ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2023; 9(8): 199-205
www.allresearchjournal.com
Received: 07-06-2023
Accepted: 16-07-2023

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An exploratory study on the influence of Behavioral finance and traditional finance on financial decision making

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Abstract
This exploratory study aims to examine the intricate interplay between behavioral finance and traditional finance in shaping individuals' financial decision-making processes. The field of finance has traditionally relied on rational assumptions derived from traditional finance theories, but behavioral finance has introduced a paradigm shift by incorporating psychological and behavioral factors into the analysis of financial decisions. This study seeks to shed light on the relative impact of both schools of thought on various aspects of financial decision making, such as investment choices, risk assessment, and portfolio management. Through a combination of literature review, survey data collection, and qualitative analysis, this research endeavors to provide a nuanced understanding of how cognitive biases, emotional influences, and socio-cultural factors interact with traditional financial principles to shape real-world financial choices. The findings of this study could have implications for financial education, advisory practices, and the development of more accurate models for predicting and understanding financial behaviors.

Keywords: Behavioural finance, traditional finance, financial decision making, cognitive biases, investment choices, risk assessment, portfolio management, psychological factors, behavioral factors

Introduction
The realm of finance has long been characterized by its reliance on rational decision-making models rooted in traditional finance theories. However, the emergence of behavioral finance has introduced a paradigm shift, challenging the notion of purely rational economic actors and emphasizing the significance of psychological and behavioral factors in shaping financial decisions. This exploratory study delves into the intricate interplay between behavioral finance and traditional finance, investigating how these two schools of thought collectively influence financial decision-making processes.
Behavioral finance explores how and why emotions and cognitive biases cause stock market oddities for investors. However, in modern finance, we take the concept of rationality and logical theory-based decisions such as the Capital Asset Pricing Model and efficient market theory, which assume that people are rational and work to maximise their wealth, but the reality is that people behave irrationally in real life, and this irrationality is linked to behavioural finance. Behavioral finance describes human actions and behaviours, whereas contemporary finance is concerned with explaining the activities of an economic man. Traditional finance is concerned with investment decisions in which complete information is provided.

Background and Motivation: Traditionally, financial decision-making models have been based on the assumption that individuals are rational and make choices solely to maximize their utility. This approach, often associated with traditional finance theories, lays the foundation for widely accepted frameworks such as the Efficient Market Hypothesis and Modern Portfolio Theory. However, the reality of financial decision-making is far more complex, involving various cognitive biases, emotions, and social influences that can deviate from rationality. This realization has led to the emergence of behavioral finance, which seeks to incorporate these human aspects into the analysis of financial decisions.

The financial landscape continues to evolve, the integration of behavioral finance concepts alongside traditional finance principles has garnered increasing attention. This study seeks to uncover the extent to which these contrasting theories collaboratively shape financial decisions, offering insights that could pave the way for more accurate models, improved financial education, and enhanced advisory practices. By bridging the gap between the rational world of finance and the intricate realm of human behavior, this research contributes to a deeper understanding of the multifaceted factors influencing financial decision-making processes.

Decision making is a critical action in the process of selecting an alternate choice from a circumstance that yields positive benefits for individuals or investors. The goal of investing is to make money for the investors. Individual market participants and information structure have an impact on investing decisions. As a result, investing can occasionally have negative effects for investors who invested for a specific reason or who are dissatisfied with the results of their investment owing to investor behaviour. According to Buchan (2001) [25], "money is desire embodied." According to Kahneman and Tversky (1979) [9] and Statman (1999) [21], people experience pain when they learn that the other option produces positive benefits. So Behavioral finance is the science that describes how individual emotions or motivations affect investors. Share prices are driven by behaviour.

Becker (1962) [26] and Thaler (1990) [10] said that in the role of Americans and Behavioral Economics and Decision Making Individuals preserve the complete information about retirement savings decisions, according to traditional theory; they can also share the information with rational decision makers. These people's properties remained consistent and well-defined across time. According to Phung (2010) [27], behavioural finance is a relatively new topic that develops the merger of psychology theory, cognitive and behavioural with finance and traditional economics to deliver the conclusion about people's illogical decision making. Behavioral finance theory was created in 1980 by a small group of academics from several areas.

According to Shefrin (1999) [13], behavioural finance is a rich extension in the subject of finance that compares the effect of psychology on the behaviour of financial practitioners. According to Statman (1999) [21], behavioural Finance also explains how emotions and cognitive mistakes affect an investor's decision-making process about an investment. Behavioral finance is composed of two reasons that individuals do not discover about their financial attitudes that explore the feelings of investors who are deviated in attitude these deviations are composed of two subcategories that are.

1. **Cognitive Deviations:** These deviations are caused by time, memory, and attention, and the constraints of these deviations are prioritised in behavioural finance.
2. **Emotional Deviation:** This is the second sort of deviation in human behaviour that is sometimes overlooked in behavioural finance. The diagram depicts behavioural finance-related investing attitudes that are redirected. According to Hirshleifer and Teoh (2002) [28], heuristic simplifications result from cognitive limits, which cause emotional deviations based on deviation assessments.

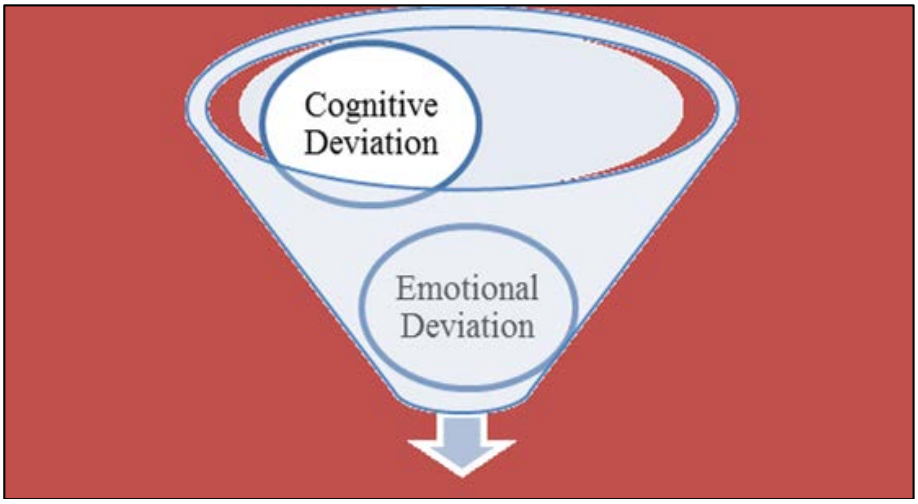

Fig 1: Behavioral Finance

Ritter (2003) [29] developed behavioural finance by employing models that are less limited than those based on Von Neumann. It is mentioned in this article that behavioural finance has two building blocks on which behavioural finance depends, which suggests that behavioural finance has dependent variables. The first is cognitive psychology, and the second is arbitrage. Cognitive psychology is concerned with thinking and any systemic mistakes that occur when people consider investing. The limitations of arbitrage refer to anticipating the most effective technique of investing or projecting when arbitrage will be beneficial and when it will not be. Behavioral finance has its own theory that helps investors make investment decisions by demonstrating market efficiency in terms of stock prices.

To potential investors Behavioral finance is concerned with people's illogical decisions. Ritter, (2002) [30] stated in a behavioural finance essay that behavioural finance is made up of two sorts of blocks: arbitrage restrictions and cognitive psychology. Cognitive psychology is the study of people's conduct when it comes to investing in stocks or other efficient market investments. Cognitive biases are connected to how people make investment decisions that reveal their influence on investment decisions and how all of these aspects related to behaviour impact our efficient

markets. The following are some cognitive psychology-related decision-making elements.

- Overconfidence
- Mental Accounting
- Framing
- Representativeness
- Conservatism
- Disposition effects
- Loss Aversion

These are the elements that pertain to an individual's cognitive psychology. When investors utilise prescriptions to discover patterns for investing decisions, the market becomes more efficient. The first element that is a dependent variable of cognitive biases is heuristics, which occur when there is a change or when they meet a change that is contrary to their rules of thumb and causes prejudices. Overconfidence is another related component that is also a dependent variable of cognitive biases, in which people are overconfident in their skills to conduct work or in their investing decisions. The second aspect is mental decision, which is based on people's thinking ability regarding decisions that are followed as distinct by some persons but are actually dependent on each other or must be joint in particular decision. Cognitive Biases have an impact on decision making processes and have an impact on investment decisions based on two sorts of variables.

1. Heuristics
2. Prospect Theory.

Diagrammatical Explanation

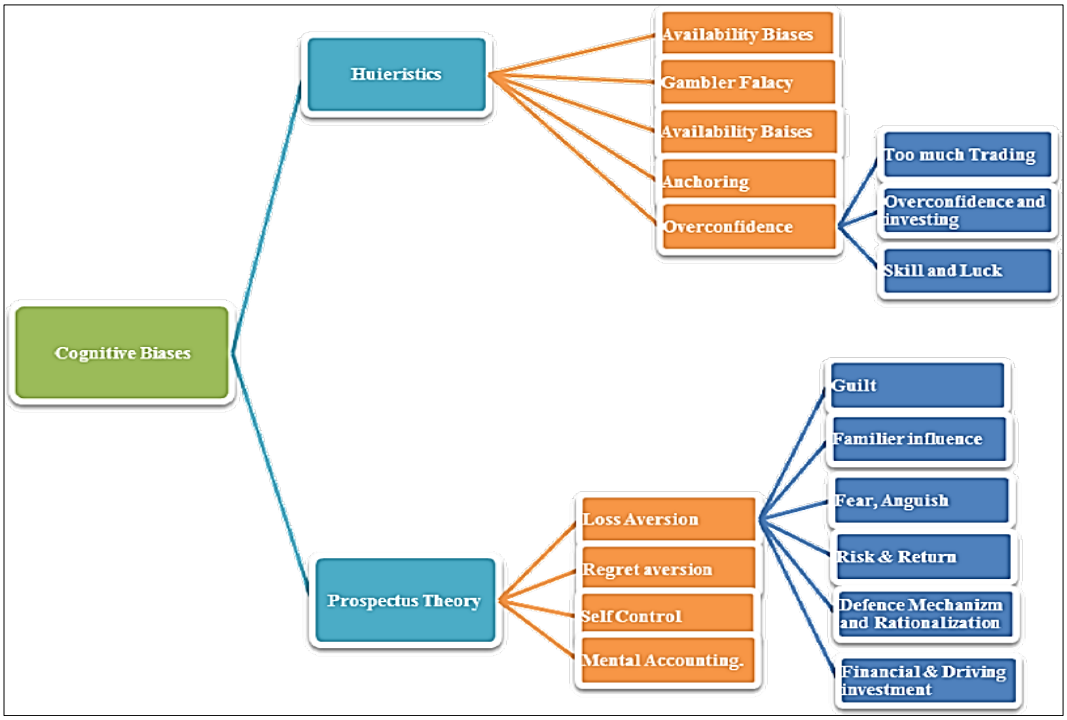

Fig 2: Diagrammatical Explanation

These two factors are moderate for cognitive biases that are reliant on a subset of independent variables that are the primary cause of producing cognitive illusions for investing decisions. Other dependent factors are separated into variable overconfidence and loss aversion. In their essay Loss Aversion: A Qualitative Study of Behavioral Finance, Kahneman and Tversky (1979) [9] wrote, "Loss Aversion is the key notion that works in behavioural finance." According to Rabin (1998) [31] and Shalev (1996), people feel significantly more grief from loss than pleasure from an identical gain. The figure below depicts the interconnectedness and how various factors are reliant or independent of one another in investment choices. Godoi, Marcon, Silva, and colleagues (2005) [2] said in their work "Loss Aversion: A Qualitative Study of Loss Aversion" Behavioral finance refers to the subjective part of financial decision-making.

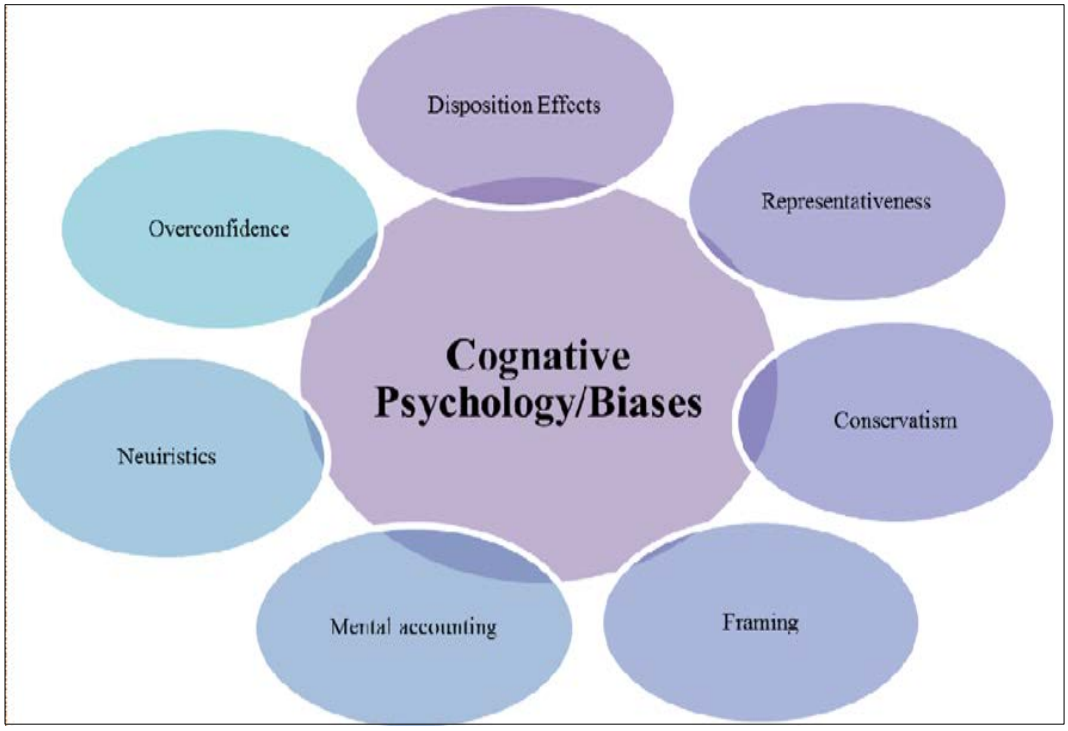

Fig 3: Cognative Psychology/Biases

Traditional finance emerged with Markowitz's (1952) [15] portfolio selection approach, which is being employed in investment decisions today. Its work lasted until Modigliani and Miller's capital structure work (1958). (Sharp; 1964, Mossin; 1966, and Fama; 1970) [32, 33, 14] offers the notion of contemporary finance's efficient market theory, which marks the emergence of modern finance. These Efficient Market Hypotheses provide efficient machine processing information on the stock market and its efficiency, allowing for better investment decisions for current and future earnings or gains. Black, Scholes, and Merton (1973) [36] developed a new theory known as option pricing theory, which is commonly utilised to evaluate options. The properties of the Utility Expected theory are similar to those of the Modern Finance theory. The conflict The study of efficient markets or market efficiency that Statman, (1999) [21] stated efficiency of market as of meaning point of view from one side view market efficiency refers to the systematic patron of trading on the other hand prices of stocks are rational that replicate only important and useful characteristics like risk that do not sport to psychology like feelings etc. According to Byrne and Utkus in "Why bother with behavioural finance?" In conventional theory, investors are not perplexed by the information presented to them, hence a typical.

The Study's Objective

This study aims to explore the dynamic relationship between behavioral finance and traditional finance and to uncover how these contrasting perspectives collectively shape individuals' financial choices. By examining the interplay between rational financial principles and psychological biases, this research seeks to contribute to a more comprehensive understanding of the decision-making processes that underlie investment choices, risk assessment, and portfolio management.

Human psychology has a significant part in making decisions regarding certain actions. It is natural for humans to make mistakes. There is a need to understand cognitive biases and emotional deviation, as well as the elements influencing people's decision-making processes. Most important questions with needed answers How can cognitive biases impact investors' psychological approaches to making decisions regarding certain actions? Is there a link between behavioural and conventional fiancés that shows their influence during the decision-making process? What factors are considered? finance assumption does not correspond to reality.

The Study's Contribution

This study investigates the influence of behavioural and conventional finance on the decision-making process of investors. This study is useful or may be used as a tool to assist investors make better decisions. This will also assist to reduce the likelihood of errors.

The Study's Limitations

Because this study does not pertain to any specific group or area, the conclusions cannot be generalised to the entire domain. It is heavily dependent on the opinions and outcomes of the many authors, although certain findings/points can be applied to individual investors.

Scope and Limitations

It is important to acknowledge that this study is exploratory in nature, aiming to provide an initial insight into the interaction between behavioral finance and traditional finance. The research will focus on reviewing existing literature, gathering survey data, and conducting qualitative analyses to examine the relative impact of these two approaches on financial decision-making. While the study aspires to shed light on the complex interrelationships, it may not be able to comprehensively cover every nuance within these expansive domains.

Traditional finance and behavioural finance's impact on investment

Olsen (1998) [36] stated in "Investor Irrationality and Self-Defeating Behavior" that people's behaviour is rational in traditional finance, which creates profit maximisation, which is an incomplete model that does not fully consider people's behaviour for investment, which is studied in behavioural finance. The Efficient Market Hypothesis (EMH) is a fundamental tenet of rationality in Semi. Strong forms of efficient market hypothesis are linked with all current and prior information relating to asset price ups and downs.

Traditional finance considers investment decisions on rationality idea that considers reasonable conduct of individuals about investing. However, there is no precise rationality in the actual world, therefore its influence on investment decisions is limited. Arises from the change of market share prices Behavioral finance influences investment decisions that are influenced by people's biases and emotions, much as classical finance influences investment decisions. Behavioral finance influences investor decisions as well. Baker and Haslem (1974) [34] noted that "the projected returns dividends and financial stability of the business are major investment factors for individual investors." Baker and Haslem (1977) [35] emphasised that "investors behave rationally and take into account investment risk and return tread off."

Modern finance use mathematical models for financial interpretation in order to make investment decisions, which has grown in popularity over the last few decades. Investment is based on financial runs, which are more prevalent in a country crises that arise in stock market due to any reasons that impact on investment decision for investors of stock market face the inconsistency in their investment behavior that may be the change in return rate or systematic or nonsystematic risk which effect investors investment in stock market.

Factors that influence the investors decision making of investment related developing country like Pakistan behavior of investment have different pattern in same society and same income group as Mishra & Dash, (2010) [5] stated that the level of risk is dependent of age and people show the different level of risk due to difference in age group as tolerance of risk level during decision making is difference in genders. Means the age and gender differences are also factors for investment that may be the finance. individual's behaviour According to Sultana (2012) [38], the other most influential aspect is "stock marketability, historical performance of the stock, current price volatility, risk reduction, wealth maximisation, social duty, and expert advice." Barber and Odean (2008) [39] observed that most traders like to buy stocks that have received a lot of attention in the market or in the press, and they prefer to invest in stocks that have given them a lot of money in the past.

Ahmed and Khalil (2011) [8] introduced the notion of individual choice making and the influence of rational and illogical decisions. According to Wickham (2003) [40], humans experience decision bias as a result of representative heuristics that push them to overvalue low probability behaviours, which leads to wrong conclusions.

concerning the new commercial endeavours Griffin and Tversky (1992) [20] go on to say that when individuals make decisions about future investments, they overlook statistical explanations and assign greater weight to source, which implies they are skewed towards strength rather than fault. Kliger and Kudryavtsev (2010) [5] extended on individual decision making by stating that people typically make decisions based on prior experience in the context of heuristics. Sevil *et al*. (2007) [41] also claimed that heuristics have a large impact on the stock exchange decision Comparison of Study Results Finding Factors Influence and Checking Impact of Behavioral Finance and Traditional Finance in Developing Countries Like Pakistan:

The study of research consists of secondary data from research that uses a comparison method of descriptive research on the hypothesis of rational decision preference or irrational decision are preferred by investors. Citations used for analysing outcomes to explain behavioural finance and traditional finance in poor nations like as Pakistan, taking into account variables influencing individual investor decisions. The following citations draw conclusions regarding decision making in Pakistan based on the preceding material. N. Ahmed *et al*. (2011) [8] indicated that decisions had a large effect on small investors on the Lahore Stock Exchange. In their research, they determined that individual investors' behavioural judgement while investing is influenced by rationality.-making process. Using basic SPSS 16.0 descriptive study of investor behaviour, they either follow logic or do not. This study concluded that investors on a small scale, such as the Lahore market, do not make decisions based on all available information, but rather make illogical decisions.

T. Bashir *et al*. (2013) [42] conducted an evaluation study on the "factors impacting individual investor decision making behaviour" using primary data direct. Questioners utilised a 125 sample size, 33 items with a 6-month effect, and 34 variables to demonstrate that investors' conduct is logical or irrational based on cognitive and emotional factors. This study concludes five types of factors: accounting information, self-image, neutral information, firm image, personal financial requirements, and advocacy. Cranach alpha for data dependability is 0.620, 0.672, 0.414, 0.588, and 0.617, according to the guideline. "This research found that dividend paid reputation of the firm, feeling for firm's products, get rich quick and firm's involvement in solving community problems are high on the list of criteria that a high percentage of individual investors consider when choosing stock investments, namely 77.6%, 71.2%, 71.2%, 70.4%, and 68.8%." On the other hand, financial market conditions, stock marketability, firm majority stockholder opinion, and attractiveness of non-stock investment are the least important factors to most investors when making investment decisions, i.e. 28%, 25.6%, 23.2%, and 16%, respectively, and only a small percentage of individual investors consider them important investment decision criteria." Criteria for evaluating investors.

Fig 4: Investors decision making

Ali and Kashif ur Rahman (2013) [4] employ primary data analysis in "stock selection behaviour of individual equity investors in Pakistan" to conclude investors' investment behaviour by applying hypothesis, and their findings are as follows.

The following research examines variables and results that influence investment decisions:

Downward Spiral Weights: routes, estimations, Standers Error, P value, and their descriptions are as proven by primary data study.

All of the study's findings point to the stock selection behaviour of individual investors in Pakistan. The supported description demonstrates the influence of the hypothesis and acceptance criteria.

According to Singh (2012) [43] in Investor Irrationality and Self-Defeating Behavior: Insights from Behavioral Finance, when new information is introduced, anchoring and overconfidence are modified by analysts, and these biases may result in the following scenarios:

1. Price changes cause a reaction.
2. Future implementation of prior practises
3. Failure to pay attention to the requisite underlying stock.
4. An overemphasis on popular stocks.

Proponents of EMH, in reality, utilised tiny money to aggressively keep prices at their initial level. According to the findings, reasonable investors cannot disregard the acts of their irrational counterparts. According to Edward and Miller (1977) [7], this is "primarily due to the difficulties of smart money to participate in short sells when the majority of shares are owned by irrational investors." Previous research and literature demonstrate how human decisions are influenced by their behaviour and market knowledge. With the examination of research comparison, I concluded some recommendations for developing-country investors in this research paper to make judgments

First, investors should recognise the prejudices and do their best to prevent individual bias preferences. Second, investors should be aware of their investment criteria and the reasons for investing in that area. If investors are aware of their investment area and purpose, they will be more aware of their losses and will take some measures toward rational investment. The third benefit of investing is diversity, which provides individuals with more protection for their investments.

Conclusion

It has been determined that behavioural finance and conventional finance impact investors' investing decisions. Behavioral variables are certainly important in traders' decision-making processes. Investor cognitive behaviour is crucial, implying that human psychology cannot be ignored while making investing decisions. Prospect theory and Heuristics contribute to irrationality in behavioural finance. Investors' rational views of classical finance efficient market hypothesis play a vital part in creating greater profit; but, in developing nations such as Pakistan, rational decisions are impossible owing to uncertainty and a lack of available information to investors. There are other more aspects to consider while looking for logical information for investment, such as cost and time waste or opportunity elimination danger. It has been determined based on the examination of several studies. That behavioural finance plays a larger part in investor decision making than rational investment decisions, and that more behavioural finance considerations are taken into account by investors when making investment decisions.

References

1. Aduda J, Oduor EO, Onwonga M. The Behavior and Financial Performance of Individual Investors in Trading Shares of Companies Listed on the Nairobi Stock Exchange in Kenya, Journal of Finance and Investment Analysis. 2012;1(3):33-60.
2. Godoi CK, Macon R, Silva AB. Loss Aversion: A Qualitative Study of Behavioral Finance. 2005;31:4.
3. Xavier De Scheemaekere. 'The Epistemology of Modern Finance,' Journal of Philosophical Economics. 2009;2(2):99-120.
4. Ali I, Kashif Ur Rahman. stock selection behaviour of individual equity investors in Pakistan, Middle-East Journal of Scientific Research. 2013;15(9):1295-1300.

5. Kliger D, Kudryavtsev A. Investor Reaction to a Company-Specific Event and the Availability Heuristic in Journal of Behavioral Finance. 9th, Kabra, Mishra, and Dash. 2010;11(1):50-65.
6. Factors Influencing Generational Investment Decisions in India: An Econometric Study, Asian Journal of Management Research.
7. Miller Edward M. Risk, Uncertainty, and Opinion Divergence, Journal of Finance. 1977;32(4):11511168.
8. Ahmed N, Ahmad Z, Khalil S. Behavioral Finance: Shaping the Decisions of Lahore Stock Exchange Small Investors. Interdisciplinary Journal of Research in Business. February 2011;1(2):38-43).
9. Kahneman D, Tversky A. Prospect Theory: An Analysis of Decision under Risk. Econometrica. 1979;47(2):263-291.
10. Thaler RH. Toward a Positive Theory of Consumer Choice. Journal of Economic Behavior and Organization. 1980;1(1):39-60.
11. Shiller RJ. Irrational Exuberance. Princeton University Press; c2000.
12. Barberis N, Thaler R. A Survey of Behavioral Finance. Handbook of the Economics of Finance. 2003;1:1053-1128.
13. Shefrin H. Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing. Oxford University Press; c2002.
14. Fama EF. Efficient Capital Markets: A Review of Theory and Empirical Work. The Journal of Finance. 1970;25(2):383-417.
15. Markowitz HM. Portfolio Selection. The Journal of Finance. 1952;7(1):77-91.
16. Malkiel BG. The Efficient Market Hypothesis and Its Critics. Journal of Economic Perspectives. 2003;17(1):59-82.
17. Barber BM, Odean T. Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment. The Quarterly Journal of Economics. 2001;116(1):261-292.
18. DellaVigna S, Malmendier U. Contract design and self-control: Theory and evidence. The Quarterly Journal of Economics. 2004 May 1;119(2):353-402.
19. Odean T. Are investors reluctant to realize their losses?. The Journal of finance. 1998 Oct;53(5):1775-98.
20. Tversky A, Kahneman D. Advances in Prospect Theory: Cumulative Representation of Uncertainty. Journal of Risk and Uncertainty. 1992;5(4):297-323.
21. Statman M. Behaviorial finance: Past battles and future engagements. Financial analysts journal. 1999 Nov 1;55(6):18-27.
22. Lo AW. Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis. Journal of Investment Consulting. 2005;7(2):21-44.
23. Mullainathan S, Shafir E. Scarcity: Why Having Too Little Means So Much. Macmillan; c2013.
24. Baker M, Wurgler J. Investor Sentiment and the Cross-Section of Stock Returns. The Journal of Finance. 2006;61(4):1645-1680.
25. Buchanan A, Brock DW, Daniels N, Wikler D. From chance to choice: Genetics and justice. Cambridge University Press; c2001 Nov 12.
26. Becker GS. Investment in human capital: A theoretical analysis. Journal of political economy. 1962 Oct 1;70(5, Part 2):9-49.
27. Phung OJ, Scholle JM, Talwar M, Coleman CI. Effect of noninsulin antidiabetic drugs added to metformin therapy on glycemic control, weight gain, and hypoglycemia in type 2 diabetes. Jama. 2010 Apr 14;303(14):1410-8.
28. Hirshleifer DA, Lim SS, Teoh SH. Disclosure to a credulous audience: the role of limited attention. Available at SSRN 604143; c2002 Oct 22.
29. Ritter JR. Behavioral finance. Pacific-Basin finance Journal. 2003 Sep 1;11(4):429-37.
30. Ritter JR, Welch I. A review of IPO activity, pricing, and allocations. The journal of Finance. 2002 Aug;57(4):1795-828.
31. Rabin M. Psychology and economics. Journal of economic literature. 1998 Mar 1;36(1):11-46.
32. Sharp JT, Henry JP, Sweany SK, Meadows WR, Pietras RJ. The total work of breathing in normal and obese men. The Journal of clinical investigation. 1964 Apr 1;43(4):728-39.
33. Mossin J. Equilibrium in a capital asset market. Econometrica: Journal of the econometric society. 1966 Oct 1:768-83.
34. Baker HK, Haslem JA. The impact of investor socioeconomic characteristics on risk and return preferences. Journal of Business Research. 1974 Oct 25;2(4):469-76.
35. Baker HK, Hargrove MB, Haslem JA. An empirical analysis of the risk-return preferences of individual investors. Journal of Financial and Quantitative Analysis. 1977 Sep;12(3):377-89.
36. Black F, Scholes M. The pricing of options and corporate liabilities. Journal of political economy. 1973 May 1;81(3):637-54.
37. March JG, Olsen JP. The institutional dynamics of international political orders. International organization. 1998;52(4):943-69.
38. Sultana A, Kumar A. Optimal siting and size of bioenergy facilities using geographic information system. Applied Energy. 2012 Jun 1;94:192-201.
39. Barber BM, Odean T. All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. The review of financial studies. 2008 Apr 1;21(2):785-818.
40. Wickham MQ, Erickson GR, Gimble JM, Vail TP, Guilak F. Multipotent stromal cells derived from the infrapatellar fat pad of the knee. Clinical Orthopaedics and Related Research®. 2003 Jul 1;412:196-212.
41. Sevil G, Sen M, Yalama A. Small Investor Behavior in Istanbul Stock Exchange (ISE). Middle Eastern Finance and Economics. 2007;1:74-9.
42. Bashir T, Azam N, Butt AA, Javed A, Tanvir A. Are behavioral biases influenced by demographic characteristics & personality traits? Evidence from Pakistan. European Scientific Journal. 2013 Oct 1;9(29).
43. Singh S, Darroch JE. Adding it up: costs and benefits of contraceptive services-estimates for; c2012.