

**Maqsut Narikbayev**

**KAZGUU University**



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OF ECONOMICS KAZGUU**

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**« Mind and Money: Exploring Psychological Factors Shaping Financial  
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**Written by: Nazerke Nuraly**

**Supervisor: Nursultan Bazarbay**

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## **Abstract**

This study examines how psychological biases shape financial decisions and investor behavior. The literature review includes historical development, frameworks of behavioral finance and studies of heuristic and biases of psychology. The FTX cryptocurrency exchange case has been investigated in the context of behavioral finance. The research also includes the impact of psychological factors on investors in Kazakhstan, using a survey and interviews. The results of the FTX Case Study showed that investors in this situation were exposed to biases such as representativeness, availability, overconfidence, over-reaction and herd effect. The analysis of the survey of psychological variables for investors in Kazakhstan showed that they are vulnerable to the effects of prejudice, such as anchoring bias, availability, overconfidence, over-reaction and herd effect. The results of the survey were confirmed by an analysis of interviews. Common biases have also been identified between FTX Case and result of Kazakhstan's behavioral aspects. The analysis sheds light on the importance of understanding the role of psychology in the world of finance, both in the context of the FTX case and in relation to the Kazakh financial market. In general, the results make it possible to understand what biases an investor needs to work with both in the Kazakh market and in the global market.

Key words: behavioral finance, Kazakhstan, Investor behavior, FTX case, Investment Decisions

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## Introduction

Behavioral finance represents a paradigm shift in the understanding of financial markets and investment decisions by incorporating insights from psychology into traditional financial process. Unlike classical finance, which assumes that individuals are rational and consistently make decisions aimed at maximizing utility, behavioral finance recognizes the complexities of human behavior. It delves into the realms of cognitive biases, emotional responses, and the psychological factors that significantly influence financial choices.

Financial market stability, investment strategy performance, and investor well-being are all dependent on not only economic variables, but also the psychological features of their adoption. The recognition of the significance of these psychological aspects in their interaction with financial decisions highlights the need for further research into this topic.

The 2017 Nobel Prize in Economics was bestowed upon Richard H. Thaler in recognition of his groundbreaking work in behavioral economics. This prestigious award significantly highlighted the burgeoning disciplines of Behavioral Economics and Behavioral Finance to the wider public and academic communities. Additionally, Princeton Psychologist Daniel Kahneman believes “Psychology has a story to tell about investing, and it is different from the one economics tells”. This narrative, championed by psychologists such as Daniel Kahneman, Richard H. Thaler, and others, underscores the importance of understanding human behavior to comprehend market dynamics (S. Kevin, 2022).

This study is comprised of two main components. First, it will delve into the recent excessive-profile case involving FTX and its founder, Sam Bankman-Fried, in the context of the psychological dynamics that play in contemporary financial crises. The collapse of FTX have captured worldwide interest, highlighting the dangers and psychological underpinnings related to the rapidly evolving digital financial panorama. This incident is a powerful illustration of the complex relationships that exist between investor behavior, financial institution trust, and the effects of psychological biases the cryptocurrency industry. By inspecting the mental aspects of monetary decision-making against the backdrop of the FTX disintegrate, this thesis ambitions to shed light at the broader implications of such excessive-profile financial events for investor conduct. It will discover how the narratives and perceptions surrounding those activities can influence investor confidence, risk assessment, and decision-making processes.

Having analyzed the FTX case and having identified main types of biases evident in that case, the study will look into the psychological factors that Kazakhstan's investors must deal with. In Kazakhstan, the topic of stocks and investments has not been widely developed in the past. This is due to various factors, including a lack of available information, distrust of financial markets, and cultural investment preferences. However, there has been a significant shift in recent years. The growing economy, the improvement of the investment climate and the development of financial instruments have attracted an increasing number of people to the financial markets. This growing interest in investing underscores the need for research aimed at understanding how mental biases and psychological factors influence financial decisions in a market that sits at the intersection of traditional and modern monetary participation.

Furthermore, the study will compare the outcomes of the two components to see if investors in developed markets and frontier markets share the same behavioral biases.

The purpose of this study is to analyze the psychological factors influencing financial decisions and investor behavior, with particular attention to their role in financial crises such as the FTX crash, as well as factors faced by investors in Kazakhstan, in the context of growing interest in the country's financial markets.

The rest of this thesis is stated as follows. The second section provides an overview of the literatures about historical development and conceptual framework of behavioral finance and the studies about analyzing behavioral heuristics and biases. The third section describes the types of psychological biases that were used for analysis in this study and also includes research methods. The fourth section provides analysis of psychological biases in the context of FTX and Kazakhstan. The last section provides the discussion of results of analysis followed by concluding remarks.

## Literature review

### Historical Development

The origin of behavioral finance may be traced back to 1912, with the publication of George Seldon's book, *The Psychology of the Stock Market*. Nonetheless, the idea garnered widespread acceptance and traction in 1979, when Daniel Kahneman and Amos Tversky proposed that the majority of investors tend to rely on subjective criteria rather than objectively selecting the optimal choice.

A few years later, in 1985 Richard Thaler presented the concept of "mental accounting," which posits that individuals see and manage their money differently depending on its designated purpose, such as saving for retirement or a student fund. Ultimately, their efforts served as the foundation for the examination of cognitive psychology and behavioral biases in finance, which holds a significant position in the realm of behavioral finance. After that, Thaler with De Bondt in 1985 introduced the phenomenon over reaction in the stock market. Shefrin and Statman established a capital asset pricing theory in a market with noise and information traders. Information traders are cognitively error-free, but noise traders make them. The theory determines the mean-variance efficient frontier, market portfolio return, term structure, and option prices. The research derives a necessary and sufficient condition for price efficiency in the presence of noise traders and evaluates their effects on price efficiency, volatility, return anomalies, volume, and noise trader survival (Hersh Sh., Meir S..1994). Shleifer, (2002), by exploring the linkage of behavioral finance with Efficient market Hypothesis to find that stock markets are inefficient. Fernandes, J., Pena, J.I., and Benjamin,T. in 2009, through their working paper Behavior Finance and Estimation Risk in Stochastic Portfolio Optimization, they classified behavioral biases into "Cognitive biases" and "Emotional biases" (P.Veni, R.Kandregula, 2020).

In general, over the years, many scientific articles, studies, and books have been written in the field of behavioral finance. Researchers have discovered various theories and also psychological factors influencing the process of forming an investor's decision, which will be discussed in the next section.

### Conceptual Framework

#### Prospect Theory

The field of behavioral finance has evolved over time, incorporating findings from psychology and sociology into the theories of finance. Initially, there was little impact of behavioral research on economics, with no existence of behavioral economics. However, in the early 1970s, Richard Thaler, a graduate student in economics,

demonstrated the cognitive bias called the endowment effect, which marked the beginning of behavioral economics. The field matured when Daniel Kahneman and Amos Tversky published prospect theory, and Kahneman received the Nobel Prize for Economics in 2002, showcasing the acceptance of behavioral research in the field of study (Muradoglu and Harvey, 2012). The theory is formulated for uncomplicated scenarios with financial consequences and expressed probability, but it can be expanded to encompass more complex decisions. People cannot rationally assess either the magnitude of the expected benefits or losses, nor their probability.

1. People react differently to equivalent situations depending on whether they are losing or winning.

2. People tend to make mistakes when assessing probability: they underestimate the probability of events that are likely to occur, and overestimate much less likely events. A normal person is not able to correctly assess future benefits in absolute terms, in fact, he evaluates it in comparison with some generally accepted standard, trying first of all to avoid deterioration of his situation.

Prospect theory identifies two stages in the decision-making process: editing phase and evaluation phase. At the first stage, a preliminary analysis of alternatives takes place and their presentation in a simplified form more convenient for the subject. At the second stage, the alternatives processed and presented in a suitable form are evaluated, and a final decision is made.

If a person makes a sequence of decisions under conditions of risk and uncertainty, he evaluates the benefits and losses at each step and never integrates them into a single benefit or loss and does not assess the impact of the entire sequence of decisions on his well-being. With the same risks, people are more inclined to maintain the achieved financial level than to increase it. Under equivalent conditions, the possibility of small losses repels private investors more than achieving significant income. They avoid risk in a growing market and are more tolerant of it in a declining one.

The peculiarity of the prospect theory: it was obtained inductively in the course of psychological experiments, and only then it was improved.

The essence of the theory: when making decisions, a person is guided not by abstract principles of maximizing pleasure and minimizing losses, but first encodes the possible consequences of his actions as benefit or harm, depending on the chosen guideline, using relative rather than absolute values (Kahneman & Tversky, 1979).

### Loss Aversion

A key component of Prospect Theory is the concept of loss aversion. It is the tendency of individuals to see a real or potential loss as more psychologically or emotionally impactful than an equivalent gain (Tversky, 1991). For example, the anguish experienced from losing \$100 is frequently much more intense than the happiness derived from discovering an equivalent sum (Liberto, 2022). Researchers have utilized the concept of loss aversion to gain insights into several facets of individual decision-making and the valuation of assets in financial markets. Currently, certain additional assumptions have been made in order to derive these consequences. Loss aversion impacts financial markets by influencing the risk preferences of market participants. Overall, loss aversion is an important component in our comprehension of financial markets (Yang, 2019).

### Mental Accounting

Richard Thaler (1999), pioneered the concept of mental accounting in 1999. The concept was published in a paper titled "Mental Accounting Matters," defined mental accounting as "the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities". Mental Accounting Bias is present when investors select assets for their risky and safe portfolios. To protect the former from the negative effects of the latter, investors separate their safe portfolios from their speculative portfolios. (Mathur, 2023).

### Nudge Theory

In their 2008 book "Nudge: Improving Decisions about Health, Wealth, and Happiness", economists Richard Thaler and Cass Sunstein gave a definition of the theory Nudge: it is asserted that by taking advantage of human cognitive biases (based on psychology research), we have the ability to intentionally shape the way information and options are presented to people, hence exerting control over their behavior. In other words, individuals can be influenced or guided to attain specific outcomes. In financial markets, nudge theory is currently employed by regulators and financial intermediaries to influence investor behavior. This is done by altering how investment options are presented and selectively providing information (Cai, 2020). Mark (2022), in his article explored the application of nudge theory, in the field of finance to promote improved decision-making in the areas of saving and investing. Nudge theory entails the strategic manipulation of options to steer individuals towards more advantageous alternatives, such as augmenting their retirement savings, but still preserving their autonomy to choose. Jim Coke also stated that the application of Nudge theory can assist individuals in the decision-making process within the banking industry (Coke, 2020). Along with the

good influence of theory, Change (2020) in her article also warned of the "dark side" of nudges in financial advice. When financial advisors use nudges primarily for profit, it can lead to the exploitation of customers.

### Endowment Effect

The gift effect refers to the phenomenon in which people tend to value an object they own at no lower than the price they would like to receive for selling the same object if they had one. (Kahneman et al., 1991). Two primary psychological factors have been identified as the sources of the endowment effect, according to research. Ownership: Numerous studies have consistently demonstrated that individuals tend to assign a higher value to an object they possess compared to a similar item they do not possess, aligning with the well-known saying. Loss aversion is the primary factor that causes investors to hold onto unprofitable assets or trades, as they perceive the market value to be lower than their own valuation (Ganti, 2023). Ericsson & Fuster (2014), also consider that this behavior may be best explained by psychological factors related to loss aversion.

### **Heuristics and Biases**

Understanding psychological variables affecting financial decisions and investment behavior is important for many reasons. First, it identifies and explains investment irrationality. Traditional financial theories presume rational investors and efficient markets. However, behavioral finance research has demonstrated that investors can be impacted by biases and emotions. Second, knowing psychology helps improve financial decisions. Cognitive bias, overconfidence, self-attribution bias, and herd behavior can cause poor financial judgments. Gaining insight into the psychological factors that influence financial decisions and investor behavior is crucial for accurately forecasting market trends, enhancing investing choices, and mitigating biases and irrational behavior. By incorporating psychological insights into financial theories and procedures, investors might enhance their decision-making abilities. Author believes that when analyzing the psychology of investors in making investment decisions, it is crucial to include their attitudes, emotions, moods, sentiment, personality traits, perspective towards investing, and sentiments (Boda, 2018).

It is worth noting that cognitive biases and heuristics overlap. These two phrases are sometimes used interchangeably, as if they were synonyms; nevertheless, their connection is more complex. Gonzalez (2017) outlined the differentiating factor between the two terms: "Heuristics are the 'shortcuts' that humans use to reduce task complexity in judgment and choice, and biases are the resulting gaps between normative behavior

and the heuristically determined behavior.” Tversky and Kahneman (1974), in their book "Judgment under uncertainty: Heuristics and biases." Explain the link between biases and heuristics as follows: "... cognitive biases that stem from the reliance on judgmental heuristics.”

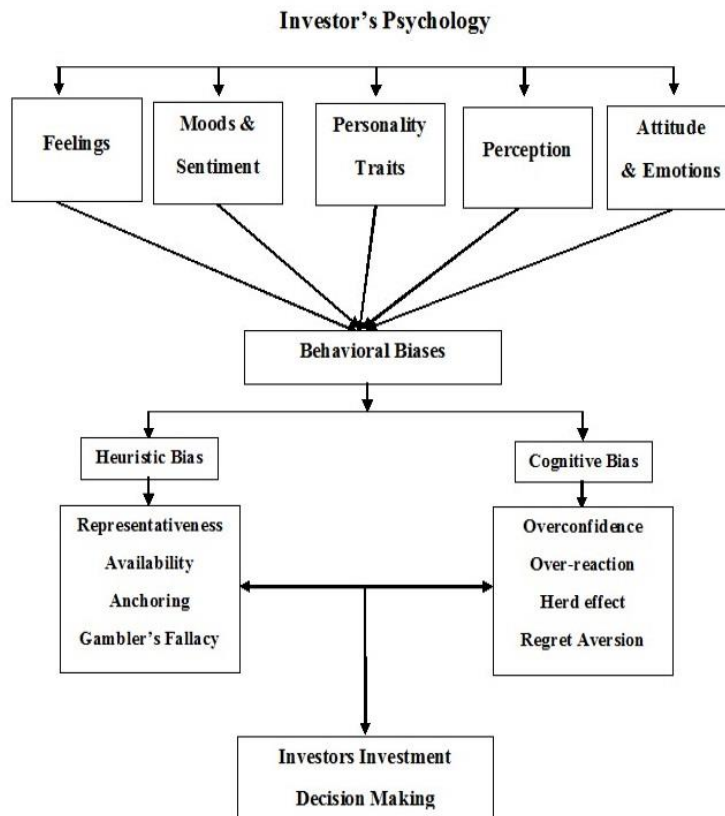


Figure 1: Psychological approach to Investment Decision making (Boda et al.,2018)

In contrast to standard finance theories, psychological biases can help explain and solve market oddities to some extent. The evidence of behavioral finance theory helps in further understanding behavioral psychology and give deeper insight into stock market anomalies and strategies for investment selection.

#### Representativeness heuristic

Psychologists Amos Tversky and Daniel Kahneman first discovered the representativeness heuristic in the 1970s. They found that people often rely on stereotypes and generalizations when making judgments and decisions because it is quicker and easier than considering all the relevant information. Example: Driving an expensive automobile indicates wealth, even if they purchased it secondhand or on lease. Meng Chen Gong et al. (2004) in their study suggest that experienced investors are more likely to make trading blunders and suffer from representational bias.

Kalyan and Gurusamy (2018) also believe that psychology biases including overconfidence, anchoring, representativeness, loss aversion, regret minimization, and framework reliance impact investing decisions and understanding behavioral finance may help investors detect and control these biases, improving investing decisions.

#### Availability heuristic

Investors prioritize making judgments based on readily available facts. This happens pretty frequently. This leads to lower returns and possibly bad results (S.Thakur. 2017). For example, plane disasters might cause people to be scared of flying. Chen, C. S. (2017) in his paper suggested that the availability heuristic plays a role in investor behavior related to the January effect. In the context of the Taiwanese stock market, the study proposes that investors place more emphasis on readily available information from well-known electronics firms, especially when they receive bonuses and are aware of the impending stock market holidays due to Chinese New Year. This leads to a higher demand for stocks in the electronics industry in January compared to other industries when there is limited thinking time for investment decisions before the specific stock market holidays. Kluger (2010) and Matos (2022) also revealed evidence of the presence of heuristics in investors' decisions in various situations.

#### Anchoring heuristic

Anchoring occurs when investors base their judgments on the early information they get, and then make subsequent decisions based on that earlier knowledge (Svoboda, 2022). For instance, a salesman might propose an extremely high price to begin discussions that is objectively well over fair value.

Gupta (2016) considered that anchoring bias refers to the tendency of investors to fixate on a reference point or price level when making investment decisions, even if that reference point is not relevant to the current decision-making process. This bias can lead to investors buying stocks at high prices or selling them at low prices, based on their fixation on a previous high or low point of the stock's price. According to the research, experienced investors in the Indian stock market are more prone to experiencing anchoring bias compared to less experienced investors. Their research shows that 41% of experienced investors indicated a tendency to hold onto stocks that have gone down in value, waiting for them to reach previous highs. The research findings confirm that experienced investors are more likely to exhibit anchoring bias than less experienced investors. Jain (2021), Kalyan and Gurusamy (2018), Charles, et al., (2016) in their investigation determined anchoring bias as crucial factor in decision-making process of investor's.

### Gambler's Fallacy

The gambler's fallacy is the false notion that previous occurrences can impact future events that are completely unrelated to them in fact. The gambler's fallacy might lead someone to believe that if a coin has landed on heads twice in a row, it is "due" to land on tails on the next toss.

The gambler's fallacy, alternatively, is rooted within the law of small numbers and the misunderstanding of independence in random events. It embodies the expectation that a deviation from what takes place on common or inside the long term may be corrected within the quick time period. Tversky and Kahneman (1971) highlighted this fallacy in their work on cognitive biases, demonstrating how people anticipate consequences in random sequences to self-correct. This fallacy is specially widespread in gambling scenarios, in which gamers modify their bets inside the expectation that their success ought to exchange after a losing streak. (Xu & Harvey, 2014)

Cognitive bias is the second classification of biases. Cognitive biases play a crucial role in influencing how investors analyze information, perceive risk, and ultimately make financial choices, often resulting in suboptimal outcomes (Charles & Kasilingam, 2016). It highlights that investment choices are often swayed by cognitive biases and they lead to deviations from rational decision-making, as investors might rely more on intuition or subjective judgment rather than objective analysis. It also notes that personality traits and emotional factors further compound these biases, affecting risk perception and investment behavior.

### Overconfidence bias

Ricciardi (2008) identified overconfidence, as another characteristic that influences a person's risk perception since there are many ways in which an individual tends to be overconfident about their decisions in terms of risk-taking behavior. Example: Ignoring data which shows that most M&A deals do not deliver the projected results and that they usually fail (Moeller, S.,2022). Zhang, Y. (2023) concluded that overconfidence bias shows a different relationship with return yield in the initial, completion, and diminishing periods. Additionally, overconfidence bias for investors exists. The characteristics of better-than-average-effect (BTAE) and the illusion of control have different effects on trading volume, return volatility, and market efficiency, and the role of contrarian investment strategy (CIS) in overcoming this bias is discussed. Madaan, (2016) and Prayudi, (2023) also indicated that overconfidence boosts decisions.

### Over-reaction bias

Overreaction bias in finance refers to a tendency where investors react excessively to new information, causing stock prices to move sharply and disproportionately. Investors tend to exhibit an exaggerated response to negative information and hence adopt a pessimistic approach when making financial choices. Investors who have undergone significant stress or trauma tend to have a heightened level of reactivity, primarily due to their risk-averse nature (Cohn, Engelmann, Fehr & Maréchal, 2015). Darman et al., (2017) consider that in the area of asset pricing, under- and overreaction bias of behavioral finance have been used to interpret and/or to discover empirical anomalies in the speculative dynamics of stock returns. Talhartit et al., (2022) and Ricciardi (2008) mentioned overreaction bias in their study, and it said that risks that are familiar are feared less than those that are unfamiliar this provides an explanation as to why people overreact to unexpected information.

#### Herd effect bias

Gregarious behavior, also known as follower, mimetic, or herd bias, can lead to cognitive and emotional biases. This behavior involves making impulsive and emotional decisions influenced by the psychology of the individual, but primarily based on the knowledge and experiences of other investors Talhartit et al., (2022). This phenomenon may occur due to the fact that investors are members of a social community and possess an inherent desire to be recognized and accepted by their peers, rather than being stigmatized as undesirable individuals. Furthermore, investors often exhibit a tendency to conform to the group, as there is a prevailing belief that a large group is unlikely to make mistakes. This commonly occurs in situations when investors possess limited expertise and understanding (Gupta, 2016).

#### Regret aversion bias

Chaudhary (2013) defined, regret theory posits that an individual assesses their anticipated responses to a forthcoming event or circumstances. Psychologists have discovered that individuals who make decisions that result in negative outcomes experience more feelings of regret when those decisions are more unusual. Within the realm of investment, the fear of regret can either induce risk aversion or serve as a catalyst for investors to assume higher levels of risk. Regret is the act of attributing blame to oneself or assuming personal accountability for errors committed (Joel et al., 2011). Rahman, (2019) and Kumar et al., (2023) findings highlight the important role of regret aversion bias in behavioral finance.

Despite the extensive body of research on the interaction of psychology and economic decision-making worldwide, a significant void exists in the context of

Kazakhstan. The study of psychological factors influencing economic decisions and investor behavior has been extensively researched in various parts of the world, yielding full-size insights into biases such as the overconfidence bias, herd effect, anchoring heuristic, and others. However, those studies primarily replicate investor behaviors and economic decision-making procedures in Western and other economically advanced contexts, leaving a critical gap in our understanding of how these mental biases manifest in Kazakhstan's unique socioeconomic and cultural landscape.

There is also a lack of research in the FTX context, especially regarding the psychological aspects that affect the behavior of traders and investors. FTX is a cryptocurrency exchange offering trading in a wide range of cryptocurrency assets and derivatives. However, unlike traditional financial markets, there is less research in the field of cryptocurrencies on the impact of psychological factors on decision-making. In this regard, this dissertation analyzes this gap in research.

Psychological variables influencing the behavior and financial decisions of investors, identified as a result of a review of the literature by various authors, will be used as an example in the analysis of this study.

## **Data and research methodology**

This section describes the types of psychological biases that were used for analysis in this study and also includes research methods.

### **Types of behavioral biases**

The representativeness heuristic is used when making judgments about the probability of an event being representational in character and essence of known prototypical event (Kahneman & Tversky, 1972).

Kendra Cherry (2023) described the availability heuristic like a type of mental shortcut that involves estimating the probability or risk of something based on how easily examples come to mind.

Anchoring bias refers to people's tendency to depend excessively on the first piece of information they hear about an issue (Nikolopoulou, 2023).

According to Kovic and Kristiansen (2017) the gambler's fallacy is the unreasonable notion that earlier outcomes in a series of events influence the probability of a future outcome, even when the events are independent and identically distributed.

Overconfidence bias is the tendency to overestimate our knowledge and abilities in a certain area (Nikolopoulou, 2023).

An overreaction is an extreme emotional response to new information. In finance and investing, it is an emotional response to a security such as a stock or other investment, which is led either by greed or fear. Investors overreacting to news cause the security to become either overbought or oversold until it returns to its intrinsic value (Hayes, 2022).

Herd mentality bias refers to investors' tendency to follow and copy what other investors are doing (Vipond, 2024).

Investors with regret aversion bias tend to make poor choices because they are afraid of looking back. They might behave irrationally and dangerously by holding onto lost positions or refusing to sell winners.

It is important to note that, using all these psychological variables in the practical part of the study will provide a deeper understanding of how psychology affects financial decisions and investor behavior in the market.

### **Methodology**

The research presented in this thesis is based on an integrated approach that includes two main parts: the case study of the FTX and a certain situation in Kazakhstan, also conducting surveys and interviews in the context of Kazakhstan.

The first part of the methodology provides for a detailed study of the FTX cryptocurrency exchange case study. As part of this part of the study, an analysis will be carried out:

- Psychological strategies and tactics used by the FTX exchange to attract and retain customers.
- The influence of social and psychological factors on investors' investment strategies

The second part of the methodology includes conducting surveys and interviews.

The main objectives of this part of the study are:

- Study of the influence of psychological factors on financial decisions and investor behavior in Kazakhstan.
- Studying the presence of biases among investors in Kazakhstan.

Both parts of the study will be combined to form a comprehensive understanding of the psychological factors influencing financial decisions and investor behavior both in the global market and in the specific regional context of Kazakhstan.

## **Analytical Framework**

### **From Hero to Zero: The case study of FTX, founded by Sam Bankman-Fried**

#### Description

FTX.COM is a cryptocurrency exchange. It offers derivatives, options and volatility products, tokenized stocks, prediction markets, leveraged tokens and an OTC desk. The exchange was founded in 2019 by Sam Bankman-Fried and Gary Wang. At its peak in July 2021, the company had over one million users and was the third-largest cryptocurrency exchange by volume. FTX is incorporated in Antigua and Barbuda and headquartered in the Bahamas.

The investigated FTX examples and their interactions with investors such as Sequoia Capital, Tom Bravo, and others show numerous critical concerns concerning investment potential evaluation and effective communication in investment relationships.

#### Nudge theory

It is important to note here that Sam's father is Joseph Bankman, an American legal scholar, psychologist and professor at Stanford Law School who helped develop FTX. One of the major investors in TTX, who invested \$ 125 million, is Orlando Bravo, the cofounder of the investment company Tom Bravo. In the middle of 2021, he receives a phone call. The call was from Joseph Bankman, who had taught Bravo in the late 1990s. At the time, in mid-2021, Bravo's \$US122 billion (\$182 billion) private equity firm Thoma Bravo was opening an office in Miami, the city where Bankman's son Sam had just paid \$US135 million for a 19-year naming rights contract with the local NBA team. Bankman told Bravo his son was looking for guidance on philanthropic projects in Miami to further his "effective altruism" mission. Only after they spoke did Bravo learn that Bankman-Fried was also in the process of raising a \$US900 million Series B funding round at a \$US18 billion valuation, with a who's who of investors including Sequoia Capital, BlackRock and SoftBank. He quickly called Bankman back seeking an introduction and a way into the deal, which was progressing quickly and would be the largest capital raising in crypto exchange history (Waters, 2022).

Here you can see the clear signs of the nudge theory that was described earlier. The nudge theory is achieved by changing the way investment options are presented and selectively providing information, which is what Sam Bankman's father applied. That is, he first asked for help, and only at the end gently and briefly mentioned FTX.

#### Representativeness and availability heuristics

Further, in the process of buying FTX shares by Tom Bravo, one can notice signs of heuristic representativeness and availability. They were stunned by the FTX numbers. The two-year-old startup, led by a relatively small staff of young traders, was close to making more than \$200 million in operating profit for the year, an unprecedented profit for an early-stage growth company that usually suffers losses. They were impressed. People often estimate the probability of an event or whether an object belongs to a certain category based on how much the object resembles a typical representation of that category. Here, the heuristic representativeness is manifested in the fact that investors probably used their ideas about what startups usually look like at an early stage, and evaluated FTX based on this. These are the signs of heuristic representativeness in their investment decision-making.

Second, heuristic availability occurs when an event or information is easily remembered or available in memory, which can lead to erroneous reassessment and being perceived as more likely or significant than it is. Many investors, for example, may place a higher value and potential on the cryptocurrency industry than on other industries, owing to broad media coverage of high revenues and quick price growth. This could be due to heuristic accessibility, as knowledge about cryptocurrency is frequently discussed and readily available in today's information world.

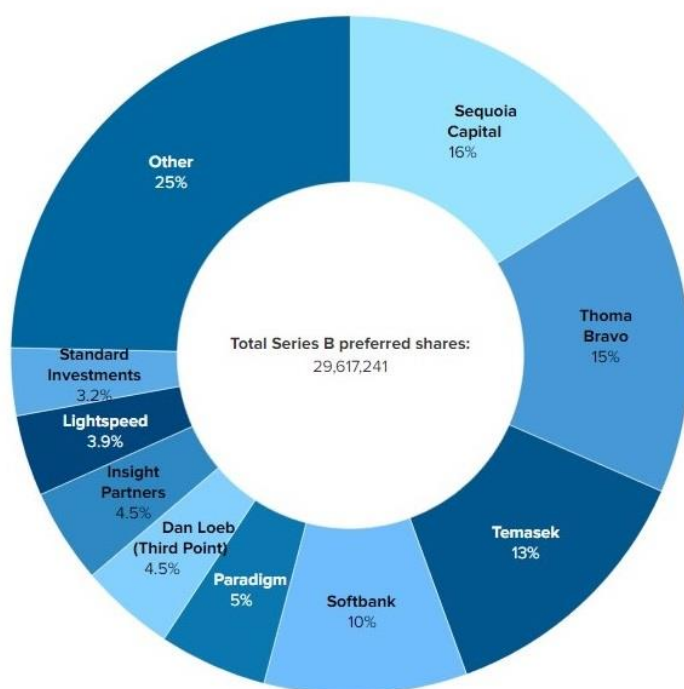


Figure 2: FTX Series B Shareholders

Source: <https://www.cnbc.com/>

### Overconfidence bias

Also, one of the largest FTX investors was Sequoia Capital, which has an impeccable reputation and about 50 years of experience. They were delighted with the prodigy Sam Bankman, who had his own stock exchange. In September 2022, the company published a kind of "hagiography" — an article quoting partners about what they see in Bankman-Fried. The article was headlined: "Sam Bankman-Fried has a savior complex—and you might want to take an example from him. To our shame, we never tried to contact Sam because we thought he didn't need us. I thought they were just printing money and they didn't need investors at all." Michel Baille, a partner at Sequoia, says in the article. Sequoia recently removed the article from the site (Kochkodan, 2022).

This scenario demonstrates how overconfidence and a lack of communication can result in missed opportunities and inaccuracies in interpreting the situation. In this situation, Sequoia Capital executives confessed that they misjudged the value of contacting Sam Bankman-Freed and did not attempt to build a connection with him, presuming that he did not require their investment due to his success. This could be an example of being overconfident in one's own judgment and passing up the opportunity to learn more about a person or company that may offer attractive investment opportunities. The circumstance also emphasizes the need for open and effective communication between investors and entrepreneurs in order to avoid missed opportunities and misunderstandings.

### Herd effect and overreaction bias

Also, in the history of the FTX crash, it can be noticed biases such as the herd effect and the tendency to overreact.

On November 2, 2022, CoinDesk reported that 40% of Alameda's assets were invested in FTX's FTT token. On November 6, 2022, Binance CEO Changpeng Zhao announced that his company would liquidate its FT assets worth about 584 million US dollars due to recent revelations. Caroline Ellison, CEO of Alameda Research, offered to buy Binance FTT tokens at \$22 (the market price at that time), which led to speculation that Alameda had loans that would have been repaid if FTT had traded at that price.

SBF tweeted: "A competitor is trying to harass us with false rumors. Everything is fine with FTX. The assets are in order. FTX has enough funds to cover all customer assets. We do not invest clients' assets (even in Treasury bonds)". On November 8,

2022, FTX suspended the withdrawal of funds. The FTT token has fallen in price by 72%.

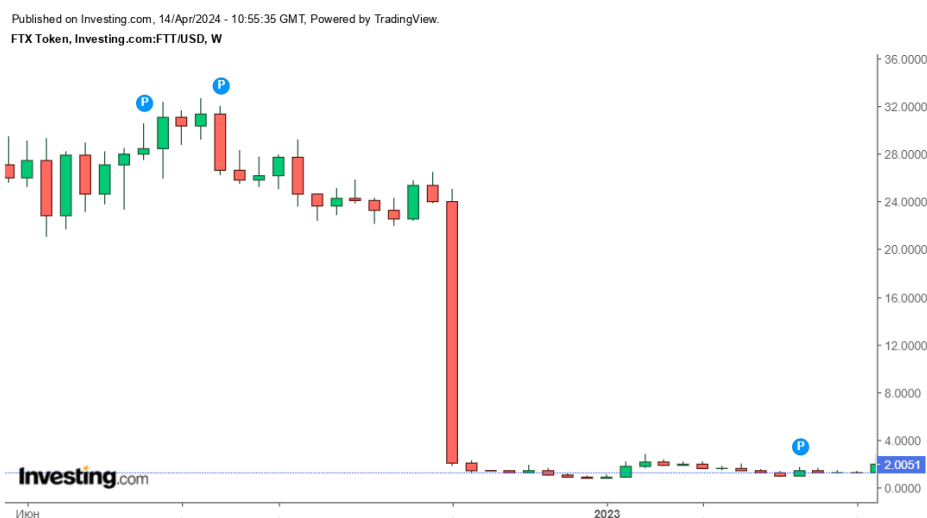


Figure 3: FTX Token's graph

Source: <https://ru.investing.com>

In this situation, several psychological variables can be distinguished. Investors react emotionally to various market events, such as revelations and statements by company management. These reactions can be excessive and prone to panic and fear. Social influences, such as statements by high-ranking individuals from the world of cryptocurrencies, can amplify these emotional reactions and create a herd effect. Bias due to rumors and false information can also influence investors' decisions, leading them to irrational actions.

In summary, the FTX case observes suggests a variety of cognitive biases, such as:

1. Representativeness heuristics
2. Availability bias
3. Overconfidence
4. Herd effect
5. Over-reaction bias

All of can have a primary effect on investment outcomes.

Overall, these real-world examples demonstrate the need of recognizing and mitigating psychological biases in financial procedures. To successfully manage the intricacies of financial markets, investors and financial professionals must prioritize objective analysis, open communication, and disciplined decision-making.

## Behavioral aspects of investing in Kazakhstan

As mentioned before, the interest in investing among citizens of Kazakhstan is growing every year. Statistics show that in the first quarter of 2024, the total number of accounts in the Central Securities Depository system increased by 347,200 (14%) and is approaching 3 million. In 2022, there was a record number of open subaccounts, broken by a young category of investors from 18 to 24 years old. However, to date, the largest number of investors is still represented by the age group from 35 to 54 years, which in February amounted to 38.7% of the total number of investors. Their number increased 4.3 times over the year (from 23 thousand to almost 101 thousand). The gender distribution of investors remains almost 50-50: the share of female investors is 49.8%, the share of male investors is 50.2%. This balance has remained unchanged since April 2023.

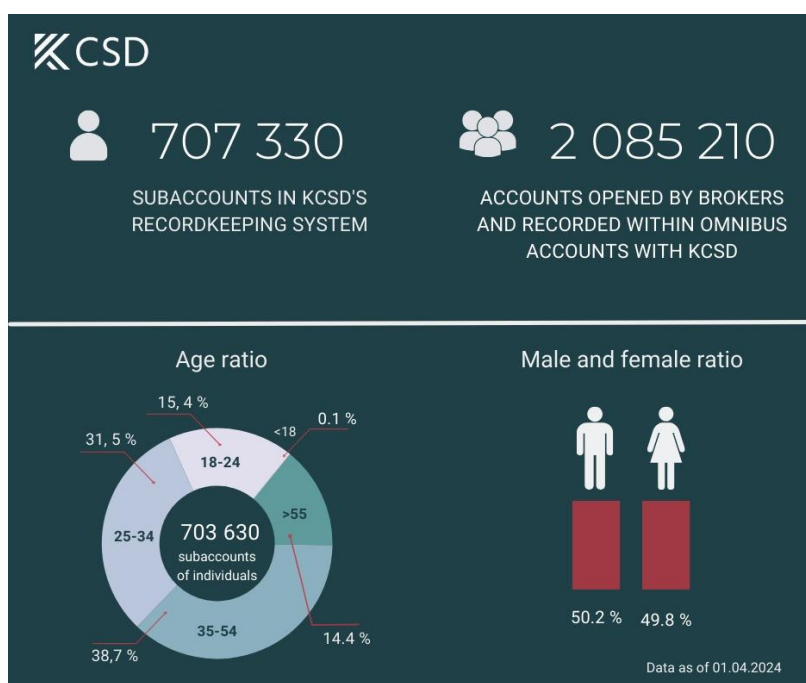


Figure 4: Data of brokerage accounts

Source: <https://kcsd.kz/>

All these data indicate a significant increase in interest in investing among the citizens of Kazakhstan and demonstrate the active participation of the population in financial markets. This fact highlights the importance of analyzing investor behavior in Kazakhstan in the context of behavioral finance, as different groups may have different approaches to investing, risk decisions and asset management strategies.

## The case study in the context of Kazakhstan

Case studies, such as FTX exchange analysis, can be an effective technique for studying the psychological dynamics that drive financial decision-making. However, when conducting a similar study in Kazakhstan, we encounter some challenges and restrictions. For starters, a lack of information regarding financial transactions and companies in Kazakhstan makes conducting a thorough analysis difficult. Due to a lack of open data and insufficient openness in organizational reporting, it is difficult to collect reliable and complete information required for qualitative research. Second, the Kazakh financial industry is still in its early stages, so the market's relative freshness and unpredictability limit the feasibility of conducting a case study in Kazakhstan.

Given these considerations, it appears that performing a similar case study in Kazakhstan was extremely challenging. Instead, to meet the study's aims in the context of Kazakhstan, it was more productive to employ alternative methodologies and research tools such as surveys, interviews, and statistical data analysis. Despite access constraints to case study data, these methodologies can provide useful information regarding the psychological variables impacting financial decisions and investor behavior in Kazakhstan.

### Survey

For the purpose of the study, a survey was created to uncover psychological aspects that influence financial decisions and investor behavior. The survey's initial stage included all 30 questions. However, due to the low response rate, just 23 responses were received. This led us to conclude that the number of questions in the questionnaire has a substantial impact on the level of participation.

Based on this result, the questionnaire was redesigned and reduced to 14 items. The updated survey was circulated to the same target audience. The second stage of the poll saw a significant increase in participation, reaching for 104 respondents. The survey data from every phase were pooled to provide a more thorough knowledge of the elements that influence financial behavior. This enabled us to gain a more comprehensive understanding of the relationship between psychological factors and financial decisions.

*Table 1. Group Statistics*

	Age
<b>Female</b>	<b>46</b>
<b>26-45 years old</b>	<b>32</b>
An experienced investor (3-10 years of investment)	2
Beginner (less than a year of investment)	26

Novice investor (1-3 years of investment)	4
<b>46-65 years old</b>	<b>4</b>
Beginner (less than a year of investment)	4
<b>Up to 25 years old</b>	<b>10</b>
Beginner (less than a year of investment)	10
<b>Male</b>	<b>58</b>
<b>26-45 years old</b>	<b>40</b>
An experienced investor (3-10 years of investment)	4
Beginner (less than a year of investment)	20
Novice investor (1-3 years of investment)	16
<b>Up to 25 years old</b>	<b>18</b>
Beginner (less than a year of investment)	10
Novice investor (1-3 years of investment)	8
<b>Overall</b>	<b>104</b>

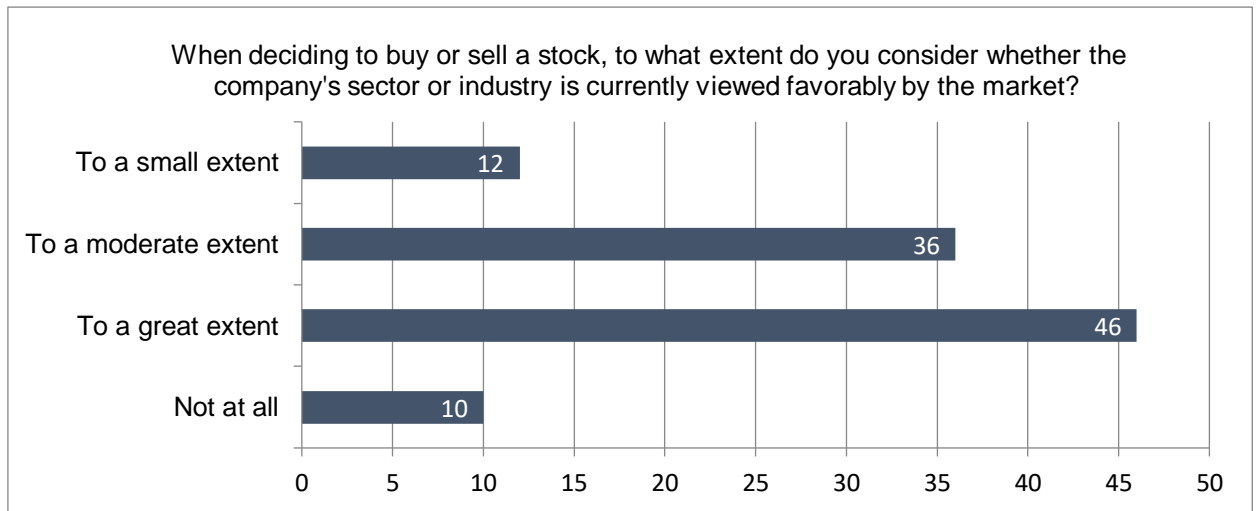
As Table 1 shows, a total of 104 responses were collected, offering insights into the gender, age, and investment experience of the participants. The responders consisted of 46 females and 58 males. The age breakdown among the participants is as follows: 28 responses came from those under the age of 25, 72 from people aged 26 to 45, and 4 from people aged 46 to 65. The findings show that 70 respondents classed as beginner, with less than a year of financial experience. Furthermore, 28 respondents identified as novice investors, with 1-3 years of investment experience, and 6 as experienced investors, having 3-10 years of investment experience.

This overview paints a complete picture of the participants, including their gender, age, and amount of investment experience, all of which are critical for understanding their investment behavior and decision-making processes.

## Bias specific analysis

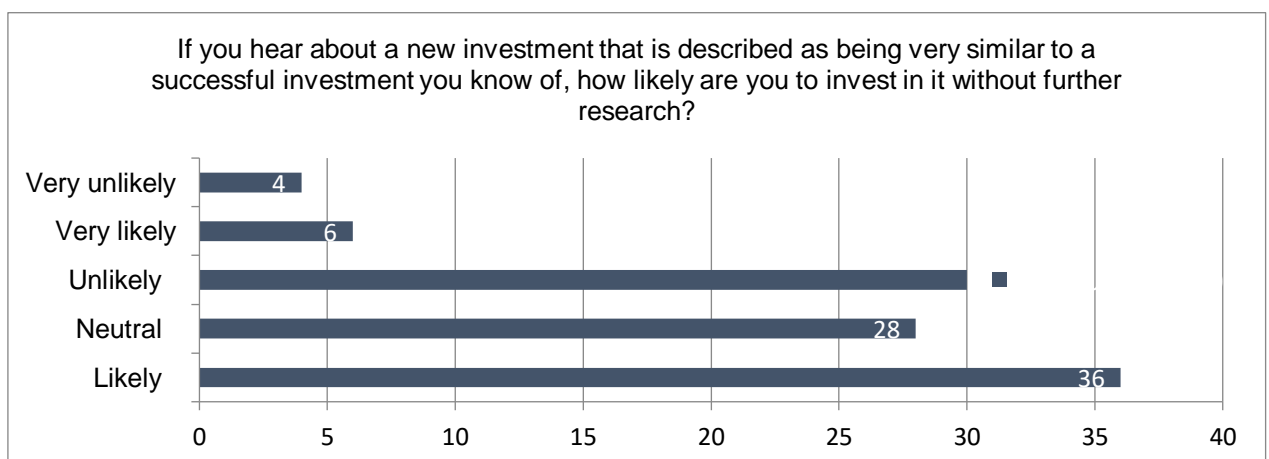
### Representativeness heuristic

Figure 5: Representativeness heuristic 1



In the context of considering market perception of company's sector or industry, founding on **figure 5** shows that 46 of respondents strongly believe that if a sector or industry is now viewed positively by the market, individual companies within that sector or industry will perform well. This dependence on templates or preconceptions is consistent with the representative heuristic. Similarly, 36 of respondents are exposed to representative heuristic, by choosing variance "to a moderate extent". However, 12 of respondents claimed that they only considered market perception to a small extent, while 10 of them did not consider it at all.

Figure 6: Representativeness heuristic 2



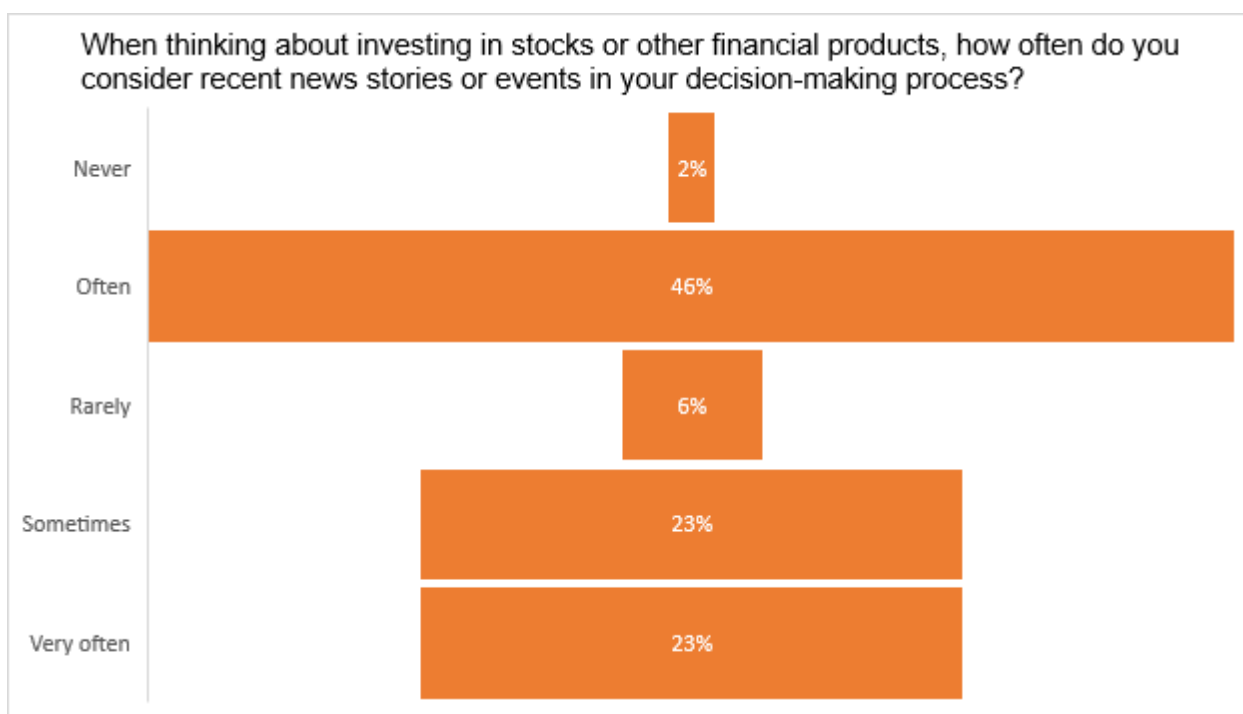
The next question was to indicate investor's likelihood to invest in a new opportunity based on similarity to a previous successful investment. 36 of the respondents said they would be inclined to invest without doing more investigation in a

fresh opportunity that was described as being extremely similar to a successful investment they already knew about. The representativeness heuristic is supported by this response, as the investors may be persuaded to think that since the new investment looks like a successful one, it would probably also be successful. Nonetheless, 30 participants expressed a low likelihood of investing in the given situation, suggesting a reduced vulnerability to the representativeness heuristic. Furthermore, 6 respondents said they would invest in a comparable opportunity without doing any additional investigation, and 4 said they would be extremely unlikely to do so (figure 6).

Availability heuristic

The next heuristic is Availability (figure 7). The first question was asked in order to find out how investors take into account the latest news or events in the decision-making process. 46 % of respondents indicated that they may prioritize recent events in their decision-making process. It means that they are heavily influenced by the availability of information in the media. 23% of them answered “very often”, showing that they are exposed by this bias often. However, another part of the respondents: 23% - “Sometimes”, 6% - “Rarely” and 2% - "Never", demonstrate less influence of accessibility heuristics.

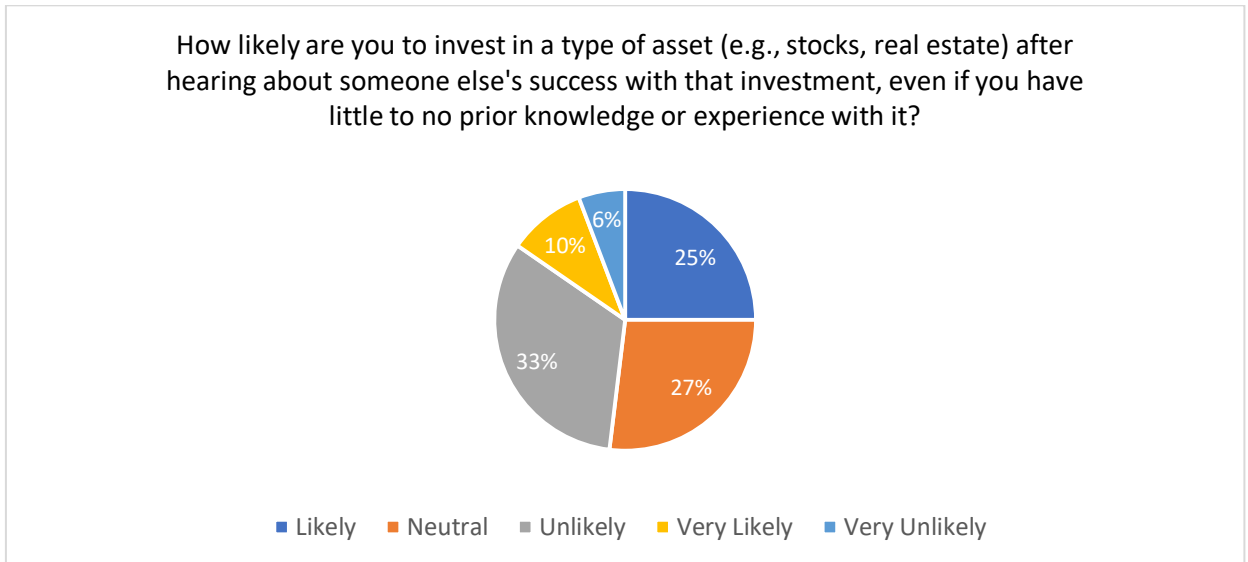
Figure 7: Availability heuristic 1



The figure 8 demonstrates Investor’s relationship for likelihood to invest after hearing about someone else’s success. The result shows that 25% and 10% of

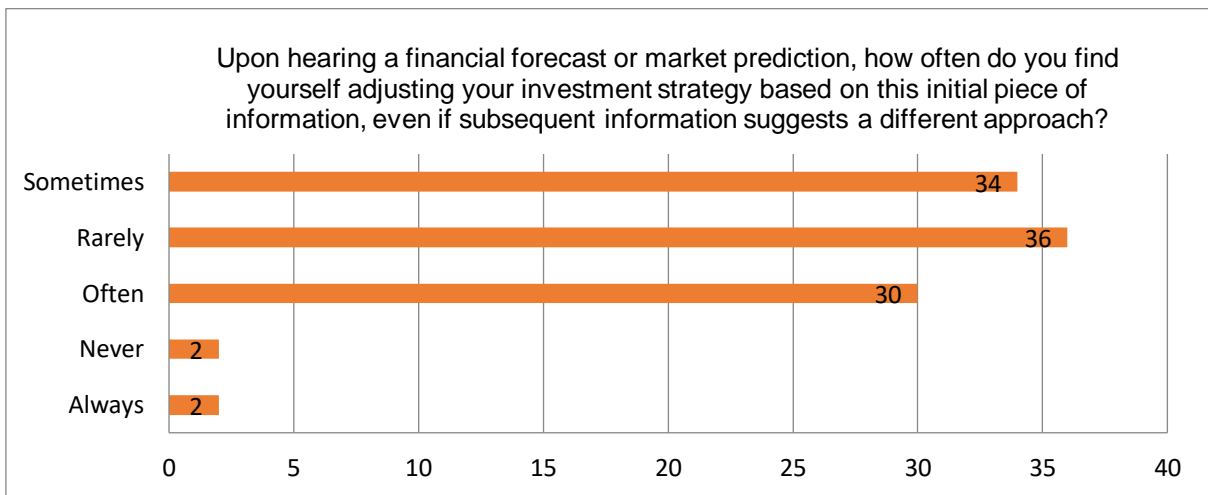
respondents are influenced by availability heuristic in different degrees. However, the part of them (33%- unlikely and 6%- very unlikely) indicated low impact of this variable. At the same time, 27% of respondents adhere to neutrality.

Figure 8: Availability heuristic 2



Anchoring heuristic

Figure 9: Anchoring heuristic 1

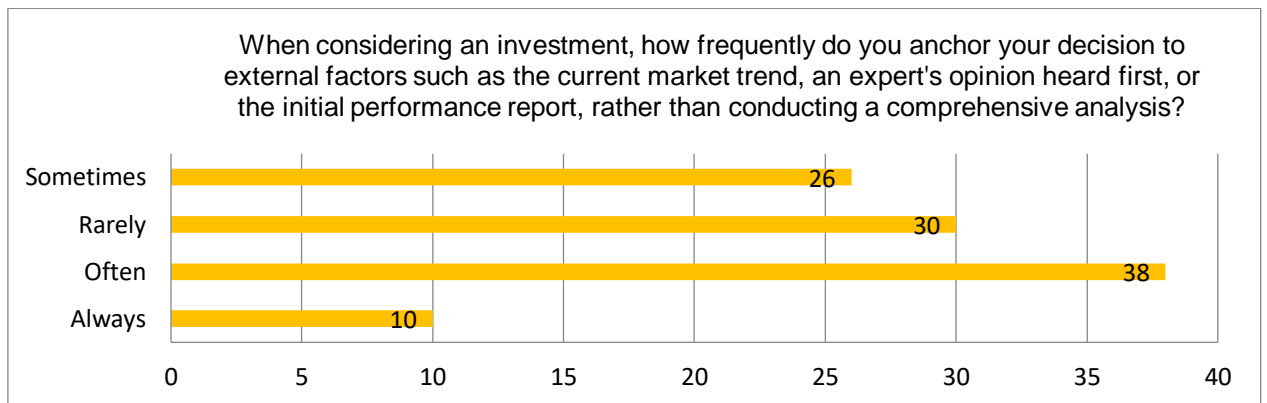


In order to understand impact of anchoring heuristic, 2 question were build. First question reveals adjusting investment strategy based on financial forecast or market prediction (**figure 9**).

- “Often” (30 respondents) and “Sometimes” (34 respondents). These groups tend to tweak their investment plans when they first hear financial forecasts or market predictions, even if later information points to a different strategy.

- “Rarely” (36 respondents). These investors are less influenced by the anchoring bias.
- “Always” (2 responder). It indicates that there is strong influence.

Figure 10: Anchoring heuristic 2



Next, anchoring investment decisions to external factors are analyzed. The majority of respondents answered “Often” (38) and “Sometimes” (26). It suggests that these investors might be prone to the anchoring heuristic, meaning they could put too much importance on the first piece of info they get. They might end up leaning heavily on that initial point, possibly missing out on other important stuff or skipping a thorough look into things. Similarly, 10 of respondents chose “Always”, by indicating stronger influence. However, there are part (“Rarely”- 30) of investors who understand that relying too much on external factors could have its drawbacks. So, they might choose to take a closer look at things before making their investment calls (**figure 10**).

### Gambler's Fallacy

As **Figure 11** demonstrates, some people haven't really thought about whether their recent investment success influences their future decisions. Most folks believe that each investment is independent, regardless of past outcomes. However, a minority—about 32 of them—think that a streak of wins might spell trouble down the road and might proceed with caution as a result.

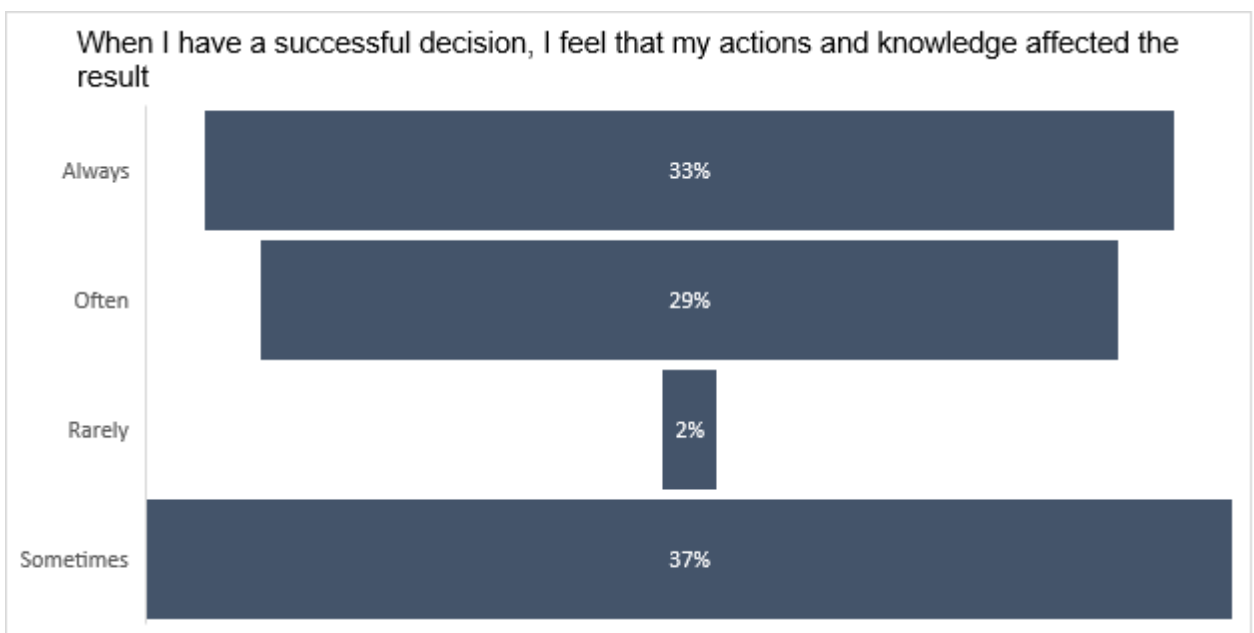
Figure 11: Gambler's Fallacy



### Overconfidence bias

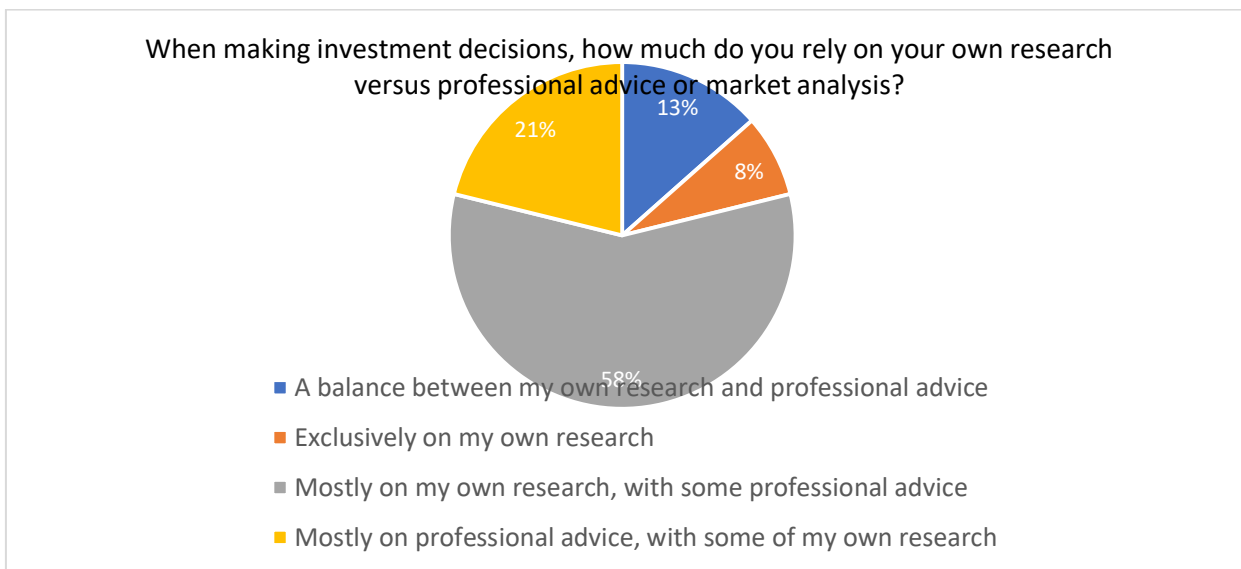
In order to analyze investors' tendencies towards overconfidence, 2 questions were built. First question reveals attribution to successful decisions of investors. As shown in **figure 12**, the majority of them for question "When I have a successful decision, I feel that my actions and knowledge affected the result?" answered "always-33%" and "often- 29". It indicated that high level of overconfidence bias in decision-making process. "Sometimes-37%" demonstrates a tendency towards overconfidence slightly, taking into account external factors. The other 2% have a low level of overconfidence in successful decision-making process.

Figure 12: Overconfidence bias 1



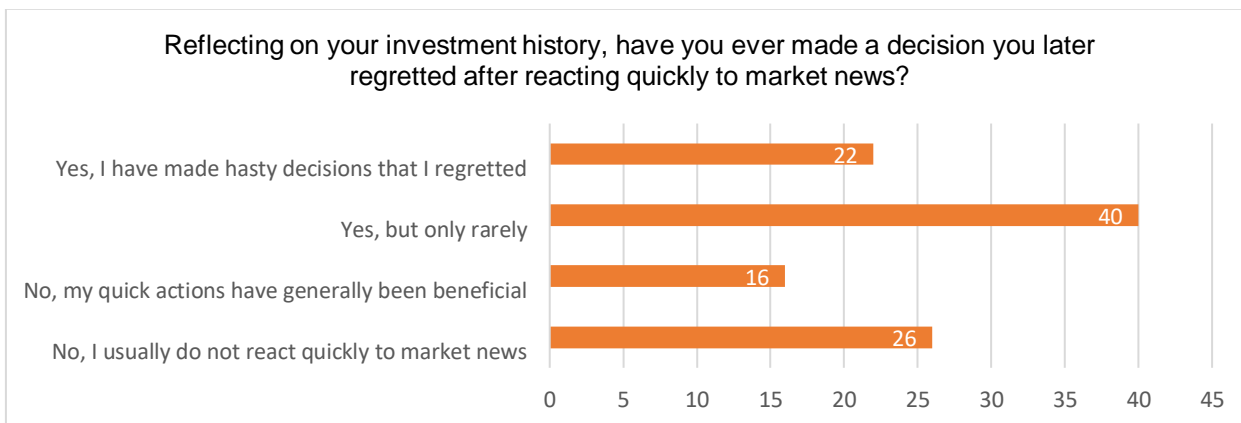
The second question was directed to reveal reliance on own research versus professional advice. The results are similar with former. 58 % of respondents rely their own research with some professional advice, and 2 % only their own research, while 21 % rely mostly professional results. 13 % maintain a balance between own and ones (figure 13).

Figure 13: Overconfidence bias 2



Over-reaction bias

Figure 14: Over-reaction bias 1



Figures 14, 15 appear how investors are impacted by over-reaction bias. The question “Reflecting on your investment history, have you ever made a decision you later regretted after reacting quickly to market news?” was asked.

- 40 respondents - “Yes, but only rarely” and 22 respondents - “Yes, I have made hasty decisions that I regretted”. Their responses indicate that they've experienced moments where they regretted making decisions hastily in

response to market news. This hints at being prone to overreaction, where emotional reactions to market events might drive impulsive or irrational decision-making.

- 16 respondents – “No, my quick actions have generally been beneficial”. It also indicates over-reaction bias, despite that their decisions were profitable.
- 26 respondents – “No, I usually do not react quickly”. These respondents demonstrate a tendency to avoid over-reaction.

Figure 15: Over-reaction bias 2

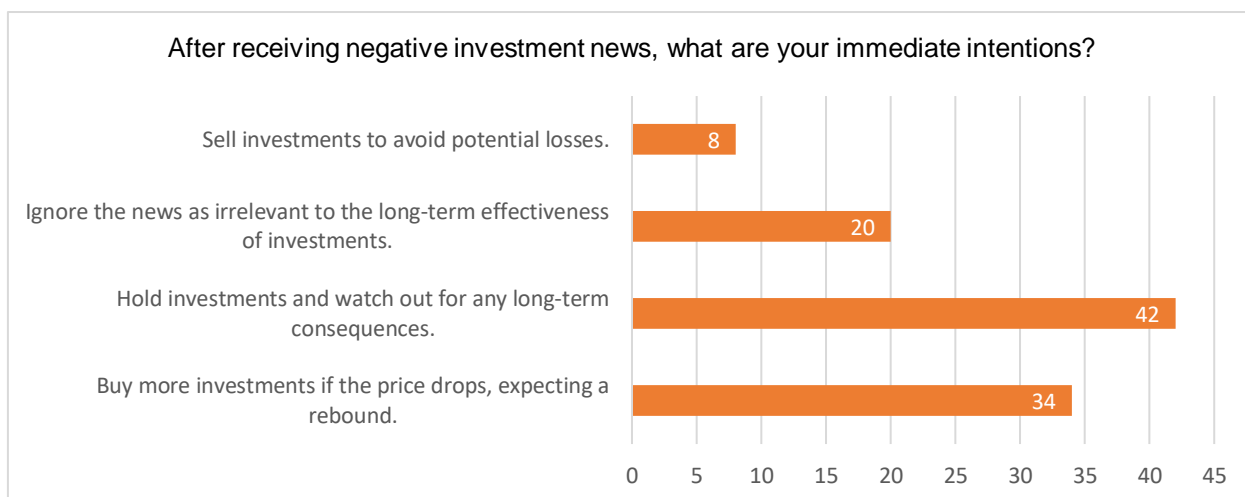


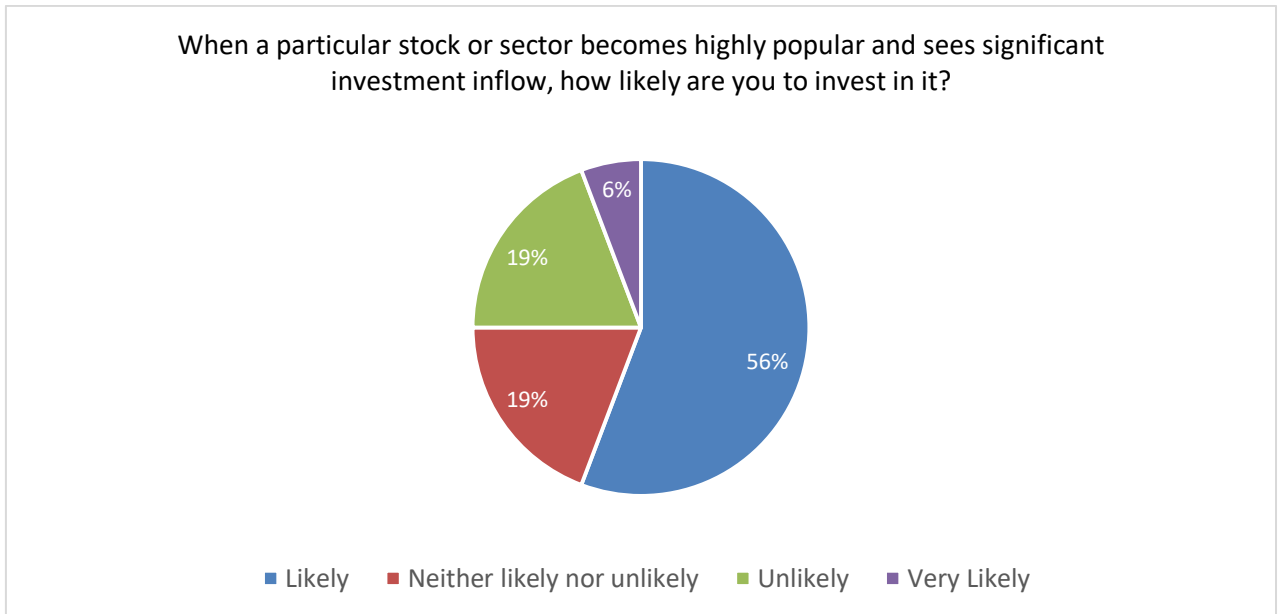
Figure 15 shows information about immediate intentions of investors towards investment news. Some investors (34 respondents) choose to capitalize on negative investment news by buying more investments if prices drop, expecting a rebound. The majority (42 respondents) prefer to hold onto their investments and monitor the situation for any long-term consequences after negative news. Others (20 respondents) ignore negative investment news, believing it won't significantly impact the long-term effectiveness of their investments. A few (8 respondents) opt to sell their investments immediately upon hearing negative news to avoid potential losses. These responses suggest that news stories can strongly influence investors' decisions, but each investor chooses his or her own perceptions of their interpretation and impact on his or her portfolio.

### Herd effect

As shown in Figure 16, the majority of investors, 56 %, have herd effect. The responses suggest that many investors tend to go with the flow and base their investment choices on what's popular in the market. Similarly, 6% of respondents have a strong herd effect. However, 19% of them seem to have doubts or prefer to swim

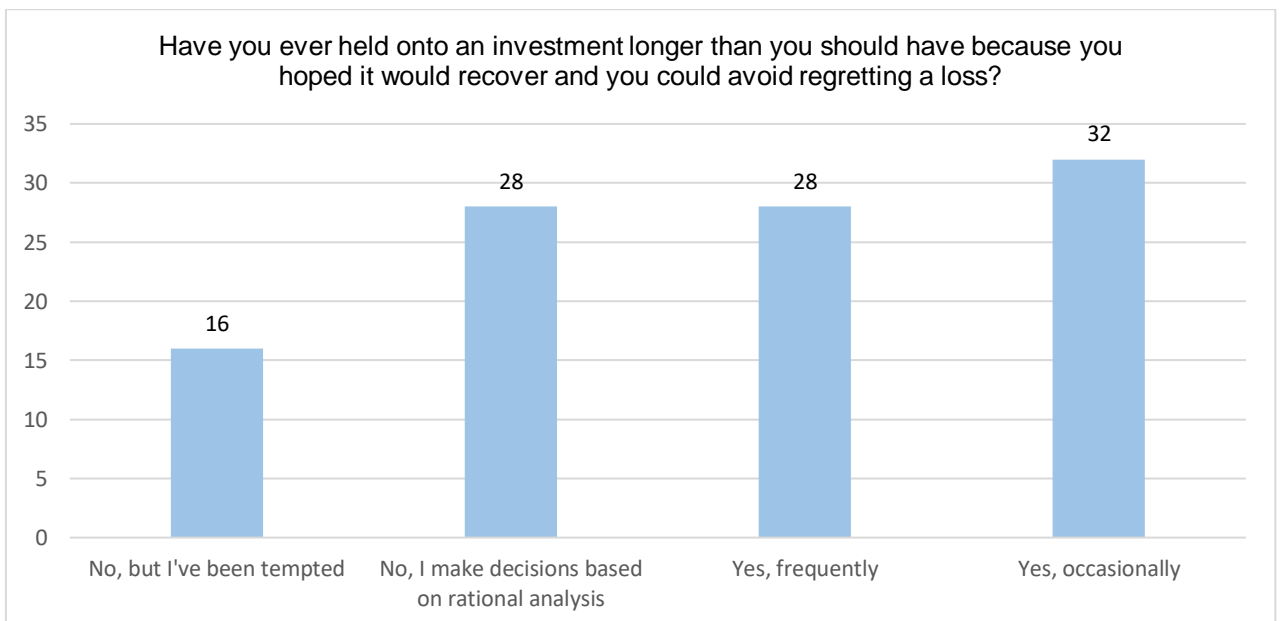
against the current. These investors opt to steer clear of investments that have garnered a lot of attention or seem overly hyped. While another 19% remain neutral.

Figure 16: Herd effect



Regret aversion

Figure 17: Regret aversion 1

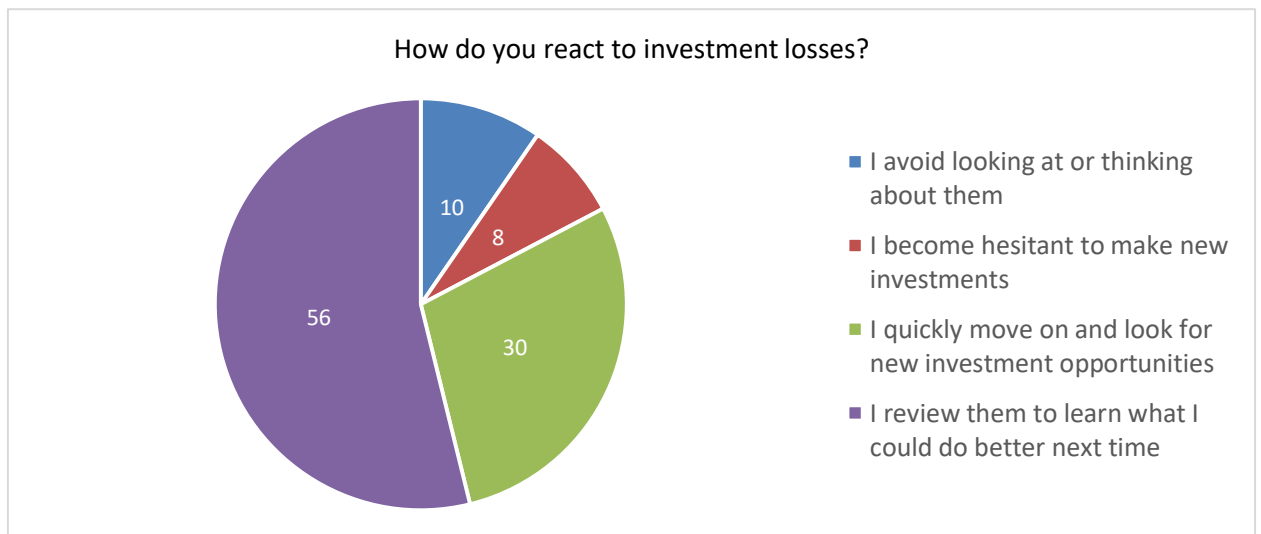


In the context of regret aversion, two questions were provided. First question was: Have you ever held onto an investment longer than you should have because you hoped it would recover and you could avoid regretting a loss? A few individuals (16 respondents) admitted to being inclined to keep investments longer than they should have in order to avoid sorrow over a loss. Additionally, 28 respondents make decisions

based on rational analysis. However, 28 responded “yes, frequently” and 32 responded “Yes, occasionally”. It indicates that they experienced regret aversion (**figure 17**).

The next question was to reveal reaction to investment losses. 10% individuals avoid looking at, while 8% become hesitant to make new investment. This conduct could be the result of an aversion to the negative feelings connected with loss. 28 % of responders have a resilient approach to financial losses, rapidly moving on and looking for new chances. The majority of them (54%) considered they would like to analyze investment losses to identify opportunities for improvement (**figure 18**).

Figure 18: Regret aversion 2



In this section, an analysis was made of the main types of psychological biases, and how often investors in Kazakhstan are exposed to them. Questions were asked about each bias, and an analysis was made based on the answers. The Table 2 covers the key results of the survey analysis.

Table 2. Key aspects of the survey analysis

Types of behavioral biases	The degree of exposure to bias	Number of questions	Key highlights
Representativeness heuristic	Moderate degree of exposure	2	Heuristic representativeness has a moderate impact on investors. Because 46 out of 104 people firmly believe that if the market is now positive about a sector or industry, then individual companies in this sector or industry will perform well, while 36 out of 104 people are moderately confident in this. On the other hand, the analysis of the second question shows that only 36 out of 104 people choose

			to invest in new investments similar to well-known, successful investments.
Availability heuristic	High degree of exposure	2	The results of the analysis of the first question showed that investors show significant exposure to this bias. 46% of respondents said that they often pay attention to recent events when making a decision, while 23% answered very often. Also, the analysis of the second question also confirms this idea, since 25% and 10% of respondents are influenced by accessibility heuristics after hearing the success of others.
Anchoring bias	High degree of exposure	2	The analysis showed that the majority of investors (about 60%) are prone to this heuristic because they "often" or "sometimes" adjust their strategies based on financial forecasts, which can lead to overestimation of primary information and omission of other important aspects such as fundamental analysis, etc.
Gambler's Fallacy	Moderate degree of exposure	1	The results show that the majority of investors (54%) are confident that every investment is independent of the past, while 30 % of them are confident that a series of victories can turn into trouble.
Overconfidence bias	High degree of exposure	2	According to this bias, the results showed that investors in Kazakhstan are very susceptible to overconfidence, since they answered questions that they rely on their own strength and, with successful decisions, think that this is their merit.
Over-reaction bias	High degree of exposure	2	From the answers to the first question, it can be concluded that investors are often exposed to this prejudice, as 62 of the 104 respondents say they regret hasty decisions after market news. From the answers to the second question, it can be concluded that investors are exposed to this bias, despite the diversity of answers.
Herd effect bias	High degree of exposure	1	An analysis of the answer to the herd effect question shows that investors show a noticeable exposure as they follow popular trends in the market (about 56%).
Regret aversion bias	Moderate degree of exposure	2	The results show that, on the one hand, investors in Kazakhstan express a strong bias towards regret and disgust, as shown by their tendency to hold investments for longer (60 out of 104 people) to avoid potential loss regrets. On the other hand, according to the analysis of the second question, 54% of respondents answered that they can quickly adapt to losses and look for new opportunities, which means that they are less exposed to this prejudice.

## **Interview**

The purpose of this interview is to study the influence of psychology on financial decisions and investor behavior in the financial market of Kazakhstan, using the respondents' experience in their real practice. The interview is also aimed at confirming the results of the survey analysis.

Further, the analysis of the interview revealed the main psychological biases that were discussed during the conversation.

### Overconfidence bias

It is interesting to note that respondents agree that self-confident investors are often found in their practice. They emphasize that such investors may neglect important aspects such as risk management and analysis of investment opportunities, and are often subject to subjective biases. This observed trend highlights the importance of developing healthy critical thinking and an informed approach to investing that takes into account both potential returns and risks. Dealing with Overconfidence: They support the idea that letting a person get "burned" can be an effective way to learn from mistakes. Understanding the causes and consequences of your decisions can help mitigate overconfidence. An important point is learning how to comply with risk management and analyze investment opportunities. Filtering out information and making decisions based on your own analysis, rather than blind confidence in someone else's opinion or advice, is also an important aspect.

### Over-reaction bias

Similar to other psychological biases, the tendency to overreact is also widespread among investors in Kazakhstan. For example, this was observed when KazMunaiGas shares were issued for an IPO, when news about it led to a massive investor reaction that caused a sharp demand for the company's shares. In addition, respondents mentioned the global example associated with Virgin Galactic. In 2021, the company planned to carry out the first space flight with tourists. This led to a surge of interest and a rise in the share price. However, after the flight, which was not completely successful, the company's shares collapsed. This example highlights that an overreaction by investors to events or news can lead to unreasonable changes in the market.

### Herd effect bias

The respondents noted that this example also demonstrates the impact of the herd effect, when investors, under the influence of group dynamics, can make decisions based on the opinion of the masses, instead of their own analysis or beliefs. They also stressed that the herd effect is widespread in Kazakhstan, especially among those who do not yet have sufficient knowledge in the financial sector.

### Representativeness heuristic

The managers noted that investors regularly meet in practice who often focus on generally accepted ideas about companies, sectors or types of assets. For example, many people believe that technology companies are more innovative and profitable, that stocks of large and sustainable companies are more reliable and safe to invest in, and real estate is considered a stable and risk-free asset.

However, respondents identified cases where the strong influence of typical ideas led to unsuccessful investment decisions. They mentioned that PayPal shares, which despite the generally accepted opinion about the good quality of the company, have experienced price declines in recent years due to management and competitiveness problems. This indicates the phenomenon of incorrect representativeness, when investors can rely too much on a superficial perception of a company based on its fame or advertising. Also, many clients prefer to invest in well-known companies such as Tesla, KazMunaiGas, Air Astana or Kaspi, which emphasizes the additional aspect of the influence of generally accepted ideas and popularity on investment decisions. These companies can be widely known and discussed in society, which attracts the attention of investors and can influence their choice.

### Gambler's Fallacy

Managers note that in practice there is still a psychological bias such as a Gambler's Fallacy. As a result of several unsuccessful deals in a row, the investor begins to believe that he is about to earn and come out on top. However, this is not always how it works. In such cases, we consult and discuss how to proceed. The first approach is that if we have confidence in the company's prospects, we suggest buying shares and waiting, which is the averaging method. Alternatively, without closing the current position, we can use other assets or money to compensate for losses, while respecting the principles of risk management. It is impossible to avoid losing trades, but it is important that the number of successful transactions is greater. By setting a stop

loss at 3-5%, the investor can limit losses and use other opportunities to compensate for losses. It is necessary to recognize the fact of loss and close the position if necessary.

### Regret aversion bias

Responders noted that almost every day they encounter situations when a client regrets that he did not buy shares on time or did not sell them earlier. This is called the FOMO effect. The impact of this bias on the investor depends on his individual characteristics and psychological characteristics. For example, investors who are inclined to a conservative approach may be more prone to fear of losses and regret than those who are more risk-averse.

Regarding Kazakhstani investors, their risk tolerance may vary depending on their age, investment goals and financial literacy. Older investors tend to prefer more conservative investments, whereas younger investors may be more inclined to take risks and buy promising stocks. However, as it is emphasized, even senior investors may be interested in risky transactions with the possibility of earning money.

As the result shows, in Kazakhstan, the influence of behavioral biases on the behavior and decision of the investor is different. As can be seen from the analysis, investors are often exposed to biases such as:

1. Overconfidence bias
2. Over-reaction bias
3. Herd effect
4. Representativeness
5. Gambler's Fallacy
6. Regret aversion.

In general, the interview showed that psychological aspects play a significant role in financial decisions of investors in the Kazakh market, and that an informed approach to analysis and decision-making can help reduce risks and improve investment results.

### **Parallel between FTX case study and behavioral aspects of Kazakhstan**

As the results of this study show, there are common behavioral biases in the behavior of investors in FTX Case and investors in Kazakhstan that influence their decisions and behaviors.

*Table 3. Parallel between FTX case biases and KZ biases*

<b>KZ</b>	<b>Common biases</b>	<b>FTX Case</b>
	Availability heuristic	
Anchoring bias		Representativeness heuristics
	Overconfidence bias	
	Over-reaction bias	
	Herd effect	

As shown in Table 3, biases such as availability, overconfidence, over-reaction and herd effect are most evident in both situations. However, in Kazakhstan, investors are also exposed to anchoring bias, while representativeness was found in the FTX case.

## **Conclusion**

In the process of this study, the relationship between reason and financial decisions was deeply explored, paying attention to the psychological factors that shape investor behavior. Psychological biases selected based on the analyzed literature were used for the analysis. Also the method of this research includes case studies, surveys and interviews.

The analysis of the FTX case underscores the prevalence of cognitive biases like representativeness heuristic, availability bias, and overconfidence, all of which significantly impact investment outcomes. Moreover, the examination of investor behavior in Kazakhstan reveals a distinct manifestation of behavioral biases. The analysis indicates that investors in Kazakhstan frequently encounter biases such as overconfidence, overreaction, herd mentality, representativeness heuristic, and regret aversion. These findings underscore the necessity of tailored approaches to address behavioral biases in investment practices within the Kazakhstan context, emphasizing the importance of informed decision-making and risk management strategies tailored to local market dynamics.

Overall, the study highlights the importance of understanding psychological aspects in financial decisions. Investors, being aware of these factors and applying appropriate risk management strategies, can achieve more successful results in financial markets. Therefore, further research in this area is important for the development of the theory and practice of financial decisions and investing.

### **Limitations and recommendations**

One of the main limitations of this study is the complexity of data collection related to the response of respondents to surveys. People in particular could be reluctant to take part in surveys if they receive no compensation or incentive, which could cause unrepresentative sample to provide biased results. It is advised that statistics institutes carry out formal research on this subject in this context, as this would enable the collection of more trustworthy data and result in more accurate analytical results.

Furthermore, to acquire a more comprehensive understanding of the impact of psychological variables on investors' financial behavior, it is advised that the research field be expanded outside Kazakhstan. Conducting similar surveys in other countries and comparing the results to this study might reveal parallels and differences in investors' financial behavior across cultural and economic circumstances. This

technique will improve the results' generalizability and broaden our understanding of the impact of psychological elements on global financial decisions.

This study significantly expands the scope of research on the impact of psychological aspects on financial decisions, both in the context of the FTX crisis and in relation to the Kazakh financial market.

As such findings will hopefully stimulate interest in further studying the behavioral aspects of financial decisions in Kazakhstan and internationally, contributing to the development of behavioral finance in the future.

## References

1. Boda, J. R. M. (2018, July 17). *INVESTOR'S PSYCHOLOGY IN INVESTMENT DECISION MAKING: A BEHAVIORAL FINANCE APPROACH*. ResearchGate. [https://www.researchgate.net/publication/326439329\\_INVESTOR'S\\_PSYCHOLOGY\\_IN\\_INVESTMENT\\_DECISION\\_MAKING\\_A\\_BEHAVIORAL\\_FINANCE\\_APPROACH](https://www.researchgate.net/publication/326439329_INVESTOR'S_PSYCHOLOGY_IN_INVESTMENT_DECISION_MAKING_A_BEHAVIORAL_FINANCE_APPROACH)
2. Cai, C. (2020). *Nudging the financial market? A review of the nudge theory*. <https://www.semanticscholar.org/paper/Nudging-the-financial-market-A-review-of-the-nudge-Cai/46fb8eaa72864000a128c698b19bae42dfb5b963>
3. Charles, A., & Kasilingam, R. (2016, May 1). *IMPACT OF SELECTED BEHAVIOURAL BIAS FACTORS ON INVESTMENT DECISIONS OF EQUITY INVESTORS*. ICTACT Journal on Management Studies. <https://doi.org/10.21917/ijms.2016.0039>
4. Chaudhary, A. (2013). *IMPACT OF BEHAVIORAL FINANCE IN INVESTMENT DECISIONS AND STRATEGIES - A FRESH APPROACH*. <https://www.semanticscholar.org/paper/IMPACT-OF-BEHAVIORAL-FINANCE-IN-INVESTMENT-AND-A-Chaudhary/6320820b57097aed96928fd031c518df21dde20a>
5. Chen, C. S. (2017). *The role of house money effect and availability heuristic in investor behavior*. <https://www.semanticscholar.org/paper/The-role-of-house-money-effect-and-availability-in-Chen-Cheng/d4358cd3562bca3b7846a6d6d86726d8e47085a5>
6. Chen, G. M., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2004, February 1). *Behavior and performance of emerging market investors: Evidence from China*. ResearchGate. [https://www.researchgate.net/publication/228558216\\_Behavior\\_and\\_performance\\_of\\_emerging\\_market\\_investors\\_Evidence\\_from\\_China](https://www.researchgate.net/publication/228558216_Behavior_and_performance_of_emerging_market_investors_Evidence_from_China)
7. Cheng, S. (2020, October 21). *The Power of Nudges in Financial Advice*. CFA Institute Market Integrity Insights. <https://blogs.cfainstitute.org/marketintegrity/2020/10/21/the-power-of-nudges-in-financial-advice/>
8. Cohn, A. (2015). *Evidence for Countercyclical Risk Aversion: An Experiment with Financial Professionals*. [https://econpapers.repec.org/article/aeaaecrev/v\\_3a105\\_3ay\\_3a2015\\_3ai\\_3a2\\_3ap\\_3a860-85.htm](https://econpapers.repec.org/article/aeaaecrev/v_3a105_3ay_3a2015_3ai_3a2_3ap_3a860-85.htm)
9. Darman, D., Salim, U., Aisjah, S., & Indrawati, N. K. (2017, May 29). *THE INTERPRETIVE PARADIGM IN FINANCE RESEARCH: AN OVERVIEW OF*

*BEHAVIORAL FINANCE*. Russian Journal of Agricultural and Socio-Economic Sciences. <https://doi.org/10.18551/rjoas.2017-05.22>

10. Ericson, K. (2014). *The Endowment Effect*.  
[https://econpapers.repec.org/article/anreveco/v\\_3a6\\_3ay\\_3a2014\\_3ap\\_3a555-579.htm](https://econpapers.repec.org/article/anreveco/v_3a6_3ay_3a2014_3ap_3a555-579.htm)
11. Ganti, A. (2023, February 18). *Endowment Effect: Definition, What Causes It, and Example*. Investopedia. <https://www.investopedia.com/terms/e/endowment-effect.asp#:~:text=The%20endowment%20effect%20refers%20to,irrationally%2C%20than%20its%20market%20value.>
12. Gonzalez, C. (2017). *Decision-making: A cognitive science perspective*. In S. Chipman (Ed.), *The Oxford handbook of cognitive science* (pp. 249–264). Oxford University Press. Accessed on July 9, 2020
13. Gupta, Y. (2016, November 4). *The Impact of Psychological Factors on Investment Decision Making of Investors: An Empirical Analysis*.  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2880059](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2880059)
14. Hayes, A. (2022, June 27). *Overreaction: What it is, How it Works, Examples*. Investopedia. <https://www.investopedia.com/terms/o/overreaction.asp>
15. <https://mail.josephscollege.ac.in/pdf/jimds/The%20Impact%20of%20Behavioral%20Finance%20on%20Stock%20Markets%20-%20Sangeeta%20Thakur.pdf>
16. <https://www.cmu.edu/dietrich/sds/ddmlab/papers/oxfordhb-9780199842193-e-6.pdf>
17. Jain, S. (2021, December 13). *Behavioral Finance and Investment Decisions: Influence of Gender, Personality, and Culture*. Ashokauniversity.  
[https://www.academia.edu/es/64012257/Behavioral\\_Finance\\_and\\_Investment\\_Decisions\\_Influence\\_of\\_Gender\\_Personality\\_and\\_Culture](https://www.academia.edu/es/64012257/Behavioral_Finance_and_Investment_Decisions_Influence_of_Gender_Personality_and_Culture)
18. Jim Coke (2020). *What is 'Nudge Theory' – and why should we care as bankers?*  
[https://www.charteredbanker.com/resource\\_listing/what-is-nudge-theory-and-why-should-we-care-as-bankers.html](https://www.charteredbanker.com/resource_listing/what-is-nudge-theory-and-why-should-we-care-as-bankers.html)
19. Joel, S., MacDonald, G., & Plaks, J. E. (2011, September 12). *Attachment Anxiety Uniquely Predicts Regret Proneness in Close Relationship Contexts*. Social Psychological and Personality Science. <https://doi.org/10.1177/1948550611420886>
20. Kahneman, D. (1979). *Prospect theory: An analysis of decision under risk* *Econometrica* 47. <https://www.semanticscholar.org/paper/Prospect-theory%3A-An-analysis-of-decision-under-risk-Kahneman-Tversky/2daaf5c34d456a3ba739cfb16293f97561d3a301>

21. Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991, February 1). *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*. *Journal of Economic Perspectives*. <https://doi.org/10.1257/jep.5.1.193>
22. Kahneman, Daniel; Tversky, Amos (1972). "[Subjective probability: A judgment of representativeness](#)". *Cognitive Psychology*. **3** (3): 430–454. [doi:10.1016/0010-0285\(72\)90016-3](https://doi.org/10.1016/0010-0285(72)90016-3).
23. Kliger, D. (2010). *The Availability Heuristic and Investors' Reaction to Company-Specific Events*. <https://www.semanticscholar.org/paper/The-Availability-Heuristic-and-Investors'-Reaction-Kliger-Kudryavtsev/13d487635a22d1f8c08f7e39dbeb719752c22f0>
24. Kochkodan. (2022, November 17). The Hour of Reckoning: how the world missed the alarm bells in the history of the FTX crypto exchange. *Forbes.ru*. <https://www.forbes.ru/finansy/481217-cas-rasplaty-kak-mir-propustil-trevozhnye-zvonocki-v-istorii-kriptobirzi-ftx>
25. Kovic, M., & Kristiansen, S. (2017, September 28). *The gambler's fallacy fallacy (fallacy)*. *Journal of Risk Research*. <https://doi.org/10.1080/13669877.2017.1378248>
26. Liberto, D. (2022, June 28). *Loss Aversion: Definition, Risks in Trading, and How to Minimize*. Investopedia. <https://www.investopedia.com/terms/l/loss-psychology.asp#:~:text=Loss%20aversion%20is%20the%20observation,long%20or%20too%20little%20time>.
27. Madaan, G. (2016, January 1). *Behavioural Biases in Financial Decision-Making*. Social Science Research Network. <https://doi.org/10.2139/ssrn.2759187>
28. Mark, R. (2022). *Nudge Yourself: Make Smarter Decisions with Your Money*. (n.d.). Schwab Brokerage. <https://www.schwab.com/learn/story/nudge-yourself-make-smarter-decisions-with-your-money>
29. Mathur, V. (2023). *The Role of Mental Accounting in Behavioural Finance | Analytics Steps*. <https://www.analyticssteps.com/blogs/role-mental-accounting-behavioural-finance>
30. Matos, D. (2022). *Availability heuristic and reversals following large stock price changes: evidence from the FTSE 100*. <https://www.semanticscholar.org/paper/Availability-heuristic-and-reversals-following-from-Matos-Pacheco/f2624857be75424ff6ca7d794dd308648b8fc537>
31. Moeller, S. (2022, January 1). *A Study of How Behavioural Finance Theory Applies to the Senior Management Decision-Making Process in M&A*. Social Science Research Network. <https://doi.org/10.2139/ssrn.4043808>

32. MSED, K. C. (2023, September 5). *What Is the Availability Heuristic?* Verywell Mind. <https://www.verywellmind.com/availability-heuristic-2794824>
33. Muradoglu, G. (2012). *Behavioural finance: the role of psychological factors in financial decisions*. <https://www.semanticscholar.org/paper/Behavioural-finance%3A-the-role-of-psychological-in-Muradoglu-Harvey/adb81542d99598edb70afa4fc4a241402ecb7d0d>
34. Nikolopoulou, K. (2023, June 2). *What Is Anchoring Bias? | Definition &#038; Examples*. Scribbr. <https://www.scribbr.com/research-bias/anchoring-bias/>
35. Nikolopoulou, K. (2023, March 20). *What Is Overconfidence Bias? | Definition &#038; Examples*. Scribbr. <https://www.scribbr.com/research-bias/overconfidence-bias/>
36. P.Veni, Rajani Kandregula (2020 )"EVOLUTION OF BEHAVIORAL FINANCE", International Journal of Science & Engineering Development Research (www.ijedr.org), ISSN:2455-2631, Vol.5, Issue 3, page no.209 - 215, March-2020, <http://www.ijedr.org/papers/IJEDR2003039.pdf>
37. Prayudi, R. M. N. (2023). *The Impact of Financial Literacy, Overconfidence Bias, Herding Bias and Loss Aversion Bias on Investment Decision*. <https://www.semanticscholar.org/paper/The-Impact-of-Financial-Literacy%2C-Overconfidence-on-Prayudi-Purwanto/6b60d97a9bd0997d36fc2eebe60e84067308f31e>
38. Preeti Kalyan, Dr. M. Gurusamy (2018, September 1). "*Behavioral finance: The role of psychological factors in investment decisions*." www.IJRAR.org. [https://ijrar.org/viewfull.php?&p\\_id=IJRAR190E009](https://ijrar.org/viewfull.php?&p_id=IJRAR190E009)
39. Rahman, M. (2019, August 12). Propensity toward financial risk tolerance: an analysis using behavioural factors. *Review of Behavioral Finance*, 12(3), 259–281. <https://doi.org/10.1108/rbf-01-2019-0002>
40. Ricciardi, V. (2008, September 15). *The Psychology of Risk: The Behavioral Finance Perspective*. Handbook of Finance. <https://doi.org/10.1002/9780470404324.hof002010>
41. S. Kevin (2022) "*SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT, THIRD EDITION*." (n.d.). Google Books. <https://books.google.kz/books?id=BtyLEAAAQBAJ&pg=PA318&lpg=PA318&dq=%E2%80%9CPsychology+has+a+story+to+tell+about+investing,+and+it+is+different+from+the+one+economics+tells,%E2%80%9D+says+Princeton+Psychologist+Daniel+Kahneman&source=bl&ots=cv9J7APwgF&sig=ACfU3U1o095yBrhV6zV2o2i6dM>

[AKHCHiYg&hl=ru&sa=X&ved=2ahUKEwiw06XP5cSEAxUxHRAIHcdnBQ4Q6AF6B\\_AgNEAM#v=onepage&q=%E2%80%9CPsychology%20has%20a%20story%20to%20tell%20about%20investing%2C%20and%20it%20is%20different%20from%20the%20one%20economics%20tells%2C%E2%80%9D%20says%20Princeton%20Psychologist%20Daniel%20Kahneman&f=false](https://www.google.com/search?q=AKHCHiYg&hl=ru&sa=X&ved=2ahUKEwiw06XP5cSEAxUxHRAIHcdnBQ4Q6AF6B_AgNEAM#v=onepage&q=%E2%80%9CPsychology%20has%20a%20story%20to%20tell%20about%20investing%2C%20and%20it%20is%20different%20from%20the%20one%20economics%20tells%2C%E2%80%9D%20says%20Princeton%20Psychologist%20Daniel%20Kahneman&f=false)

42. Sangeeta Thakur (2017). *The Impact of Behavioral Finance on Stock Markets*
43. Shefrin, H., & Statman, M. (1994). Behavioral Capital Asset Pricing Theory. *The Journal of Financial and Quantitative Analysis*, 29(3), 323–349.  
<https://doi.org/10.2307/2331334>
44. Shleifer, A. (2002, January 1). *Inefficient Markets: An Introduction to Behavioral Finance*. JITE. <https://doi.org/10.1628/0932456022975402>
45. Svoboda, J. (2022). *Analysis of Behavioural Factors Influencing Investment Decisions: A Literature Review*. <https://www.semanticscholar.org/paper/Analysis-of-Behavioural-Factors-Influencing-A-Svoboda/e09a5dca8a5f989fb654e08a99f76cfa5057fb01>
46. Talhartit, I., Jillali, S. A., & Kabbouri, M. E. (2022, October 1). *BEHAVIORAL FINANCE: HOW ARE TRADERS' FINANCIAL DECISIONS AND PERFORMANCE IMPACTED BY BEHAVIORAL BIASES*. . . ResearchGate.  
[https://www.researchgate.net/publication/365243955\\_BEHAVIORAL\\_FINANCE\\_HOW\\_ARE\\_TRADERS'\\_FINANCIAL\\_DECISIONS\\_AND\\_PERFORMANCE\\_IMPACTED\\_BY\\_BEHAVIORAL\\_BIASES\\_UNDER\\_UNCERTAINTY](https://www.researchgate.net/publication/365243955_BEHAVIORAL_FINANCE_HOW_ARE_TRADERS'_FINANCIAL_DECISIONS_AND_PERFORMANCE_IMPACTED_BY_BEHAVIORAL_BIASES_UNDER_UNCERTAINTY)
47. Thaler, R. (1999). *Mental accounting matters*.  
<https://www.semanticscholar.org/paper/Mental-accounting-matters-Thaler/c2317d524ed078d5304f0154a818b0ca7d5d3ebb>
48. The number of brokerage accounts in Kazakhstan continues to increase. (2024, April 11). <https://dknews.kz/en/articles-in-english/323086-the-number-of-brokerage-accounts-in-kazakhstan>
49. Tversky, A. (1991). *Loss Aversion in Riskless Choice: A Reference-Dependent Model*. <https://www.semanticscholar.org/paper/Loss-Aversion-in-Riskless-Choice%3A-A-Model-Tversky-Kahneman/86af5b4ce3324624bbb499eb79ee0901d6375df9?sort=total-citations>
50. Tversky, A., & Kahneman, D. (1974). *Judgment under uncertainty: Heuristics and biases*. *Science*, 185, 1124–1131.

51. Vipond, T. (2024, February 14). *Herd Mentality*. Corporate Finance Institute. <https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/herd-mentality-bias/>
52. Waters, A. G. H. A. T. K. R. (2022, November 13). *How Sam Bankman-Fried and FTX seduced blue-chip investors*. Australian Financial Review. <https://www.afr.com/companies/financial-services/how-sam-bankman-fried-seduced-blue-chip-investors-20221113-p5bxuz>
53. Xu, J., & Harvey, N. (2014, May 1). *Carry on winning: The gamblers' fallacy creates hot hand effects in online gambling*. Cognition. <https://doi.org/10.1016/j.cognition.2014.01.002>
54. Yang, L. (2019, November 1). Loss Aversion in Financial Markets. *Journal of Mechanism and Institution Design*, 4(1), 119–137. <https://doi.org/10.22574/jmid.2019.11.005>
55. Zhang, Y. (2023). *The Impact of Investors Overconfidence Bias on Investment Strategy Based on Behavioral Finance*. <https://www.semanticscholar.org/paper/The-Impact-of-Investors-Overconfidence-Bias-on-on-Zhang/e9f73093c910caa46c7cfb693c2953f632b5306e>

## **Appendix A. Questions of survey**

When deciding to buy or sell a stock, to what extent do you consider whether the company's sector or industry is currently viewed favorably by the market?

- To a great extent
- To a moderate extent
- To a small extent
- Not at all

If you hear about a new investment that is described as being very similar to a successful investment you know of, how likely are you to invest in it without further research?

- Very likely
- Likely
- Neutral
- Unlikely
- Very unlikely

When thinking about investing in stocks or other financial products, how often do you consider recent news stories or events in your decision-making process?

- Very often
- Often
- Sometimes
- Rarely
- Never

How likely are you to invest in a type of asset (e.g., stocks, real estate) after hearing about someone else's success with that investment, even if you have little to no prior knowledge or experience with it?

- Very likely
- Likely
- Neutral
- Unlikely
- Very unlikely

Upon hearing a financial forecast or market prediction, how often do you find yourself adjusting your investment strategy based on this initial piece of information, even if subsequent information suggests a different approach?

- Always
- Often

- Sometimes
- Rarely
- Never

When considering an investment, how frequently do you anchor your decision to external factors such as the current market trend, an expert's opinion heard first, or the initial performance report, rather than conducting a comprehensive analysis?

- Very frequently
- Frequently
- Occasionally
- Rarely
- Never

How do you react to a series of profitable investments? Do you believe that you are more likely to experience a loss soon because of your recent success?

- Yes, I believe a loss is more likely and may act more cautiously.
- No, I believe each investment decision is independent of previous outcomes.
- I'm not sure; I haven't thought about it this way.

When I have a successful decision, I feel that my actions and knowledge affected the result

- Very often
- Often
- Sometimes
- Rarely
- Never

When making investment decisions, how much do you rely on your own research versus professional advice or market analysis?

- Exclusively on my own research
- Mostly on my own research, with some professional advice
- A balance between my own research and professional advice
- Mostly on professional advice, with some of my own research
- Exclusively on professional advice

Reflecting on your investment history, have you ever made a decision you later regretted after reacting quickly to market news?

- Yes, I have made hasty decisions that I regretted
- Yes, but only rarely
- No, I usually do not react quickly to market news

- No, my quick reactions have generally been beneficial
- I prefer not to answer

After receiving negative investment news, what are your immediate intentions?

- Sell investments to avoid potential losses
- Ignore the news as irrelevant to the long-term effectiveness of investment
- Hold investment and watch out for any long-term consequences
- Buy more investments if the price drops, expecting a rebound

When a particular stock or sector becomes highly popular and sees significant investment inflow, how likely are you to invest in it?

- Very likely
- Somewhat likely
- Neutral
- Somewhat unlikely
- Very unlikely

Have you ever held onto an investment longer than you should have because you hoped it would recover and you could avoid regretting a loss?

- Yes, frequently
- Yes, occasionally
- No, but I've been tempted
- No, I make decisions based on rational analysis
- I prefer not to answer

How do you react to investment losses?

- I avoid looking at or thinking about them
- I review them to learn what I could do better next time
- I become hesitant to make new investments
- I quickly move on and look for new investment opportunities