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Investigating the moderating role of past behavior in the relationship between risk aversion and investment choice in the Tehran stock market

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Abstract

Research aims: The possibility of damaging factors such as risk aversion and past behavior when making investment choices is very high. Therefore, it is crucial to identify and measure risk aversion and the influence of people's past behavior in different conditions of certainty and uncertainty on investors' decisions in the market. The primary goal of this research, which has remained hidden from the perspective of many researchers, is to investigate the moderating effect of past behavior (experiences) on the relationship between risk aversion and investment choice among investors of the Tehran Stock Exchange.

Design/Methodology/Approach: Considering the unlimited population size, Morgan's Table was used for sampling, and the sample size for the unlimited population according to Morgan's Table is 384 people. Therefore, 384 community members were selected as samples. The collected data were then analyzed through SPSS and SMART-PLS software, and research hypotheses were investigated using structural equation modeling.

Research findings: The results obtained from the research demonstrated that the risk aversion factor yielded a positive and statistically significant effect on investment choice. In contrast, the factor of past behavior (experiences) generated a negative and statistically significant effect on the relationship between risk aversion and investment choice.

Theoretical contribution/Originality: This study provides information on how to earn returns for investors and increase the efficiency of securities markets. In addition, there has been minimal research into this field in Iran.

Practitioner/Policy implication: The results of this research provide for investors to pay attention to the impact of market efficiency and the optimal and desired use of available resources.

Research limitation/Implication: Among the most important limitations, three things can be mentioned: (a) society's lack of familiarity with academic research, (b) failure to provide more variables, and (c) due to some characteristics of the respondents, generalizing the results to other populations must be approached with caution.

Keywords: Past Behavior; Risk Aversion; Investment Choice



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Introduction

Investors' decision-making is influenced by their past investment profits or losses (KARSH, 2018). They tend to use past performance as an indicator of future performance in decisions to purchase stock (Parmar & Bootwala, 2022). Additionally, investors are influenced by historical high- or low-

trading stocks (Vasile et al., 2012). These behavioral biases can lead to suboptimal investment choices and inefficient markets. These deviations from rationality in investor behavior are understood and explained in behavioral finance as a field (Muhammad & Maheran, 2009). It challenges the traditional finance approach that assumes rational acting investors. By incorporating insights from psychology and sociology, behavioral finance provides a more comprehensive understanding of how investors react to previous returns and make investment decisions. This understanding can help identify and address the biases that investors exhibit, leading to the development of measures such as regulations and investment education to improve decision-making and market efficiency.

In this case, investigating the moderating role of past behavior on the relationship between risk aversion and investment choice in the Tehran Stock Market is an important area of research. The Tehran Stock Exchange has seen increased fraudulent reporting through transactions with related parties, highlighting the need for effective corporate governance (Pakdelan et al., 2022). Additionally, the quality of corporate governance has been found to impact investment efficiency and the risk of financial information disclosure (Kashani & Mousavi Shiri, 2022). Furthermore, the optimal selection of stock portfolios using multi-criteria decision-making methods has been studied, providing insights into maximizing returns and minimizing risk (Jing et al., 2023). Understanding the behavioral biases of individual investors, such as self-control and risk aversion, is crucial for financial security (Mohammadi et al., 2022). Finally, the relationship between social responsibility and the cost of equity capital has been explored, with operational risk found to moderate this relationship (Sotoudeh & Samet, 2022). By examining these various aspects, the study on the moderating role of past behavior on the relationship between risk aversion and investment choice in the Tehran Stock Market can contribute to a comprehensive understanding of investment decision-making.

In the real world, this behavior is hardly comprehensible and acceptable to investors as they seek to optimize profits on a logical basis; even assuming that investors are knowledgeable about everything, the fact that they may be forced to show too much flexibility in the process of searching for and analyzing information to make an investment decision (Kargarborzi, 2021). Moreover, considering that the attitude of never giving up in trying to achieve performance goals is one of the factors affecting performance (Sofyani et al., 2019), investment decisions can be considered from this point of view. Trying to obtain effective and important information for decision-making can prevent paying attention to past decisions and make decisions with more up-to-date and logical information to be more efficient and effective.

Before discussing financial behavior in financial management and the economy, the economic demand theory is used to interpret investor behavior in the capital market. In comparison, numerous scientific studies and investigations into financial behavior have noted the significance of psychological factors. Although the theories of financial behavior in buying and selling decisions date back to earlier periods, the internal and external factors should be examined subtly because individuals are exposed to the thoughts and mentalities of a wide range of people, giving knowledge of and

understanding of these mentalities' priority. Further, this research has a key feature called an action potential, which means that the activity of the stimulus (e.g., a positive reward) causes people to show a reaction mainly at the initial point. According to this discovery, investors rely too much on their previous experiences, which causes them to depend on their psychological beliefs and reduce their risk tolerance. These beliefs also exhibit the investors' overconfidence in the past returns of investing in the companies' shares. Considering the extraordinary expectations, investors think that the increase in the stock price in the past will also be preserved in the future (Greenwood & Shleifer, 2014). This issue indicates that investors are very sensitive to past returns and behavior.

Additionally, the capital market is regarded as one of the most significant foundations of economic growth and development of any country, along with the money market and insurance. Collecting monetary resources and small and large capitals and transferring them to economic activities with the highest efficiency and effectiveness is deemed the vital task and mission of the capital market (Alimohammadi et al., 2018). One of the ways people participate in economic development is by investing in the capital market and the stock exchange, through which small wandering savings find their way to productive activities, moving the wheel of production and economy. However, some of these complicated financial products can be challenging for investors to understand, particularly for newcomer investors. Experience has shown that those who make speculative investments typically earn very little return (Yousefi & Tayibizadeh, 2017).

The second main tenet of conventional financial knowledge—the assumption of "market efficiency"—has been challenged by the emergence of phenomena like price bubbles in the stock market, the existence of excessive price fluctuations, and the over- and under-reaction of investors to new information. The existence of these irregularities with exceptions in the market is inconsistent with the theory of market efficiency (Engabini, 2012).

As a new branch of study, behavioral finance attempts to explain phenomena such as what was mentioned (such as bubbles, herd behavior, and others) (Pompian, 2012). Investigating the psychological factors that affect individuals' financial behavior and wealth can help us better understand how people make financial decisions (Strömbäck et al., 2017). In addition, the study of financial markets using models that are less constrained than those based on Von Neumann-Morgenstern's anticipated utility theory and arbitrage assumptions is known as behavioral finance. The limits of arbitrage and cognitive psychology are the two main tenets of behavioral finance. Here, cognitive refers to the process of thought. Numerous studies in psychology have shown that people consistently make mistakes in their thinking, including being overconfident and placing too much emphasis on recent experiences. Furthermore, their preferences might lead to distortions. Instead of taking the conceited stance that this corpus of information should be disregarded, behavioral finance takes advantage of it. Meanwhile, limits to arbitrage allude to determining when and under what conditions arbitrage forces will be effective (Ritter, 2003).

Evidently, paying attention and preparing a solution to support small investors are two of the most necessary areas discussed in the stock market. To support small investors, a large part of whom are real investors, it is very useful to know their behavior to correct it. This group of investors and stock market policymakers can increase the proportion of real investors in the stock market by understanding the decision-making process and the factors influencing real people's transactions, one of the key components of financial science that looks at decision-making behavior. It deals with behavioral finance in the financial industry (Engabini, 2012).

Further, almost everyone is aware of the difficulties of making investment judgments based on experience and the possibility of making financial decisions that are not based on sound reasoning. As a result, many investors are interested in learning how to counteract this phenomenon and may regulate and restrict systematic calculation errors. However, only a few deviations are defined in the research, even though a review of behavioral finance research demonstrates that this developing scientific discipline is most appropriately developed to simulate these real-world economic actors. One of the typical factors that significantly affect asset allocation is behavioral finance. Knowing the important behavioral influences on decision-making is the first step toward achieving this objective. To improve investment outcomes by application and planning, the next step in the practical application of behavioral finance is to link the known aberrations with personal, environmental, professional, and other variables (Tehrani & Hisarzadeh, 2009).

Therefore, this study aims to investigate risk aversion, investment choice, and past behavior of investors on the Tehran Stock Exchange. According to this research, many important topics in theory and science can be implemented in practice to help investment efficiency and make appropriate decisions. By identifying the variables influencing susceptibility to each of the characteristics mentioned earlier, the authors hope to offer advice to capital market decision-makers deciding how to allocate assets. From Nofsinger's (2005) point of view, behavioral finance exhibits how people's actual behavior in financial planning differs from rational behavior. One of the effective variables in this difference is the behavioral assumptions related to decision-making. The two perceptual flaws that are the subject of this research—risk aversion and previous behavior—may harm the choices that investors and financial counselors make. Hence, it is vital to identify and measure risk aversion and the impact of people's past behavior in different situations of certainty and uncertainty on investor's decisions in the market.

Literature Review and Hypotheses Development

Theoretical Underpinning

By referring to different scientific sources, several definitions of risk can be found. Of course, each definition has provided a different description of risk depending on its dimension or perspective. In the management culture of the guide, in the definition of risk, it is stated (Mandelker, 1974):

“Risk is anything that threatens the present or future of an asset with the company's ability to earn money, an institution, or an organization.”

Weston and Brigham (1975) write in the definition of the risk of an asset (Firer, 1993) as follows,

“The risk of an asset is the possible change in future returns resulting from that asset.”

Definition of risk aversion and the reasons for the need to measure it

It is very important to be aware of each person's risk aversion. The investments that exceed the person's risk tolerance and put much financial pressure on him will be permitted if the investments are chosen according to the person's risk tolerance, and the quantity of participation is determined by his financial circumstances. With a small change in the capital market, a person will feel a big risk and stress. Much stress will cause unspecialized, quick, and short-term decisions. On the other hand, the investor will not have the patience for the situation to return to normal. As a result, at the worst time, when rates are at their lowest, he decides to exit the capital market and convert it into cash, incurring a double loss after deducting taxes and related crimes.

Investors can be divided into three categories regarding risk acceptance and the shape of the utility curve as follows (Shahrabadi & Yousefi, 1386). First, risk-averse people are those who have a conservative strategy. The ultimate utility of risk-averse people decreases as their wealth increases, so any person whose wealth utility curve is concave is a risk-averse person. Green-risk people prefer to earn a certain return and will not participate when luck is involved. The second is risk-taking people who have a bold strategy. According to the definition, a risk-taking person is someone whose utility of wealth is convex, so for this person, the ultimate utility increases with the increase of wealth, and in this case, the person always wants to accept risk and likes to test his luck. Third is people who are neutral towards risk. The third group is people who are called neutral risk. These people consider the value of money as its nominal value, and it is a function of the utility of such people in the form of a straight line. Risk-neutral behavior is often seen in extremely wealthy people.

In short, it can be said that examining people's risk-taking and risk-aversion is essential because people are not risk-averse always and in all their behaviors as assumed in economic models; however, there are times when they become risk-takers and accept risks. In addition, financial market players and policymakers state the category "risk appetite of investors" as an important driver to describe the downward trend of risk-taking and the yield gap of similar securities. Risk appetite reflects investors' willingness to keep high-risk assets in their stock portfolio, and the amount of this willingness depends on the investors' attitude towards risk and the risk of the assets in their balance sheet.

Risk aversion is one of the inherent characteristics of an investor, and studies show that there is very little possibility that it will change significantly or frequently over time—risk

tolerance, on the other hand, changes periodically. In unfavorable conditions, an investor requests a higher expected additional return for holding each unit of risk, and at this time, the risk tolerance will be low.

Determining factors affecting risk aversion

Before the development of behavioral finance in financial management and economics, the economic utility theory was used to interpret investor behavior in the capital market. In contrast, a large body of research in behavioral finance established the significance of psychological factors. The idea that psychological and behavioral traits of people influence purchase decisions has been explored in prior studies, even though behavioral finance theories are relatively new and have only been around for a decade. Now that futures contracts have entered the investing market and the stock market has undergone recent changes, it is important to carefully assess all internal and external elements because we deal with individuals with various beliefs and perspectives. Knowing and understanding these mentalities is highly important (Gai & Vause, 2005).

Investment choice

One of a company's most crucial decisions is how to allocate resources to investments whose benefits will be realized in the future. Investing in capital assets is one of the most crucial components of such decisions. Since future benefits cannot be determined with certainty, investments are necessarily risk-associated. Therefore, their expected value and risk should be evaluated because these factors affect the value of companies' shares. The combination of such assets and the combination of business risk determine investment decisions from the perspective of capital providers. Besides, information asymmetry and agency issues are significant in investment decisions. In businesses with limited resources, information asymmetry, market fluctuations, and their effects on external finance simply induce underinvestment. At the same time, agency issues brought on by excessive investment are typically caused by managers focusing on their interests and improperly investing free cash flow in ventures with little current value (Alti, 2003). According to investment theory, businesses are prepared to invest in projects with a fixed rate of return higher than their cost of capital, which necessitates lower borrowing costs (Vaez & Baghi, 2015).

Various factors influence investment choice. Past research has demonstrated that the theory of Modigliani and Miller (1958) is true only if there are efficient markets, and in practice, in inefficient markets, companies' investment decisions will not be independent of their capital structure. Imperfect markets lead to agency problems caused by the interaction between managers, shareholders, and creditors, which can result in incentives for over-investment or under-investment. Stulz (1990) states that the presence of financial leverage in the company's capital structure reduces underinvestment and increases overinvestment, and short-term debt can effectively reduce information asymmetry. From the point of view of lenders, short-term loans can affect management control and supervision. Also, governance mechanisms can make optimal decisions regarding effective investment and financing at a lower cost. Suppose

it is determined that the presence of institutional owners as one of the monitoring and management mechanisms of the business can make appropriate decisions regarding investment and optimal financing. In that case, it is possible to achieve a suitable performance, and on the other hand, the incentives for small investors to invest in these businesses increase, and they can assess the future status of businesses. The makeup of ownership, particularly the owners of institutions that own the majority of substantial shares, is one of the most crucial variables influencing the control and management of businesses (Safari & Houshmand, 2016).

Determining factors in investment choice

Neoclassical theories suggest that businesses invest to increase their value until the marginal benefits of that investment equal the marginal costs. Companies may deviate from their ideal level of investment, which causes them to suffer from underinvestment or overinvestment, according to the Keynesian framework, which asserts that investment is determined by the priority for growth with financial security, and the agency framework, which takes information asymmetry issues into account. All projects with a positive net present value should be financed and carried out in a perfect financial market. There are numerous views, though, that go against this presumption. Implementing initiatives with a negative net present value (overinvestment) and rejecting ideas with a positive net present value (underinvestment) can be caused by market failures, information asymmetry, and agency costs. According to agency theory, the existence of information asymmetry between stakeholders can be used to explain both excess and insufficient investment. Managers can try to maximize personal benefits through investments that may not be suitable for shareholders due to moral hazard, conflicts of interest between shareholders and managers, and a lack of monitoring of managers. This results in expanding power, management, and excess investment leads. Because of this, capital providers may ration capital or raise its cost, rejecting some profitable projects and, ultimately, insufficient investment due to restrictions. Managers with better information may make additional investments based on adverse selection if they sell securities with increased prices and obtain excess funds (Biddle & Gilles, 2006). Therefore, the hypothesis proposed is as follows:

H₁: There is a significant relationship between risk aversion and investment choice.

Past Behavior

The study of investor behavior, particularly on the stock market, is known as behavioral finance, which affects the psychological factors of decision-making in conditions of uncertainty (Simon, 1987). Behavioral economics and behavioral finance are closely linked fields of study. The behavior of investors, which originates from various factors, including their perception and sense, affects their decision-making process. Therefore, the choice of investment, allocation of monetary resources, price, and yield are a function of investors' behavior. Behavioral models integrate classical economic and

financial theories with psychological theories and explain capital market events from a broader perspective (Locke et al., 2000).

The link between psychology and economic sciences from a historical perspective

Irrational investor behavior has existed for as long as markets have. The earliest recorded instance of irrational investor behavior in the 16th century during the early modern era of equilibrium policy involved Konrad Goestner, who brought tulip bulbs from Constantinople and planted them in the Netherlands. Although early buyers bought bulbs out of interest in tulips, speculators soon engaged in a fiercely competitive activity to make a profit. With the increase in trading activity, Tulip bulbs were exchanged on the neighborhood stock exchange. The Dutch middle class became obsessed with tulips, and people sacrificed everything they had—including their homes, cattle, and other necessities—to buy the bulbs, hoping the price of onions would rise. Some European stock exchanges, including those in Amsterdam, Rotterdam, Haarlem, and others, were listed as tulip bulbs in 1936. However, the initial speculators started selling off their tulip holdings later that year. Tulip prices dropped gradually initially, then abruptly; within a month, onions lost 90% of their worth. Numerous investors were compelled to breach their tulip contracts, incurring significant losses.

Past behaviors, risk aversion and investment choice

The results of the influence of people's psychological characteristics on decisions are not similar to mathematical models and have their own weighting rules. People sometimes use rules of thumb to make decisions. Although these rules can be useful, use of these rules can lead to systematic biases. Kahneman and Tversky (2013) challenged the idea of expected utility (MacGruder, 1987) as a framework for making decisions in risky circumstances and offered a replacement framework known as prospect theory. Prospect theory states that people value gains and losses rather than final assets. People employ heuristic rules, which Tversky and Kahneman described, to make decisions when faced with ambiguity.

The innovative rule of representation means that the company's past performance causes the formation of a classification in people's minds and creates biased expectations about the company's future performance (Badri & Goodarzi, 2014). While availability rule estimates of how frequently an event occurs are influenced by availability or the ease with which one can recall examples (Folkes, 1988), the innovative rule of benchmarking hangs on to previous returns and makes decisions based on that.

Strahilevitz et al. (2011) stated that an investor's past behavior impacts buying and selling decisions. Investors are more likely to repurchase shares of stock that have increased in value after being sold than they are to purchase shares that have decreased in value (Hoffmann & Ketteler, 2015). It may be claimed that investors' high encouragement of past returns, i.e., their willingness to rely on past returns based on psychological features, can be justified with the aid of the novel rule of agency when characterizing looking back for future judgments.

This research assumes that the returns obtained in prior periods are familiar things that investors remember, and they maintain faith in the future, assuming they can again get such favorable results (Khan et al., 2017). As a result, they continue to rely on things they are more familiar with. Based on the accessibility rule, investors refer to the returns obtained in the recent past. According to the benchmarking rule, people may make judgments and predictions about future returns by handing over past returns and adjusting these returns. All these cases are discussed under the title of psychological biases. Based on the rules mentioned above and by combining two categories of research literature, one literature refers to previously perceived returns, and the other is the literature that deals with psychological biases. Thus, this research assumes that previous returns through psychological biases such as overconfidence, optimism, and risk tendencies mediate variables on investors' behavior, including trading (buying and selling, willingness to trade) and risk-taking. They (risk sharing and willingness to take risks) have direct and indirect effects (Amiri & Moradi, 2017).

Several studies have been conducted. Among others, Hasanzade et al. (2019) found that, in Iran, investment decisions are influenced by individual attitudes, accounting data, economic data, and personal financial demands. However, there is no conclusive link between investors' choices and financial literacy. It was also discovered that risk tolerance influences people's investment choices.

In their research (Zainiwand et al., 2022), the Tehran Stock Exchange was used to study genuine and legal investors' behavioral biases and investment decisions. The findings revealed that the behavioral biases of real and legal investors affected investment decisions differently. They had levels of support and resistance, and behavioral biases among actual investors had greater predictive power than their investment choices. The findings also revealed that the behavioral biases of shortsightedness, excessive optimism, and one-dimensional analysis were the same between these two groups of investors.

Amiri and Moradi (2017), in their research of "Investors' financial conduct and psychological biases as a mediating variable: The impact of perceived historical returns," concluded that psychological biases such as overconfidence, optimism, and risk propensities simultaneously and perceived past returns influenced financial behaviors.

In addition, Mohammadi et al. (2017) employed the meta-analysis method, and the main investor biases in the Iranian capital market were discovered. For this reason, a systematic review of domestic and foreign reliable databases (from 2016 to 1980) and, finally, a review of 60 studies that examined the biases of investors in the capital market using the same statistical analysis method were the main cognitive and emotional biases of investors were identified. Cognitive and emotional biases were identified: overconfidence, reliance and adjustment, representation, self-reference, conservatism, ambiguity avoidance, mental accounting, recent events, shaping, situational effect, and self-control. Optimism, loss aversion, and regret avoidance were the three emotional biases.

Raut (2020) also uncovered a substantial indirect association with the mediating role of attitude in a study titled "Past Behavior, Financial Literacy, and Investment Decision-making Process" that indicated past behavior did not directly influence investment choice. Additionally, it was discovered that societal pressure had a major influence on Indian investors, which can be reduced by financial literacy.

Examining how behavioral biases affected individual Indian investors' investing choices, Jain et al. (2019) used the Fuzzy Hierarchy Analysis (FAHP) method. Their study indicated that overconfidence, risk aversion, and carelessness are the three most significant behavioral characteristics.

Since Gill et al. (2018) looked at the information search's mediating role in the influencing factors on investment choice behavior, the effect of two factors, including the behavioral bias of overconfidence and economic expectations, on the investment decision behavior of Pakistani stock market investors was investigated. According to the study's findings, information search had no appreciable impact on the relationship between economic expectations and investment choice behavior, which was shown to be a positive and significant relationship between the two. Information seeking significantly affected the association between overconfidence and investment choice behavior, and there was a positive and significant relationship between overconfidence and investment decision behavior.

Moreover, Khan et al. (2017), in examining the effect of previous portfolio returns on financial behaviors concerning underlying psychological mechanisms, concluded that psychological biases influenced financial behaviors.

In research about which factors affect behavioral biases (Turkey's real investors), Tekçe et al. (2016) concluded the general effect of mood, familiarity bias, heuristic rule of similarity, and situational bias. Currently, there are biases related to high self-confidence and performance efficiency.

Furthermore, Bakar and Yi (2016) investigated "the influence of psychological factors on the decision-making of investors in the Malaysian stock market" using questionnaires among 200 investors between the ages of 18 and 60 who were involved in stock trading in the Malaysian stock market. The results demonstrated that while mass behavior had no substantial impact on investors' judgments, overconfidence, conservatism, and availability bias had considerable influence.

Hence, the following hypothesis was derived:

H₂: Past behavior moderates the relationship between risk aversion and investment choice..

The study's conceptual framework

The model taken into account in this study was generated (Raut, 2020) and is based on the influence of the moderating role of past behavior on the link between risk aversion and investment choice. Thus, this is depicted as Figure 1.

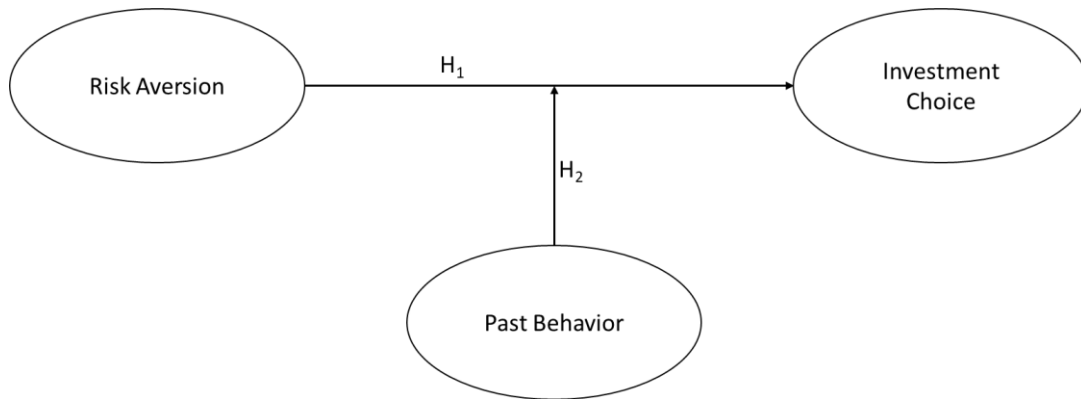


Figure 1 Research Model

Research Method

Since this study aimed to explain risk aversion and the decision to invest in the Tehran Stock Exchange market, the current research used a descriptive survey method regarding its practical purpose and implementation. The type of modeling was structural equations. Library and field research techniques were used as this study's main data collection techniques. Through the study of the relevant literature and the context of the research, an appropriate framework for the research topic was given in the library method. In the field method, the data required to explore the issue was gathered using the questionnaire instrument.

From the perspective of considering the statistical sample's perceptions of the research variables under inquiry, this study was descriptive. For this reason, because the present research was descriptive, the researchers tried to do as much as possible without any interference or citation. One of the traits of descriptive research is that the researcher investigates what is present, describes it, and explains it without interfering with the location, status, or role of the variables or trying to control or modify them. In addition, since the relationship between all variables was examined, correlation techniques and tests were also employed. Due to the correlation, the current research aimed to investigate the changes in one or more factors due to the changes in one or more other factors.

The sample size for the infinite population was determined using Morgan's Table, mentioning that 384 people should be included in the sample. Therefore, 384

community members were selected as a sample, and the present research was conducted in the first half of 2021.

The public of this research were the investors of the Tehran Stock Exchange, who were directly active in the market. These investors had different characteristics, and an attempt was made to select the sample randomly and in a way that included the characteristics of the types of investors. Hence, all the investors, Iranian nationals, including individual investors, brokers, and brokers in the capital market of Iran, and the interests of profit and profit in investing in them could be observed. In addition, the number of sample people was selected according to the following method.

$$N = \frac{N(Z_{\alpha/2})^2 p_q}{(N-1)D^2 + PQ(Z_{\alpha/2})^2} = \frac{7200508 \times (1.96)^2 \times 0.25}{419 \times (0.05)^2 + 0.25 \times (1.96)^2} = 384$$

In this research, the indexed questionnaire 1, whose validity and reliability had already been measured, was used to measure the variables.

Table 1 Questionnaire's Cronbach's Alpha Value

Row	Subscales	Cronbach's alpha
1	0.749	Risk aversion
2	0.778	Past behavior
3	0.749	Investment choice

In addition, the reliability and validity of the research questions were done by delivering the questionnaire to experts. After two weeks, the questions were given to experts again to determine Cronbach's alpha. Cronbach's alpha coefficient should be above 0.7. In this research, Cronbach's alpha coefficients for the questions of all three variables were above 0.7, indicating that the questionnaire questions had good validity and reliability

Structural equation modeling was utilized to evaluate the research hypotheses after the data were analyzed using SPSS and SMART-PLS software.

Result and Discussion

Results

In order to prevent common-method variance (CMV) from entering the research, various methods can be used, such as designing the questionnaire so that terms or expressions with multiple meanings are not used. Also, the questions in the questionnaire should be such that the questions are related to the same topic. In addition, adding control questions to the questionnaire, which covertly assesses CMV, can help to prevent its influence on research results. Another way to better understand CMV and ways to prevent it is to study more in this field and learn about different methods of dealing with it (Fuller et al., 2016).

In this study, to avoid common-method variance (CMV), the authors put the questions of each variable together so that the respondents could focus more on answering each question in the questionnaire. Also, the authors did not use polysemous terms and added research to avoid common-method variance (CMV).

Respondents' Demographics

According to Table 2, this study had a sample of 272 men (70.83%) and 112 women (29.17%). Concerning the educational background, 270 (70%) of the respondents had university degrees, and almost 39 (10%) had master's and doctoral degrees. Also, 252 (65.6%) respondents were less than 40 years old, and 132 (34.4%) were more than 40.

Table 2 Respondents Demographics

Characteristic	Number	(%)
Gender		
Woman	112	29.17
Man	272	70.83
Total	384	100
Age		
<20 Years	33	8.6
21-30 Years	74	19.2
31-40 Years	145	37.8
41-50 Years	84	21.9
>51 Years	48	12.5
Total	384	100
Educational Background		
Diploma	114	29.7
Bachelor	231	60.1
Master	36	9.4
Doctorate	3	0.8
Total	384	100

The normality test of research variables

The Kolmogorov-Smirnov test was used in this study to determine the distribution of variable data, showing that the variables had a normal distribution when the P-value in Table 3 was less than 0.05.

Table 3 Value of Variable Data Distribution from the Kolmogorov-Smirnov Test

Direction	P-value	Result
Risk aversion on investment choice	0.000	Normal
Past behavior on investment choice	0.000	Normal
Adjustment variable of past behavior* risk aversion on investment choice	0.003	Normal

Confirmatory factor analysis (CFA) measurement model

To ascertain whether the chosen indicators have the requisite accuracy to measure the desired structures, it is important first to examine the validity of the chosen structure in the structural equation model approach. Confirmatory factor analysis was employed for this goal. In this method, the t-value should be between -1.96 and 1.96, and the loading factor of each indication with its structure should be at least 0.3. In this case, this indicator has the necessary accuracy to measure that structure with immovable property. The measuring model with the same confirmatory factor analysis was used to separate the researched dimensions in this study to assess the degree to which each research construct aligned with the indicators used to measure them.

Table 4 Loading Factor of Research Components

Variables	Questions	Loading Factor	T-value	P-value
Risk aversion	ri1	0.613	10.050	0.000
	ri2	0.622	11.435	0.000
	ri3	0.80	26.702	0.000
	ri4	0.704	16.689	0.000
	ri5	0.68	15.399	0.000
	ri6	0.568	9.412	0.000
Past behavior	ra1	0.862	59.125	0.000
	ra2	0.625	10.736	0.000
	ra3	0.773	21.645	0.000
	ra4	0.701	17.142	0.000
	ra5	0.667	12.051	0.000
Investment choice	en1	0.647	13.127	0.000
	en2	0.579	9.721	0.000
	en3	0.648	11.895	0.000
	en4	0.63	11.234	0.000
	en5	0.71	17.984	0.000
	en6	0.64	12.275	0.000
	en7	0.56	9.151	0.000
	en8	0.653	13.655	0.000
	en9	0.711	16.271	0.000
	en10	0.612	10.944	0.000

The selected questions provide a suitable factor structure for evaluating the researched dimensions in the research model. As shown in Table 4, the factor load was more than 0.3 in all cases, and the t-statistic value was more than 1.96. Also, the significance of all coefficients was less than 0.05, and they were significant at the 95% confidence level.

Correlation of research variables

A prerequisite is a correlation link between the two variables the authors planned to study to determine how to affect them. The following table displays the correlation coefficients regarding the correlation between two research variables.

Table 5 Correlation Coefficient of Variables

Effects Test	Investment choice	Past behavior	Risk aversion	Risk aversion *Past behavior
Investment choice	1.00	0.83	0.80	-0.43
Past behavior	0.83	1.00	0.79	-0.36
Risk aversion	0.80	0.79	1.00	-0.25
Risk aversion*Past behavior	-0.43	-0.36	-0.25	2.43

A positive correlation coefficient indicates a positive and direct relationship. In contrast, a negative coefficient denotes a negative and inverse relationship between two variables. According to Table 5 (the value of the significance level was less than 1%), all correlation coefficients were significant at the 99% confidence level.

R² criterion

The hidden dependent variables of the model are related to R² coefficients. The R² coefficient, measuring how an independent variable affects a dependent variable, has three values: 0.19, 0.33, and 1.67, which are regarded as indicators of weak, medium, and strong R² values, respectively. Supporting that, the structural model in this study fits the three criterion values, according to Table 6.

Table 6 R² Coefficients

	R Square Adjusted
Investment choice	0.75
Past behavior	0.62

Q² criterion

If the value of Q² in the case of the endogenous structure reaches three values of 0.02, 0.15, and 0.35, it shows the weak, medium, and strong predictive power of the corresponding exogenous structure, respectively. This criterion establishes the predictive power of the model.

In this research, the values obtained for the structures listed in Table 7, demonstrating the strong ability of the model in predicting these structures, attests to its suitability.

Table 7 Criterion Q²

Variable	Q ²
The pattern of past behavior	0.32
Investment choice pattern	0.29

VIF and NFI criteria

In this test, the goal is to observe the high collinearity of the apparent variables of a combined measurement model. The authors know that in a mixed measurement model, the latent variable is the dependent variable, and the manifest variables function as the

independent variables, much like in a multiple regression. On the other hand, the authors know that one of the conditions and assumptions of regression is the non-collinearity of independent variables.

Therefore, to check this situation, the VIF variance inflation or distortion index was used, in which the variance inflation index above 10 indicates a critical collinearity situation, and a value close to 1 represents a favorable situation and shows an acceptable level of collinearity.

The value was obtained for the structures listed in Table 8, displaying the model's strong collinearity with this structure. It proves its proper fit.

Table 8 VIF Criterion

Variable	VIF
Risk aversion on investment choice	2.75
Past behavior on investment choice	2.65
Variable influencing past behavior* risk aversion on investment choice	1.06

Following that, the NFI criterion is another one used to gauge how well the model produced fits the data. The adequacy of the extraction model is indicated if this index's value is greater than 0.90. Following Table 9, the structure value was produced, showing the model's sound condition concerning this structure and confirming its appropriate fit.

Table 9 NFI Criterion

Variable	NFI
General research model	0.91

Test of hypotheses

The authors employed the proposed model, including substantial Z and standard coefficients, to test the study hypotheses. Following the data analysis technique used in the PLS approach, the researchers might study and evaluate their research hypothesis and arrive at the findings after determining whether the model fits the data.

Table 10 The Results of the Research Hypotheses Test

Direction		Standard estimate	T-statistic value	P-statistic value	Result
Risk aversion→investment choice	H ₁	0.390	6.092	0.003	Supported
Past behavior*risk aversion→investment choice	H ₂	-0.061	-3.023	0.000	Supported

The predicted coefficient of risk aversion path on investment choice was equal to 0.390 based on Table 10 and the estimated research model. In light of the significance of this coefficient and the t-value for this parameter above 1.96 (6.092), it can be concluded that the risk aversion factor had a statistically significant impact on the choice of

investment. The 1% error rule supports this conclusion in rejecting the null hypothesis for values above 1.96 in each model parameter, and research hypothesis 1 is confirmed.

According to the research model and the indicators of the path coefficient and t component specified for each of the variables, it can be checked that risk aversion affected the choice of investors.

The path coefficient of the influence of the moderating variable of past behavior on the link between risk aversion and investment choice has also been evaluated to be equal to (-0.61) based on the findings of Table 10 and the estimated research model. When considering the significance of this coefficient, it can be said that the factor of past behavior plays a significant role. The t-value for this parameter was calculated above 1.96 (-3.023) under the rule of 1% error in rejecting the null hypothesis for values above 1.96 in each model parameter. Thus, it had a statistically significant detrimental impact on the association between investment choice and risk aversion.

Conclusion

Investors overestimate their past behaviors. They believe they have made more money in the past by doing this. As a result of this favorable perception, investors' expectations of the future are more upbeat. When investors get more profit and income from the market, they become optimistic about it. Optimism acts as a return on expectations about returns. Investors will have positive expectations for future portfolio returns since they have experienced higher returns. Additionally, past perceived portfolio returns may contribute to investors' overconfidence, which depends on the magnitude of prior profits. This problem pushes investors above average and increases the aspects of their overconfidence, whereas prior losses decrease it.

The findings of this research section, which focus on the beneficial influence of past behavior on investors' investment choices, are compatible with those of Amiri and Moradi (2017), although they do not match those of Raut (2020). The results of this study are also consistent with the research written by Jain et al. (2019), who concluded that risk aversion and overconfidence are the behavioral tendencies of investors. Also, the results of this research are in accordance with the research (Khan et al., 2017), who deduced that psychological biases affected financial behavior. Considering that the previous decisions can be called availability decisions, the results of this study align with the research done by Bakar and Yi (2016) in Malaysia, who found that availability bias had a significant effect on investors' decisions. This discrepancy can be attributed to the two studies' statistical populations' differing levels of financial literacy and cultural issues. According to research from India, social pressure concerns are the key reason most investors are eager to invest in the stock market (Raut, 2020).

Studies already conducted indicate that optimism may play a role in the relationship between past behavior and taking risks. Investors are likely to be upbeat due to past and favorable results. This research demonstrates how investors' sensitivity to investor

optimism about the portfolio market would affect them through their desire to gain the portfolio's past returns, which is in line with the attitude of the current studies. Due to optimism, they consider the amount of risk to be less, and due to the expectation of more profit, they tend to take more than average risk and avoid risk aversion. Past profit gives investors more confidence in their abilities and skills.

The findings indicate that investors depend more on their past behaviors regarding behavioral models. Investors who overly extrapolate the portfolio's historical performance exhibit risk-taking, overconfidence, and self-optimism. The effects of overconfidence include more financial turnover, more company goals, and retaining a bigger risk share. On the other hand, optimism leads to the preservation of the risky share and a greater willingness to take risks.

Risk attitude leads to less risk aversion. The outcomes of the mediation demonstrate that overconfidence affects portfolio turnover by way of prior portfolio returns.

Every research in the way of gathering information and obtaining desirable results faces problems that need to be identified, and steps need to be taken to solve them. Conducting this research was also faced with several problems, the main of which were: a) The low familiarity of the society concerning academic studies and research and the statistical community of this research were not exempt from this; b) Failure to provide more effective independent and moderating variables in the research; and c) Due to some characteristics of the respondents, it is necessary to generalize the results to other communities that were cautious.

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Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.



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