. *Journal of Finance and Investment Analysis*, *5*(1), 55-69.

Statman, M. (1995). Behavioral finance versus standard finance. In *AIMR conference Proceedings*, *7*, 14-22(

Stöckl, T., Huber, J., Kirchler, M., & Lindner, F. (2015). Hot hand and gambler's fallacy in teams: Evidence from investment experiments. *Journal of Economic Behavior & Organization*, *117*, 327-339.

ul Abdin, S. Z., Farooq, O., Sultana, N., & Farooq, M. (2017). The impact of heuristics on investment decision and performance: Exploring multiple mediation mechanisms. *Research in International Business and Finance*, *42*, 674-688.

ul Hassan, N., Mehmood, D., & Mushtaq, M. (2017). Effect of behavioral biases followed by money attitudes on investment decisions: Evidence from Pakistan stock exchange. *Research Communications in Psychology, Psychiatry and Behavior*, *3*(1), 1-21.

Waseem-Ul-Hameed, Sabir. A. S., Razzaq, S., & Humanyon, A. A. (2018). The influence of behavioural biases on investment decision making: A moderating role of religiosity among Pakistani investors. *International Journal of Management Research and Emerging Sciences*, *8*(1), 87-98.

Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets*, *1*(1), 24-41.

Waweru, N. M., Mwangi, G. G., & Parkinson, J. M. (2014). Behavioural factors influencing investment decisions in the Kenyan property market. *Afro-Asian Journal of Finance and Accounting*, *4*(1), 26-49.

Wen, F. H., Huang, D. L., Lan, Q. J., & Yang, X. G. (2007). Numerical simulation for influence of overconfidence and regret aversion on return distribution. *Systems Engineering-Theory & Practice*, *27*(7), 10-18.

Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*.. *10*(2), 210-251

Zaiane, S. (2015). Behavioral biases of individual investors: The effect of anchoring. *Eurasian Journal of Social Sciences*, *3*(1), 13-19.