# Behavioral Biases and Investment Decision: A Systematic Literature Review

Pushpa Nidhi Amgain

**Abstract**

This study aims to provide comprehensive overview of traditional finance theories, introducing and emphasizing the significance of behavioral finance, examining the behavioral biases and how they contribute to the risk-averse and risk-seeking attitudes and proposing a future research direction through the construction of a taxonomy model of investor's psychology in the form of a causal framework that impact on investment decision. The study employed a systematic literature review approach and includes 23 research articles from Google scholar database in the fields of behavioral finance and investment decision. The time frame from 2008 to 2023 and the choice of 2008 as the base period is justified by the global financial crisis. The findings suggest that a comprehensive overview of the literature on behavioral finance and investors psychology behavioral biases impact on investment decision and theoretical developments. The taxonomy model contributes to understanding the complex interplay of behavioral biases influencing investment decision. A proposed a taxonomy model, categorizing various biases as independent variables including emotional, cognitive, and financial biases. The findings revealed irrational behavior in stock markets, influenced by factors like fear-based sentiments and artificial intelligence. The research emphasized the significance of moderating variable as financial literacy and risk perceptions as mediating variable and research implication for investors, portfolio managers, and policymakers. Future studies can explore behavioral biases in different investor groups and examine regional variations in developing and developed countries.

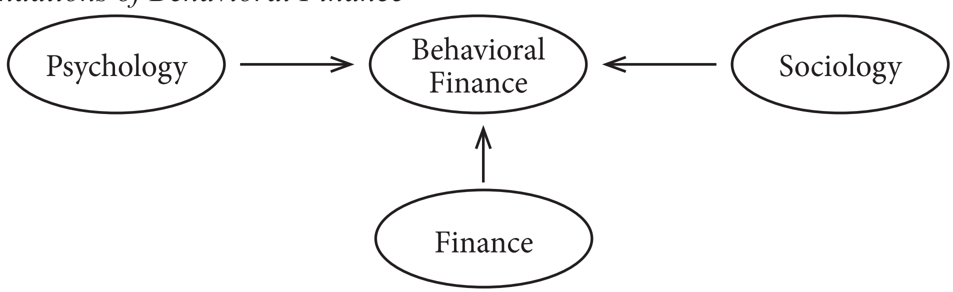
**Keywords:** behavioral biases, behavioral finance, investment decision, systematic literature review, taxonomy model

## Background

Finance refers to the study of how scarce resources are allocated by human capital and how these resources are organized, acquired and invested over period of time. Traditional finance, based on principles which are Modern Portfolio Theory (Markowitz, 1952) and the Efficient market hypothesis (Fama, 1965) assumes rational investor behavior and efficient markets (Vaid & Chaudhary, 2022). An understanding of individual behavior of investors reflects rationality while making investment decision. Efficient market hypothesis of Samuelson states that investors behave rationally, maximize their expected utility and regarding all information are perfectly known. The stock prices show all the available information (Vaid & Chaudhary, 2022). However, investors are irrationality. Investors are frequently influenced by emotional factors, including their feelings, state of mind, trading theories, values, norms, and interpretation of market information. These emotional aspects can lead them to make irrational investment decisions (Kahneman & Tversky, 1979). Likewise,Vaid and Chaudhary (2022) studied an investors behavior influence by psychological factors on financing decision. Researchers concluded that utmost of the traditional finance principles emphasized further significance to fundamental aspects instead of giving significance to financing decisions of persons. As a result, it is necessary to develop modern finance to study these irregularities. The study has demonstrated a link between behavioral biases and the investment decisions made by individual investors in the stock market. However, this is only limited to a period of high global uncertainty during the period of 2008- 2010 (Gabbori et al., 2020). Similarly, Dickason and Ferreira (2018) studied to establish a link between behavioral biases with a certain level of risk tolerance and investor personality. Furthermore, this study indicates how these behavioral finance biases can affect the investment industry decisions making. Investors with a low risk tolerance level and a conservative investor personality are subject towards loss aversion and mental accounting biases whereas a high-risk tolerance level are mostly subject towards the self-control bias (Dickason & Ferreira, 2018). Likewise, Investment is a key pillar of economic developments which is significantly influenced by behavioral biases and psychological factors, affecting investor decisions and market efficiency. Raut et al. (2018) found that in the Indian stock market, investors are impacted by herding, information Cascades, anchoring, representativeness, and overconfidence but not contagion emphasized investor irrationality and market inefficiency, and use of psychology to stock markets (Selden,1912). The emotional and psychological influences affecting investors and traders in the financial markets. Meta (2015) claimed that the emotional and psychological influence that can impact financial decisions and how this influence impact in irrational behavior. The markets can remain irrational longer than you can stay solvent (Keynes, 2016). In a similar vein, Patil et al. (2019) stated that investors are rational and they consider all perfect data in the portfolio investment choice process since the basic assumption for the Efficient Market Hypothesis (EMH). During the long-term research, the analysts have tested this assumption and the investors cannot be rational. Since mental/emotional and cognitive blunders impact their investment decision making. Behavioral finance considers what the different emotional/mental factors mean for how investors settle on making their investment. Behavioral finance attempts to justify the gap between expected behavior and real behavior. Behavioral finance is the investigation of psychological effects on the behavior of financial analysts or investors. It focused that investors are generally irrational, has cutoff points to their poise and also impacted by their own biases.

Dhungana et al. (2018) studied behavioral factors are the most important factors influencing investor's decision making and performance. Behavioral is helpful to study the psychological aspect of investors that assists to explain why investors buy, sell or hold the stocks. Nagy (2017) suggested that examining prospect theories in relation to the psychological aspect of investors brains can reveal how these factors impact the stock market. In practice, behavioral finance not only accounts for anomalies that challenge the efficient market hypothesis but also offers new predictions that have been validated through empirical evidence. Behavioral finance is a relatively new field that seeks to combine behavioral and cognitive psychological theory with conceptual economic and finance to provide explanations for why investors make irrational financial decision (Chaudhary, 2013). In addition, Ricciardi and Simon (2000) studied on principles of behavioral finance consisting of financial cognitive dissonance, overconfidence, prospect theory and the theory of regret. Behavioral finance studies the psychological and sociological factors that influence the financial decision-making process of individuals, groups and entities. The behavioral finance decision makers are the individual, the group and an organization (Ricciardi & Simon, 2000). Behavioral finance examines how psychological factors interact with the financial behavioral and performance of practitioners (Shefrin, 2000). Moreover, The concepts of behavioral finance are essential to understand the interdisciplinary relationships that integrate this filed with sociology, psychology, and standard finance. However, traditional finance has been remains the core foundation the insights from sociology and psychology serve as catalysts enriching our understanding of investor behavior. Thus, an investor exploring behavioral finance should have a basic knowledge of psychology, sociology and finance.

**Figure 1**
*Foundations of Behavioral Finance*




Source: Chaudhary (2013)

This study synthesizes the available literature on various types of behavioral biases and investors psychology. This study aims to develop a taxonomy model comprised of different behavioral factors and investment decision and how they influence on investment decision and to construct investors risk profiles based on various biases. Stock market investment decision making depicts a crucial role in a Worldwide economic growth and economic development. They promote the financial development, capital markets, promoting liquidity, raising capital as well as investment decisions. The proposed taxonomy model comprised various behavioral biases will be pertinent to the financial experts, and policymakers. The classified investors based on their risk factors and achieve a widespread understanding of the role of behavior biases and investors' psychology on investment decision making. The synthesis will aid in identifying future research directions that can be explored regarding behavioral biases, investor sentiment, and risk factors affecting stock investment decisions.

## Review of Literature

In recent years, the stock market is a critical component of the financial market, which plays a crucial role in the economy by serving as an economic indicator of financial development and a funding intermediary for financing and resource allocation. Shefrin (2013) studied behavioral economics to extend the treatment of psychology in Minskey's framework as well as the role psychology has played in limiting the influence of his work.

Bennett et al. (2023) examined that behavioral finance and digital asset spaces to recognize better relations of behavioral influences on the pricing of assets and exchanged in decentralized finance. Behavioral finance is the study that combines psychology and economics to understand why investors make certain financial decisions, cognitive and emotional factor that affect financial behavior, and how those factors can lead to market inefficiencies and investment decisions (Kahneman and Tversky, 1979; Barberis and Thaler, 2005). Ogunmokun et al. (2023) studied the bank credit risk decision making behavior under conditions of risk & uncertainty. On the other hand, Hemrajani (2023) claimed that the better understanding of the financial risk tolerance impact on investment decision making. Sesini and Lozza (2023) found that money attitude as a reflection of individual's perceptions, beliefs and emotions & multifaceted nature of people's attitudes towards money. Behavioral finance studies an individual's biases determining stock investment decision. Sinha and Shunmugasundaram (2023) studied on the behavioral factors influencing investment decision making PRISMA systematic review. They found that the study support there is a significant association between 21 different behavioral biases and investment decisions. For instance, Khattak et al. (2023) claimed that artificial intelligence models have become effective tools in financial markets, helping to minimize investment risks and assist in selecting highly profitable stocks, forex, commodity, and cryptocurrencies through precise, pre- determined methods. Likewise, Kahneman and Tversky (1979) describe prospect theory as a framework for understanding how investors evaluate and estimate the likelihood of gains or losses relative to the perceived risk of a particular stock or mutual fund. Prospect theory is built on two main components; the value function and the decision weight function. The value function, analogous to the utility function is expected utility theory, differs in three key ways; it focuses on changes from a reference point, reveals loss aversion, and shows diminishing sensitivity. Meanwhile, the decision weight function which parallels probabilities in expected utility theory. It suggests that individuals use subjective decision weights rather than objective probabilities when assessing the overall value of a lottery as a weighted sum of its outcomes.

## Methodology

This research study conducted a systematic literature review to analyze the relevant research articles related to behavioral finance and investment decisions. The interval framing ranged from 2008AD to 2023 AD. The 2008 AD was taken as the starting period due to the reason of financial crunch worldwide. The Google scholar has been used as a searching database "Behavioral finance" or "investors psychology" as searching phrase. This research review from Google Scholar since it is open access. The search strategy consisting of searching phrase identification, time frame, inclusion and exclusion measures. The following inclusion criterion for articles has been followed;

- Time framed from 2008 AD to 2023 AD research articles.
- Peer-reviewed articles.
- Journals with impact factors.
- Research articles containing the specified keywords published in English.
- Full text articles.
- Relevant research articles
- Citations
- Research articles published in Asia, as the focus is on this region.

The following exclusion criterion for articles has been followed;

- Exclusion duplicates.
- Exclusion books.
- Exclusion conference paper.
- Exclusion theses/dissertation.

A systematic literature review has generated a total of "Behavioral finance" OR "investors psychology" including citations (N=20,400) search results out of which 17,700 time framed from 2008-2023 AD. Out of these 14,440 duplicate papers while sorting in total have been eliminated. The remaining 3,260 papers have been screened according to the above specified of the inclusion/exclusion criteria resulting in 57 articles after eliminations. The process of execution is shown in figure 2. The screening of remaining 57 papers resulted in elimination of 34 more. Finally, a total of 23 research articles have been extracted for full paper review. The search results from the Google scholar database are presented in Table 1.

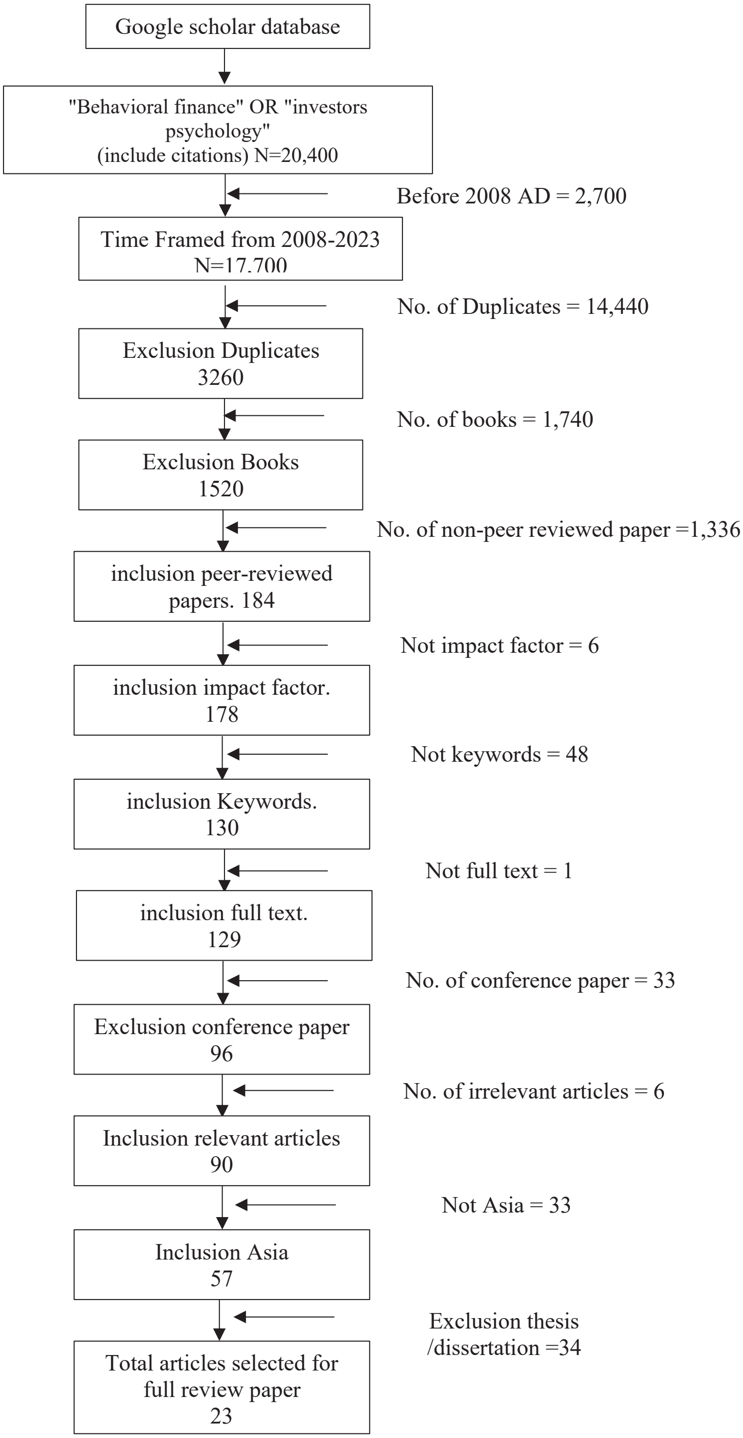
**Table 1**

*Search Results from the Databases*

| Search Strategy | Number of Search Results |
|---|---|
| "Behavioral finance" OR "investors psychology" include citations | 20,400 |
| Time framed from 2008-2023 AD research articles | 17,700 |
| Exclusion of duplicates | 3,260 |
| Exclusion of books | 1,520 |
| Inclusion peer- reviewed in the English Language | 184 |
| Inclusion impact factor research articles | 178 |
| Inclusion keywords | 130 |
| Inclusion full research articles | 129 |
| Exclusion conference paper | 96 |
| Inclusion relevant research articles | 90 |
| Exclusion theses/dissertations | 57 |
| Inclusion Asian Countries | 23 |
| Total articles selected for full review | 23 |

**Figure 2**

*PRISMA Diagram of Systematic Literature Review*



## Result and Discussion

In this section, the research articles have been organized into categories based on frequently cited research articles, recent systematic literature review articles related to behavioral finance and investment decision, theoretical developments, types of data, type of research design and unit of analysis, investors behavioral biases and risk profiling, data analysis methods, taxonomy model of behavioral financial biases and investors psychology possible impact on investment decision.

### Categories Based on Frequently Cited Research Articles

The extracted research articles for systematic literature review have been assessed on the basis of average cumulative citations based on article age, and some of the highly cited papers are displayed in Table 2. The highest average cumulative citations in 2022. The topic was 'Environmental Finance: An interdisciplinary Review', which had 72 citations. This topic had an average of 72 cumulative citations based on article age.

In 2021, the topic 'Deep learning and explainable artificial intelligence techniques applied for detecting money laundering: A critical review' followed. This topic had 35 citations. It had an average of 17.5 cumulative citations based on articles age. The topic with the least citations was" behavioral factors influencing investment decisions: Systematic review using PRISMA in 2023. This topic had only one citation, with an average of one cumulative citation based on article age.

**Table 2**

*Some of the Frequently Cited Research Articles*

| Author(s) | Title | Year | Total Citations | ACC Based on Article Age* |
|---|---|---|---|---|
| Battisti et al.(2021). | International marketing studies in banking and finance: A comprehensive review and integrative framework. | 2021 | 16 | 8 |
| Sesini, G., & Lozza, E.(2023). | Understanding individual attitude to money: A systematic scoping review and research agenda | 2023 | 3 | 3 |

| | | | | |
|---|---|---|---|---|
| French,J.(2017). | Asset pricing with investor sentiment: On the use of investor group behavior to forecast ASEAN markets. | 2017 | 19 | 3.17 |
| Calli, B.A & Coskun, E. (2021). | A longitudinal systematic review of credit risk assessment and credit default predictors | 2021 | 10 | 5 |
| Sinha, A.& Shunmugasundaram, V. (2023). | Behavioral factors influencing investment decisions: A systematic review using PRISMA | 2023 | 1 | 1 |
| Ansari et al.(2022). | A study of financial literacy of investors: A bibliometric analysis | 2022 | 18 | 18 |
| Ishak et al.(2021). | Cyclical industries' stock performance reaction during COVID-19: A systematic literature review. | 2021 | 5 | 2.5 |
| Kute et al.(2021). | Deep learning and explainable artificial intelligence techniques applied for detecting money laundering-A critical review. | 2021 | 35 | 17.5 |
| Bennett et al.(2023). | BeFi meets DeFi: A behavioral finance approach to decentralized finance asset pricing. | 2023 | 3 | 3 |
| Tao et al.(2022). | Environmental finance: An interdisciplinary review | 2022 | 72 | 72 |

Note: * Calculated by dividing the total number of citations of the paper by the article age till 2023.

**Recent Systematic Literature Review Articles Related to Behavioral Finance and Investment Decisions**

Some of the recent systematic literature review articles related to the behavioral finance and investors psychology towards investment decision are listed in Table 3 along with their study scope and published year. The researcher found that the majority of systematic literature review articles related with this study published in year 2023 and minority of the study in 2022. Author found that more study scope papers on financial risk tolerance, understanding individual attitude towards money, behavioral biases in individual investors decision making & sociodemographic factors, prospect theory and bank credit risk decision making behavior, artificial intelligence, block chain, and behavioral factors influencing investment decisions.

**Table 3**

*Some of Recent Systematic Literature Review Articles Related to Behavioral Finance and Investment Decisions*

| Author | Study Scope | Year |
|---|---|---|
| Sinha, A., & Shunmugasundaram, V. (2022) | The hidden forces of investment decision making: A PRISMA-backed systematic review of behavioral biases. | 2022 |
| Sinha, A., & Shunmugasundaram, V.(2023) | Behavioral factors influencing investment decisions: A systematic review using PRISMA. | 2023 |
| Khattak et al. (2023) | A systematic survey of AI models in financial market forecasting for profitability analysis | 2023 |
| Calli,B.A.,&Coskun, E.(2021) | A longitudinal systematic review of credit risk assessment and credit default predictors | 2021 |
| Hamal, J. B.,& Gautam,R.R.(2021) | Capital market response to COVID-19 Pandemic – A systematic review on stock volatility and performance. | 2021 |
| Lobo,S.& Bhat,S. (2022) | A systematic literature review and research agenda of share price movement of the Indian pharmaceutical industry | 2022 |
| Ishak et al. (2021) | Cyclical industries' stock performance reaction during COVID-19: A systematic literature review | 2021 |
| Sapra et al.(2023) | Impact of proof of work (PoW)-based block chain applications on the environment: A systematic review and research agenda | 2023 |
| Kute et al.(2021) | Deep learning and explainable artificial intelligence techniques applied for detecting money laundering–A critical review | 2021 |
| Liaras, E. & Nerantzidis, M.(2023). | Machine earning in accounting and finance research: A literature review | 2023 |

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|---|---|---|
| Ogunmokun, et al.(2023) | Prospect theory and bank credit risk decision making behavior: A systematic literature review and future research agenda. | 2023 |
| Cardoso et al.(2023) | Measuring behavioral biases in individual investors decision making and sociodemographic correlations: A systematic review | 2023 |
| Kumbure et al.(2022) | Machine learning techniques and data for stock market forecasting: A literature review | 2022 |
| Battisti et al.(2021) | International marketing studies in banking and finance: A comprehensive review and integrative framework | 2021 |
| Hemrajani et al.(2023) | Financial risk tolerance: A review and research agenda. | 2023 |
| Sesini, G. & Lozza, E.(2023) | Understanding individual attitude to money: A systematic scoping review and research agenda | 2023 |

**Theoretical Developments in the Context of Behavioral Finance and Investment Decisions**

Among the 23 research articles reviewed, three articles focus theoretical contributions while the others offer methodological insights within the context of existing theoretical frameworks. The seminal works by Kahneman & Tversky (1979) and Thaler (1985) as well as Sinha, & Shunmugasundaram (2022) were examined. These studies introduced significant theoretical advancements including prospect theory and Transaction Utility theory which includes various cognitive and emotional biases such as overconfidence, herding and disposition effect, gambling effect, risk-aversion, desirability bias, endowment effect , bandwagon effect, home bias, availability bias, loss-aversion, psychological bias, excessive optimism(pessimism), certainty effect, the sunk cost fallacy and mental accounting, hindsight and familiarity bias. Table 4 shows that the theoretical developments in the context of behavioral finance and investment decision.

**Table 4**

*Theoretical Developments in the Context of Behavioral Finance and Investment Decisions*

| Authors | Title | Theoretical Developments | Explanation |
|---|---|---|---|
| Sinha, A., & Shunmugasundaram, V.(2023) | Behavioral factors influencing investment decisions: A systematic review using PRISMA | Prospect Theory | It deals the concept that investors often do not act rationally. This theory suggests that persistent biases, driven by psychological factors that affect investors decisions in situations involving risk or uncertainty. This theory considers that preferences are based on decision weights do not always match with actual probabilities. |
| Bennett et al.(2023) | "BeFi meets DeFi: A behavioral finance approach to decentralized finance asset pricing" | Theory of Regret | An individual investor assesses their anticipated responses to a future event. To avoid the regret of a poor investment decision and the discomfort of reporting a loss, investors might refrain from selling stocks that have decreased in value. |

| | | | |
|---|---|---|---|
| Sesini,G.&Lozza,E. (2023) | "Understanding individual attitude to money: A systematic scoping review and research agenda" | Transaction Utility Theory | Individuals observe the value of money intuitively which results in irrational behavior. They view options in relative terms and frequently overlook the trade – offs between different choices, leading to biases such as loss aversion and a preference for maintaining the status quo. |

**Types of Data, Research Design and Unit of Analysis**

Table 5 illustrates the types of data, research designs, and unit of analysis utilized in the various research articles. Most of the studies have used secondary data, with primary data being less common. Additionally, the majority of the research articles employed quantitative research designs while a smaller number adopted qualitative approaches. The primary unit of analysis in these studies has been individual investors.

**Table 5**

*Sources of Data, Research Design and Unit of Analysis*

| Type of Data | Number of Research Articles |
|---|---|
| Secondary | 15 |
| Primary | 08 |
| Total | 23 |
| Research Design | |
| Quantitative | 22 |
| Qualitative | 01 |
| Total | 23 |
| Unit of Analysis | |
| Individual Investors | 15 |
| Group Investors | 01 |
| Professionals | 04 |
| Non- Professionals | 03 |

| Total | 23 |
|---|---|

**Investors Behavioral Biases and Risk Profiling**

When investors are exposed to an exciting, gamble like stimulus, their fear-driven emotions can lead them to adopt a risk- seeking attitude. Conversely, in the presence of a neutral or incidental stimulus investors are more likely to exhibit risk- adverse behavior (Lee & Andrade, 2015). An investors behavioral biases and risk profiling is presented in Table 6. The majority of investors shows risk seeker behavioral biases and less risk averse behavioral biases.

**Table 6**

*Investors Behavioral Biases and Risk Profiling*

| Risk Seeker Behavioral Biases | Risk Averse Behavioral Biases |
|---|---|
| Optimism | Endowment effect |
| Overconfidence | Agreeableness |
| | Critical Framing |
| Locus of control | Trust |
| Home bias | Masculinity |
| Geographic bias | Isolation effect |
| Openness | Risk perception |
| Herding | Loss aversion |
| Extraversion | Uncertainty |
| Emotional stability | Emotional tendency |
| Perceived Financial Literacy | Conscientiousness |
| Emotional intelligence | Fear |
| Beneficial Framing | Status quo- bias |
| Individualism | Investor's sentiment |
| Financial Self-efficacy | |
| Certainty bias | |
| Investor Perception | |
| Insider information | |

## Results and Discussion

Table 7 illustrates the various statistical methods of data analysis utilized in the research studies. It shows that the majority of the articles have used that have been used summary statistics, frequency distributions, correlation and regression analysis, Structure Equation Modeling(SEM), Chi-square test, time series analysis, trend analysis, multivariate analysis while others data analysis techniques such as

ARCH and GARCH (symmetric model) and asymmetric GJR GARCH, TGARCH and EGARCH, VAR, test of normality and t-test and trend analysis, Simple moving average (SMA).The main stream of the research articles have been concentrated on measuring the influence of cognitive, emotional and macro-economic variables on stock investment decision while minor variables are socioeconomic factors(income, employment status and education level),demographical factors(age, gender, marital status, household composition),psychological factors(attitudes, perceptions and cognitive factors),situational factors(life events, economic conditions, changes in personal circumstance), and behavioral factors.

**Table 7**

*Data Analysis Methods and Research Variables*

| Author | Data Analysis Technique | Study Scope | Research Variables |
|---|---|---|---|
| Sinha, A., & Shunmugasundaram, V. (2022) | Descriptive statistics, correlation analysis ,regression analysis ,Structure Equation Modeling(SEM). | The hidden forces of investment decision making: A PRISMA-backed systematic review of behavioral biases. | Behavioral biases, contextual factors, demographic variables. |
| Sinha,A.,& Shunmugasundaram, V. (2023) | Chi-square test ,content analysis & Descriptive statistics. | Behavioral factors influencing investment decisions: A systematic review using PRISMA. | Behavioral biases ; the 21 district biases |
| Khattak et al .(2023) | Descriptive statistics, Likert-type scale analysis, trend analysis & comparative analysis | A systematic survey of AI models in financial market forecasting for profitability analysis | Profitability analysis, technical assessment, hybrid Modeling, Multi-class techniques. |

| | | | |
|---|---|---|---|
| Calli, B.A., & Coskun, E. (2021) | Cluster analysis & trend analysis. | A longitudinal systematic review of credit risk assessment and credit default predictors | Socioeconomic factors (income, employment status & education level), demographical factors (age, gender, marital status, household composition), psychological factors (attitudes, perceptions & cognitive factors), situational factors (life events, economic conditions, changes in personal circumstance), behavioral factors (individual behavior including financial responsibility, debt repayment habits & credit misuse patterns). |
| Hamal,J.B.,& Gautam,R.R.(2021) | Time- series analysis, descriptive statistics, inferential statistics, Systematic Literature Review. | Capital market response to COVID-19 Pandemic – A systematic review on stock volatility and performance. | Stock market volatility, market return, stock market performance, COVID-19 impact, government responses, investors sentiment, time period 2020-2021. |

| | | | |
|---|---|---|---|
| Ansari et al.(2022) | Citation network analysis, Co-citation analysis, content analysis, publication trends analysis, keywords analysis, cluster analysis | A study of financial literacy of investors- A bibliometric analysis | Financial literacy levels, investment planning & decision making stages, time period 2001 -2022. |
| Lobo,S.& Bhat,S. (2022) | Mean, median, range, standard deviation, skewness & kurtosis, beta & correlation analysis, ARCH &GARCH (symmetric model) and asymmetric GJR GARCH, TGARCH & EGARCH, VAR, test of normality and t-test and trend analysis, Simple moving average (SMA). | A systematic literature review and research agenda of share price movement of the Indian pharmaceutical industry | Share price movement, fundamental analysis, technical analysis, volatility, stock valuation models, risk-return analysis, & investing psychology, financial performance, & determinants of share price. |
| Ishak et al.(2021) | Systematic literature review (SLR),Content analysis. | Cyclical industries' stock performance reaction during COVID-19: A systematic literature review | Stock market reactions, stock price , COVID-19, Industry types, time period – October 2020, financial performance. |

| | | | |
|---|---|---|---|
| Sapra et al.(2023) | Systematic literature review, theories, contents & methodologies (TCM), antecedents, drivers & outcomes (ADO), Integrated TCM-ADO Framework, PESTLE Framework | Impact of proof of work (PoW)-based block chain applications on the environment: A systematic review and research agenda | Environmental consequences of block chain technology, energy consumption, carbon emissions, Proof – of Work(PoW), marginal profits, Non-renewable energy use & time period. |
| Kute et al.(2021) | Descriptive statistics, Inferential statistics (Hypothesis testing, regression analysis, correlation analysis), multivariate analysis, Bootstrapping. | Deep learning and explainable artificial intelligence techniques applied for detecting money laundering–A critical review | Type of deep learning model, use of natural language processing, detection accuracy, explain ability score, dataset representation, transaction volume, internet speed |
| Shefrin, H. (2013). | Content coding, meta-analysis, regression analysis( regression models & path analysis), textual analysis ( content and sentiment analysis) | Assessing the contribution of Hyman Minsky's perspective to our understanding of economic instability | Acceptance of Minsky's ideas, Influence of Minsky's work, Psychological foundations of Minsky's assertions , period of behavioral economics development. |

| | | | |
|---|---|---|---|
| Liaras ,E. & Nerantzidis,M. (2023). | Descriptive statistics, inferential statistics ( regression analysis, Chi-square test) , cluster analysis, trend analysis. | Machine earning in accounting and finance research: A literature review | Publication year, Geographic focus, machine learning model type, machine learning application, research cluster, number of publications ,research focus, time period , market type. |
| Ogunmokun et al.(2023) | Synthesis of literature, descriptive statistics, Inferential statistics (content analysis & Chi-square test) & thematic analysis. | Prospect theory and bank credit risk decision making behavior: A systematic literature review and future research agenda. | Time period, application of prospect theory, salient factors(loss aversion& risk perception) , reference point , bank credit risk decision making behavior, theoretical model of prospect theory, industry focus, regulatory environment, external economic conditions. |
| Cardoso et al.(2023) | Summary statistics, frequency distributions, correlation & trend analysis, thematic analysis, and synthesis of literature. | Measuring behavioral biases in individual investors decision making and sociodemographic correlations: A systematic review | Sociodemographic covariates, psychometric evidence, behavioral biases, behavioral biases scores, publication year, type of database. |

| | | | |
|---|---|---|---|
| Kumbure et al.(2022) | Descriptive statistics (summary statistics & frequency distributions like pie charts & bar diagrams) | Machine learning techniques and data for stock market forecasting: A literature review | Technical indicators (basic & other), macro- economy (economy performance, interest rate and money supply, exchange rates, commodities), Fundamental indicators (stock information & balance sheet and profit & loss), and others. |
| Battisti et al.(2021) | Synthesis of literature, regression models, summary statistics, frequency distributions, & trend analysis. | International marketing studies in banking and finance: A comprehensive review and integrative framework | Publication year, Journal ranking, study themes, geographic focus, Journal quality, time period, number of studies, integration of international marketing & banking/ finance. |
| Hemrajani et al.(2023) | Summary statistics, frequency distributions, regression analysis & SLR analysis. | Financial risk tolerance: A review and research agenda. | Publication year, citation counts, keywords, Journals, countries, authors, research trends & progress, & Journal quality. |

| | | | |
|---|---|---|---|
| Sesini, G.&Lozza,E. (2023) | Summary statistics, frequency distributions, regression models, & trend analysis. | Understanding individual attitude to money: A systematic scoping review and research agenda | Disciplines, methodologies, scales, key correlates (demographics, macro-economic factors, personality, financial practices & Job- related variables, measurement of money attitude, publication year, & database source. |
| French,J.(2017) | Summary statistics, frequency distributions, regression analysis, correlation analysis, VAR analysis, & Market timing model | Asset pricing with investor sentiment: On the use of investor group behavior to forecast ASEAN markets. | Investor groups, daily net purchases, macroeconomic factors, feedback trading, sentiment, market returns, market conditions, agency problems, & market liquidity. |
| Bennett et al.(2023) | Descriptive statistics (mean, median, mode, standard deviation), correlation & regression analysis, time series analysis. | BeFi meets DeFi: A behavioral finance approach to decentralized finance asset pricing. | Investor attention, sentiment, heuristics &biases, network effect, volatility, liquidity, emotions or risk perception, market structure, size of DeFi market, technological advancement in DeFi. |

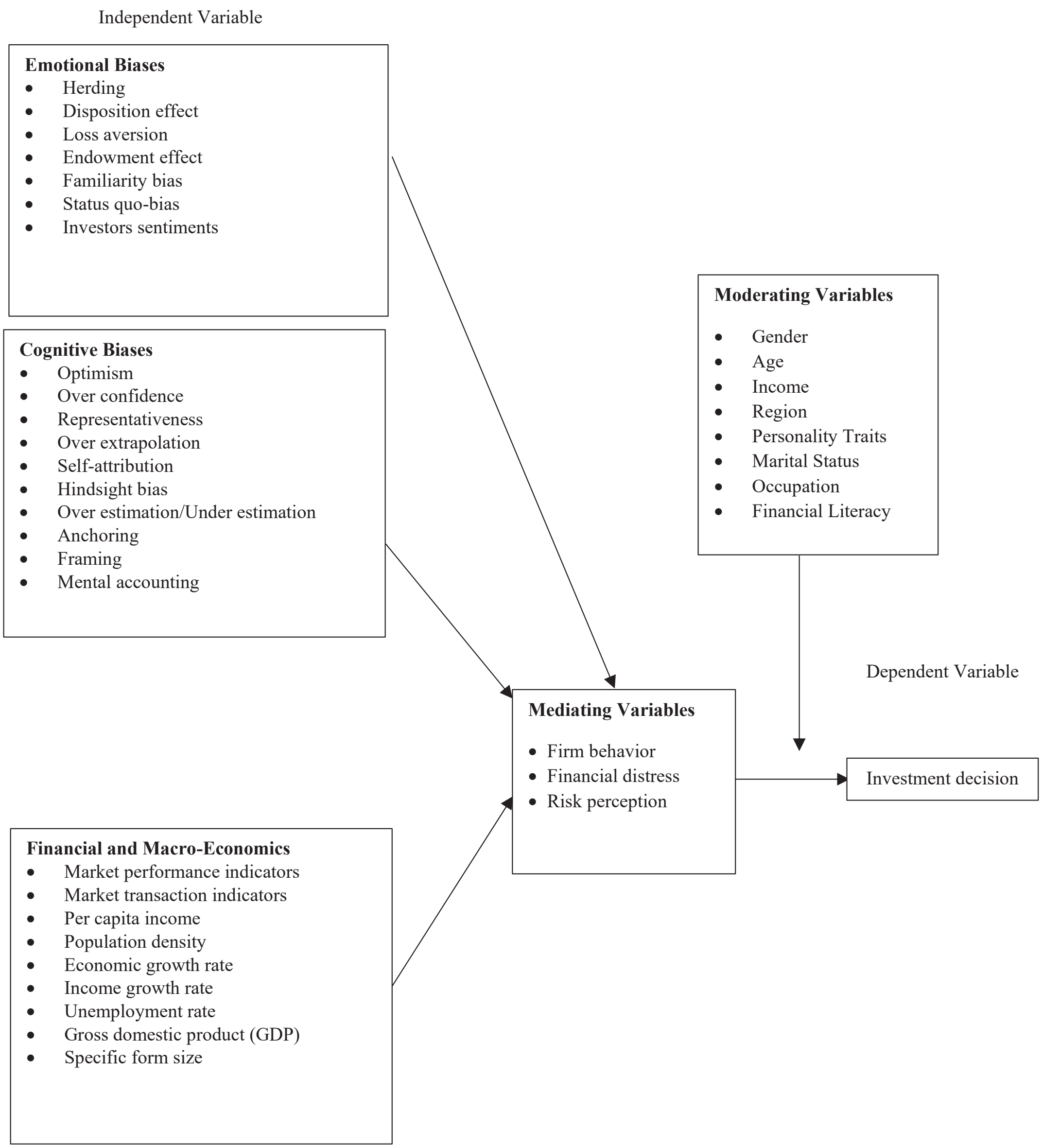
| | | | |
|---|---|---|---|
| Tao et al. (2022) | Descriptive statistics (mean, median, standard deviation), time series analysis, network analysis, regression analysis. | Environmental finance: An interdisciplinary review | Corporate social responsibility (CSR), climate negotiations, national policy, & volatility. |
| Yadav, M.& Banerji, P. (2023). | Summary statistics (mean, median, standard deviation), frequency distributions, citation analysis & Social Network analysis. | A bibliometric analysis of digital financial literacy. | Research themes (digital financial literacy), socioeconomic & demographic variables, behavioral factors, Prominent, Journals, authors, nations & citations. |
| Silva et al. (2023) | Summary statistics, frequency distributions, thematic typology analysis, comparison of empirical evidence. | Relationship between ecosystem innovation and performance measurement models | Innovation ecosystem, performance measurement models, thematic typology ( ecosystem agents, analytical focus, structured measurement tools). |

**Taxonomy Model of Behavioral Biases and Investors Psychology Impact on Investment Decision**

The main insights extracted from the systematic literature analysis addressed the presence of several behavioral biases & investors psychology that influence investment decisions besides emotional and cognitive biases there could be cultural, religious, socio-demographic, macroeconomic, financial, personality traits and other forms of biases which can impact on investment decisions either positively or negatively. The fundamental contribution of this research is the development of taxonomy in the form of the causal framework which identifies the possible behavioral biases as independent variables along with mediating, controlling and moderating variables that impact investment decisions making. Figure 3 shows taxonomy model of behavioral financial biases and investors psychology impact on investment decision.

**Figure 3**

*Taxonomy Model of Behavioral Financial Biases and Investors Psychology Impact on Investment Decision*



The researcher found that the highest average cumulative citations based on article age in 2022 on environmental finance: An interdisciplinary review and so, it is most reputed research paper and least citations in 2023 with one average cumulative citations based on article age on behavioral factors influencing investment decisions. The majority of systematic literature review articles concerned with this study published in year 2023 and minority of the study in 2022.It means that behavioral finance and investors psychology on investment decisions making using the systematic literature review had increasing trends Worldwide. The researcher found that study scope papers on behavior biases in individual investors decision and behavioral factors influencing investment decisions. Fama (1970) offered the Efficient Market Hypothesis (EMH) which give emphasis to rational investor behavior and the efficiency of stock markets. In contrast, Kahnema and Tversky (1979) developed Prospect Theory, marking the initial effort to identify irrational behaviors through behavioral biases like loss aversion and the certainty effect. Thaler (1985) proposed the 'transactional utility theory' attempt to identified behavioral biases named status quo bias, mental accounting and endowment effect. Both theories supported on this study.

The researcher found that majority of keywords are behavioral finance, behavioral biases, investment decisions, stock price and market, emotional biases and cognitive biases, investors sentiment, investor attention, financial markets, stock market prediction volatility and heuristics which all deals with irrational phenomena (Kahneman & Tversky ,1979; Thaler, 1985). The distribution of research scope across different topics and how it reflects the evolving interests in behavioral finance. To examine contributions made by seminal papers and their impact on the behavioral finance and investors psychology to developed theories in behavioral finance. The prevalence of secondary data usage and its implications quantitative research design and its effectiveness in studying behavioral finance phenomena. The variety of statistical tools used and their appropriateness for different research questions. The key insights extracted from the systematic literature review and the identified behavioral biases and their impact on investment decisions. The significance of the developed taxonomy model has been in understanding behavioral biases and their impact on investment decisions.

## Conclusion

The main purpose of the study was to conduct a systematic literature review and synthesize the existing literature on behavioral finance and investment decisions. The review of literature addressed an integrative framework that identifies the behavioral biases and investors sentiments. The researcher found that to develop a taxonomy model identifying key behavioral biases- emotional, cognitive, and financial/ macroeconomic that influence investors. It emphasizes the predominance of irrational behavior in share and financial markets, driven by biases such as fear-based sentiments and the influence of artificial intelligence. The study highlights the important influence of mediating and moderating variables, including risk perception, personality traits, financial literacy, and digital transactions. Additionally, demographic factors like age, gender, income, experience, and region play crucial roles in shaping investment decisions. These findings contribute to understanding the complex interplay between behavioral biases and investors psychology, providing valuable insights for more effective investment strategies. In addition, the proposed taxonomy model will be helpful constructs investors profile based on their risk bearing capacity in which the investors can be accessible the relevant financial products. As a result, eventually enhance the creditability of financial advisor, maximize investors capital and to protect their financial well-beings. This research study emphasized the analysis of systematic literature review on individual investors behavioral biases and investors' psychological sentiments. The future studies can be complete on institutional, group investors, entrepreneurial investors and individual investors. The behavioral biases perspective of individual investors other variables like personality traits and experiential learning can also be studied in future research direction. Moreover, the comparison between developing and developed countries can also be complete to examine the regional differences in terms of behavioral biases and investment decision.

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