Educational Administration: Theory and Practice
2024, 30(6), 3762-3773
ISSN: 2148-2403
https://kuey.net/

Research Article

Antecedents And Consequences Of Investors' Financial Behavior In Tehran Stock Exchange

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Citation: Amir Ghafourian Shagerdi, et al (2024), Antecedents And Consequences Of Investors' Financial Behavior In Tehran Stock Exchange *Educational Administration: Theory and Practice, 30(6), 3762-3773*
Doi: 10.53555/kuey.v30i6.6279

ARTICLE INFO

ABSTRACT

The purpose of this research was to investigate the antecedents and consequences of the financial behavior of investors in Tehran stock exchange. This research is applied in terms of purpose and descriptive-correlational in nature. The research population consisted of all investors of the stock exchange in Mashhad, and due to the uncertainty of population size, the minimum sample size was decided to be 384. A non-random sampling method was used. The data collection instrument was a standard questionnaire in 4 parts that examined financial literacy, thinking style, self-control, risk-taking propensity and financial behaviors measured along with 34 items. The validity of the instrument was checked and confirmed using face validity, construct validity, divergent and convergent validity. Also, the reliability of the questionnaire was checked and confirmed using Cronbach's alpha coefficient and composite reliability. Confirmatory factor analysis and hypothesis testing were done in SmartPLS3. The results showed that investors' financial literacy, rational-analytical thinking style and self-control in the stock market significantly and positively affected their financial behavior. In other words, the higher the level of investors' financial literacy and rational-analytical thinking style, and the higher their self-control in the stock market, the better their financial behavior. Moreover, improving the investors' financial behavior can increase their risk-taking propensity.

***Keywords*:** risk-taking propensity, financial literacy, thinking style, financial behavior, self-control, Tehran Stock Exchange

1. Introduction

Financial behaviors are human behaviors concerning financial decision-making and money management, such as making an appropriate budget plan and controlling it, paying bills quickly and making regular savings, planning expenses properly, taking care of financial stability, and so on. In Western economics and when analyzing financial behaviors, human being is defined as a rational creature that makes decisions in completely transparent conditions. Herbert Simon (1990), a pioneer in financial behavior, described economic man as an unreal being in economic theories. That is, an investor may make a decision that is not economically justified or does not spend on necessary things, yet spends on unnecessary things, which can be regretable in future (Abendroth & Diehl, 2006). Today, financial literacy is an economic concept and principle for making correct decisions in financial matters. Financial literacy is an important aspect of modern life. People are increasingly responsible for managing their finances (Gignac & Stevens, 2024). Policymakers and academic researchers suggest increasing financial literacy as a critical factor to improve financial health (Goyal et al., 2021). When an individual is financially literate, s/he can budget the income for several purposes, including current expenses, savings, debt pay-back, and so on. Thus, policy makers see financial literacy as the key to improving consumers' behavior and having a positive effect on their financial behavior (Fernandes et al., 2014).

Researchers draw attention to the direct association between financial literacy and financial behaviors (Ghafurian Shagerdi et al., 2023). Another factor that can influence financial behaviors is special situational thinking styles described as specific thinking styles or a momentary thinking orientation a consumer takes in a particular situation (Novak & Hoffman, 2008). Depending on the situation that the consumer faces or the arguments s/he makes to complete a task, there are different thinking styles to choose from (Novak & Hoffman, 2008). Overall, the relevant existing research findings show that thinking styles (intuitive and rational-analytical) affect investment behavior and the effect of financial literacy decreases with the introduction of thinking styles (Glaser & Walther, 2014). The difference between perceived intuitive and rational-analytical thinking is more significant for financial decisions than in any other area. Consumers who rely more on their intuitive-experiential thinking style show less favorable financial behaviors than those who depend more on their rational-analytical thinking in making financial decisions (Park and Sela, 2017). Besides, other factors also affect the financial behavior of a consumer or customer. In the past, most research aimed to shed light on cognitive factors affecting financial behavior. There is a dearth of research on non-cognitive factors such as self-control, tasks and social values (Lusardi, 2008). Marshmallow theory suggests that better self-control leads to better well-being and a promising future (Angeles & Uni, 1972). Self-control as a trait has been researched in different disciplines, including social sciences (e.g., psychology and sociology) and business sciences (e.g., marketing and economics). Self-control has been defined in the literature as the consumer's effort to avoid or resist maladaptive behaviors. In the financial field, a positive relationship can be found between self-control and financial behavior, which is defined as the ability to save money and save for retirement (Stromback et al., 2017). How an investor deals with issues that affect his/her financial state and well-being shows his/her financial behavior. Thus, the more appropriate financial behavior an investor adopts, the more experience s/he gains. Because of the competence and expertise acquired, s/he becomes more willing to take risks in financial matters (Molina-García et al., 2023). Therefore, it is helpful to examine the role of self-control in financial behaviors and risk-taking propensity in different conditions and in presence of many other variables. Thus, the present research aimed to fill the gap in self-control and financial literacy, and explore the direct relationship between the two independent variables of thinking style and financial literacy and their effect on financial behaviors. It aimed to explore the effect of this relationship on the risk propensity and the indirect relationship of self-control on financial behaviors. To this aim, a scenario was presented to investors in Tehran Stock Exchange. The main purpose of the current research was to explore the extent to which investors' thinking style and financial literacy affected their financial performance and behaviors and ultimately their risk propensity in Tehran Stock Exchange. It also explored the extent to which self-control could affect financial literacy and improve the stock market investors' financial behaviors.

Theoretical background

Financial literacy

There is increased access to credit and digitization of financial markets. Transitions in retirement prospects, increased life expectancy and the long-term effects of financial crises show the significance of financial literacy for consumers and society as the best way to organize their financial resources and protect them from financial abuse. Financial literacy allows people to organize their finance so that they can manage their daily expenses, save for a rainy day, plan for children's education, and prepare for the years after retirement. Vitality throughout an individual's life and failure to meet even basic standards has moved the issue to the top of policy-making agenda (Goyal and Kumar, 2021). The effects of financial literacy lead to a better response to financial challenges, the benefits of which extend to the real economy (Grohmann et al., 2018).

Thinking style

In general, thinking styles refer to the preferred ways of using individual abilities (Grigorenko & Sternberg, 1997). Thinking styles are based on Sternberg's mental self-management theory and show just as there are different ways to manage society, people also use different ways to benefit from their abilities. This theory proposes thirteen thinking styles along the following five dimensions.

1. *Function*: "judicial" (evaluating other people or the outcomes), "legislative" (being creative), and "executive" (performing tasks as expected) thinking styles
2. *Form*: "monarchic" (working on one task at a time), "hierarchic" (prioritizing individual tasks), anarchic (doing tasks without restrictions on "what", "where", "when" and how to "do things", "oligarchic" (working on multiple tasks without prioritization) thinking styles
3. *Level*: "global" (focusing on the overall picture), and "local" (focusing on details) thinking styles
4. *Scope*: "internal" styles (doing tasks alone), "external" styles (working with others)
5. *Leaning*: "liberal" styles (adopting an innovative approach to performing tasks), and "conservative" (using traditional methods in performing tasks)

Sternberg's thinking style model is based on the theory of mental self-management. One with a "monarchic" style enjoys doing things that allow him/her to fully focus on only one task at a time. One with a "hierarchical" thinking style prefers to distribute his attention among several prioritized tasks. One with an "oligarchic" style tends to work on multiple tasks in the same time without prioritizing them. One with an "anarchic" style enjoys performing tasks more when he has a choice of what, where and how to perform tasks (Zhang, 2002).

Self-control

Personality traits are the durable characteristics of a person and in their entirety, they are stable over time and conditions, so they explain and predict people's preferences and behaviors (Van Raaij et al., 2023). Self-control means the extent to which a person has control over his/her decisions and makes decisions with a better focus. Financial knowledge and self-control can have positive effects on one's behavior and financial well-being (Xiao, 2016).

Self-control affects the financial behavior of all types of economic actors. When it comes to self-control, an individual is considered as an organization. People tend to be confused by the conflict between their actions and feelings, but inner strength creates self-control. The three components of self-control are planning, monitoring, and commitment. Self-control is strongly associated with the household net value and financial distress. Self-control helps with decision-making, strong will and future success in getting rich or influential. Lack of self-control leads to irrational decision-making, lack of self-confidence and behavioral disasters. People's financial prospects depend on how they control themselves in the present and make the right decisions. People tend to procrastinate on their goals, sometimes trying to restrict their behavior by imposing strict rules and deadlines to achieve greater performance. However, very strict deadlines can often decrease self-control because these rules are not optimally set (Biljanovska et al., 2018).

Financial behaviors

Financial behavior can be defined as any human behavior related to money management. Common financial behaviors include cash, credit and savings behaviors (Xiao, 2008). Human behavior related to financial decision-making and money management, such as making a suitable budget plan and controlling it, paying bills promptly and the nature of regular savings, is called financial behavior (Bhushan & Medury, 2014). Financial behavior is very important and an essential dimension of financial literacy. People's positive financial behavior, such as proper planning for spending and taking care of financial stability, increases their level of financial literacy. However, negative financial behavior that depends on credits and loans weakens their financial well-being. Financial behavior can significantly affect individuals' well-being in the family, society, country and the whole world. A set of observable financial activities by economic agents best describes financial behavior. Such overt behavior is mainly influenced by one's identity, desires, knowledge, performance, achievements, personal characteristics, significance, and psychological factors. People who show their financial knowledge and can perform a series of financial activities to improve their well-being are financially literate. Trying to understand what drives financial behavior is important, especially in face of financial crises, which generally adversely affect the people's well-being in society. Internal factors that affect financial behavior are cognitive ability and psychological factors, while external factors include social and economic conditions. The theory of planned behavior contends that financial knowledge interacts with financial attitudes, mental norms and perceptions to stimulate financial behavior. Financial literacy is represented by financial knowledge and the ability to use the acquired financial knowledge to improve well-being. Financial literacy characteristics are related to cognitive abilities (Lusardi, 2015).

Risk-taking propensity

Risk propensity, defined as showing behavior that involves potential negative consequences (or losses) somehow balanced by positive consequences (or gains), is a research topic that has always been of an utmost importance. Several research areas are relevant here (e.g., psychology, education and economics). This interest in the consequences that arise from one's risk-taking propensity at the individual level plays an important role in individual life, such as increased well-being, health and life satisfaction (Molina García et al., 2023). Risk propensity is also a central factor that supports numerous business and financial decisions, such as entrepreneurship, innovation, and strategic management decisions (Zhang et al., 2020).

Review of literature

Molina García et al. (2023) conducted a study titled as "How does financial literacy influence undergraduates' risk-taking propensity?". This research used a simple randomized sample of 568 undergraduate students in Spain, who completed the questionnaires. The data were analyzed in Amos. The results showed that: (1) financial knowledge and financial behavior directly and positively affected risk propensity. (2) Financial attitude indirectly and positively affected risk appetite through financial behavior. These findings are relevant because they provide new insights into the communication mechanism that explains the relationship between financial literacy and student risk-taking.

Song et al. (2023) conducted a study titled as "The interplay between financial literacy, financial risk tolerance, and financial behaviour: The moderator effect of emotional intelligence". This research used a convenience sampling and distributing questionnaires among 389 financial institutions in Pakistan. PLS was used to analyze the data. The results showed that financial knowledge significantly affected individual investors' financial behavior. In addition, financial risk tolerance partially mediates the relationship between financial knowledge and financial behavior. In addition, this study showed a significant moderating role of emotional intelligence

in the direct relationship between financial knowledge and financial risk tolerance and an indirect relationship between financial literacy and financial behavior.

Hermansson et al.'s (2022) study titled as “The medium is the message: Learning channels, financial literacy, and stock market participation” examined the impact of learning channels on the stock market participation. The results showed that financial literacy had a significant moderating effect. Interactions refer to the joint importance of learning from media and financial literacy for people's participation in the stock market. The findings of this research have implications for policy makers in designing financial education programs.

Zain ul Abdin et al. (2022) conducted a study titled as "Overconfidence bias and investment performance: A mediating effect of risk propensity". This research used a simple randomized sample of 378 investors in Pakistan, who completed the questionnaires surveys. PLS was used for data analysis. The results showed that all cognitive biases affected the risk propensity and investment performance. The illusion of control was the strongest predictor of risk propensity and investment performance. Besides, the findings showed that all cognitive biases were positively correlated with investment performance. This study has policy-making implications for practitioners and individual investors.

Banthia and Dey (2022) conducted some research titled as "Impact of financial knowledge, financial attitude and financial behavior on financial literacy: Structural equation modeling approach". This research used a simple randomized sample of 384 Indian investors who completed questionnaire surveys. PLS was used to analyze the data. The results showed that financial behavior has a negative effect on the level of financial literacy. Financial knowledge was positively correlated with financial behavior and financial attitude. However, financial attitude and financial behavior had a negative relationship.

Moko et al. (2022) conducted a study titled as "The effect of financial knowledge, financial attitude, and personality on financial management behavior". This research used a purposive sample of 150 young entrepreneurs of Malang city in Indonesia to complete a questionnaire survey. PLS was used to analyze the data. The results showed that financial knowledge had no significant effect on financial management behavior. Financial attitude had a significant effect on financial management behavior. Personality had a significant effect on financial management behavior in young entrepreneurs in Malang city.

Goyal et al. (2021) in “Antecedents and consequences of personal financial management behavior: A systematic literature review and future research agenda” examined the current state of personal financial management behavior, with a focus on previous studies and implications. The results showed that a combination of different factors influence personal financial management behavior, such as demographic, socio-economic, psychological, social, cultural, financial experiences, financial literacy and technological factors. The prominent outcomes of personal financial management behavior include financial satisfaction, relationship satisfaction, quality of life, financial success, happiness, financial vulnerability/resilience, and financial well-being.

Meneau and Moorthy (2021) conducted a study titled as "Struggling to make ends meet: can consumer financial behaviors improve?". This research used a convenience sample of 241 financial institutions to complete a questionnaire survey. JPower was used to analyze the data. The results showed that consumers’ background, financial literacy, thinking styles and self-control predicted their financial behaviors. However, self-control played a more prominent role as a mediator between other variables and strengthened the overall relationship. Also, financial products can have a beneficial moderating effect and help consumers who need financial products most.

Mpaata et al. (2021) conducted a study titled as “Does self-control moderate financial literacy and savings behavior relationship? A case of micro and small enterprise owners”. The results showed that financial literacy and self-control significantly predicted the saving behavior. In addition, the relationship between financial literacy and saving behavior was moderated by self-control. The findings suggested that individuals with low self-control needed more financial literacy to positively affect their saving behavior than individuals with high self-control, because even if they undergo financial literacy training, its effect on saving behavior will be insignificant. In other words, before people receive a financial literacy training, they should first be assessed for the level of self-control. Therefore, it is recommended to determine self-control before providing a financial literacy training.

Younas et al. (2019) examined the relationship between financial literacy, self-control, financial behavior and financial well-being in the effect of self-control, financial literacy and financial behavior on financial well-being. The results showed that self-control and financial literacy affected financial well-being through financial behavior. Financial literacy had a significant direct effect on financial well-being, but the direct effect of self-control on financial well-being was statistically insignificant. The effect of financial behavior on financial well-being was stronger than the effects of financial literacy and self-control on financial well-being.

Based on the theoretical foundations and the literature reviewed above, the following models and hypotheses are formulated:

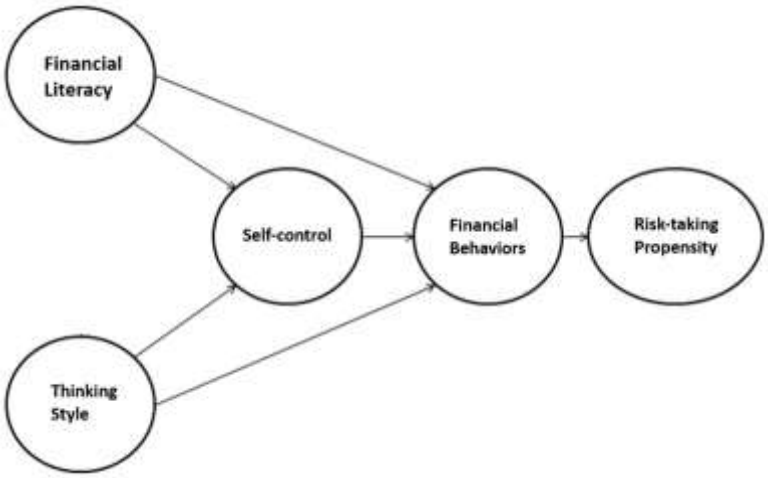

Figure 1. The conceptual model of research (adapted from Meneau and Moorthy (2021) and Molina-García et al. (2023)

1- Investors' financial literacy has a significant effect on their financial behavior in Tehran Stock Exchange.
2- Investors' thinking style has a significant effect on their financial behavior in Tehran Stock Exchange.
3- Investors' financial literacy has a significant effect on their self-control in Tehran Stock Exchange.
4- Investors' thinking style has a significant effect on their self-control in Tehran Stock Exchange.
5- Investors' self-control has a significant effect on their financial behavior in Tehran Stock Exchange.
6- Investors' financial literacy has a significant effect on their financial behavior mediated by self-control in Tehran Stock Exchange.
7- Investors' thinking style has a significant effect on their financial behavior mediated by self-control in Tehran Stock Exchange.
8- Investors' financial behavior has a significant effect on their risk propensity in Tehran Stock Exchange.

Methodology

The present research was applied in terms of purpose and descriptive and correlational in data collection method. The research population was the investors of Tehran Stock Exchange residing in Mashhad. A sample of 384 investors were selected in a non-random and convenient way. A structured questionnaire was used as the main data collection instrument. This questionnaire consisted of two parts, the first one enquiring about demographic information and the second one asking questions about the research variables. The content was translated from previous studies in the literature. To ensure the accuracy of translation, from the opinions of professors, experts and other specialists were solicited. The questionnaire used in this research was a standard questionnaire in four parts that measured financial literacy, thinking style, self-control and financial behaviors. Financial literacy was assessed using a questionnaire developed by Fernandes et al. (2014). It contained 11 questions that enquired about the respondents' opinion or decision. To measure the thinking style, the questionnaire introduced by Hsee et al. (2015) was used, along with two dimensions, the rational-analytical dimension and the intuitive-experiential dimension. In this research, the rational-analytical dimension was examined along with six items. Self-control was measured using the scale developed by Tangney et al. (2004), which included five items. The standard questionnaire developed by Hermansson and Jonsson (2021) containing three items was used to measure the risk-taking propensity. To measure financial behavior, the questionnaire developed by Dave and Xiao (2011) was used, which perceived financial behavior as a multi-dimensional construct. The primary endogenous construct was examined in the research model, along with nine questions. This scale assessed three dimensions of behavioral finance, spending, borrowing, and saving. The data were analyzed in SPSS for descriptive statistics. SmartPLS3 was used to test the hypotheses and do the structural equation modeling. In addition to face validity (experts' opinions), confirmatory factor analysis was used to check the validity of questionnaire. After the validity check, the reliability test was run using Cronbach's alpha test.

Findings

The analysis of demographic variables showed that 87.6% of investors were men and 12.4% were women. Among the investors, 11.2% were between 20 and 30, 46.1% between 31 and 40, 34.8% between 41 and 50, and 7.9% over 50 years of age. 7.9% were single and 92.3% married. Among the investors, 7.6% held a diploma,

13.2% an associate degree, 39.8% a bachelor's degree, 33.2% a master's degree, and 6.2% a Ph.D. Moreover, 19.1% of investors had less than one year, 44.3% between 1 and 2 years, 23.8% between 2 and 5 years, 12.8% more than five years' experience of investment in the stock market. 48.7% were employees and 51.3% were freelancers.

Kolmogorov-Smirnov test was used to check the normality of data. The results of the Kolmogorov Smirnov test are shown in Table 1.

Table 1: Normality distribution of data

	Total	Self-control	Financial behaviors	Thinking style	Financial literacy	Risk propensity
Z	0.300	0.301	0.306	0.295	0.285	0.258
Significance level	0.000	0.000	0.000	0.000	0.000	0.000
result	Not normal	Not normal	Not normal	Not normal	Not normal	Not normal

When checking the homogeneity of data, the null hypothesis of the homogeneity of data is tested at an error level of 0.05. If a significant value greater than or equal to the error level (5%) is obtained, there will be no reason to reject the null hypothesis. In other words, the data distribution is normal.
The analysis of the significance level of variables and all questions showed that the distribution of data related to each variable diverged from the normal distribution (the p-value was less than 0.05). Considering the non-normality of data, PLS3 was used to test the hypotheses. The factor loading of variables was more than 0.4 and they all had good validity. In addition to factor analysis, convergent and divergent validities were used to prove construct validity. Table 2 shows the reliability and convergent validity coefficients. The average variance extracted was higher than 0.5, hence the construct has good convergent validity. Cronbach's alpha and composite reliability of variables were not lower than 0.7, so the reliability is confirmed. Also, the total reliability of the questionnaire is 0.950, which is higher than the acceptable value of 0.7.

Table 2. Results of confirmatory factor analysis, convergent validity, Cronbach's alpha and composite reliability

Variable	Question	Factor loading	Significance level	Result	Average variance extracted	Cronbach's α	Composite reliability (CR)
Self-control	Q1	0.799	30.559	Significant	0.510	0.715	0.804
	Q2	0.599	10.305	Significant			
	Q3	0.754	27.656	Significant			
	Q4	0.732	27.205	Significant			
	Q5	0.670	19.002	Significant			
Financial behaviors	Q6	0.674	20.757	Significant	0.557	0.858	0.889
	Q7	0.630	17.005	Significant			
	Q8	0.889	35.133	Significant			
	Q9	0.658	18.707	Significant			
	Q10	0.713	26.572	Significant			
	Q11	0.833	26.355	Significant			
	Q12	0.870	30.402	Significant			
	Q13	0.803	21.976	Significant			
	Q14	0.585	15.310	Significant			
Thinking style	Q15	0.503	15.320	Significant	0.509	0.718	0.750
	Q16	0.691	21.242	Significant			
	Q17	0.865	29.858	Significant			
	Q18	0.869	32.149	Significant			
	Q19	0.680	23.067	Significant			
	Q20	0.602	11.168	Significant			
Financial literacy	Q21	0.782	35.113	Significant	0.507	0.903	0.919
	Q22	0.734	29.671	Significant			
	Q23	0.660	20.211	Significant			
	Q24	0.698	25.602	Significant			
	Q25	0.675	23.314	Significant			
	Q26	0.688	23.349	Significant			
	Q27	0.746	30.184	Significant			
	Q28	0.735	29.234	Significant			
	Q29	0.701	24.963	Significant			
	Q30	0.711	25.966	Significant			

Variable	Question	Factor loading	Significance level	Result	Average variance extracted	Cronbach's α	Composite reliability (CR)
	Q31	0.699	25.023	Significant			
Risk propensity	Q32	0.784	34.354	Significant	0.584	0.775	0.808
	Q33	0.725	36.024	Significant			
	Q34	0.782	31.841	Significant			

Concerning divergent validity, the correlation size of the indicators (items) of a construct is compared with the same construct as well as with other constructs. If the correlation of an indicator with another construct other than its own exceeds the correlation of that indicator with its own construct, the divergent validity of the model is questioned. As seen in the results of factor analysis, this state is definitely confirmed (Henseler et al., 2009). According to Table 3, the values on the main diagonal of matrix (the second root of the average variance extracted) are higher than all the correlation coefficients between the variables. Thus, all the variables of this research have a good divergent validity.

Table 3. Divergent validity

	Risk propensity	Self-control	Financial behaviors	Thinking style	Financial literacy
Risk propensity	0.764				
Self-control	0.617	0.715			
Financial behaviors	0.623	0.634	0.746		
Thinking style	0.671	0.627	0.521	0.713	
Financial literacy	0.707	0.704	0.682	0.676	0.712

To test the model fit, three indices are commonly used, communality, coefficient of determination and GOF. If the communalities are positive, the model fit is confirmed. The coefficient of determination shows the percentage of changes in the dependent variable caused by the independent variable. The values 0.67, 0.33 and 0.19 are interpreted as significant, moderate and weak, respectively. Table 4 shows appropriate fit indices.

Table 4. Shared values and coefficient of determination

variable	(Communality) Q2= 1-SSE/SSO	coefficient of determination	result
Risk propensity	0.184	0.678	significant
Self-control	0.208	0.750	significant
Financial behaviors	0.342	0.837	significant
Thinking style	0.222	0.603	Slightly significant
Financial literacy	0.407	---	---

The overall fit is checked using the GOF. To estimate GOF, the mean score of communalities and determination coefficients should be averaged. The average score of communalities was 0.272 and the average score of determination coefficients was 0.717. Thus:

(Equation 1):

$$GOF= \sqrt{\overline{Communality} \times \overline{R^2}}$$

$$GOF= \sqrt{0.272 \times 0.717} =0.441$$

The values of 0.01, 0.25 and 0.36 are described as weak, medium and high GOF values. GOF is in a high range, so the model has a good overall fit. After confirming the model fit and the validity of questionnaire, the hypotheses were tested. The significance test of t-value was tested at an error threshold of 0.05. If the t-value was more than 1.96, the hypothesis was significant; otherwise, the effect was insignificant. Figure 1 shows the t-values.

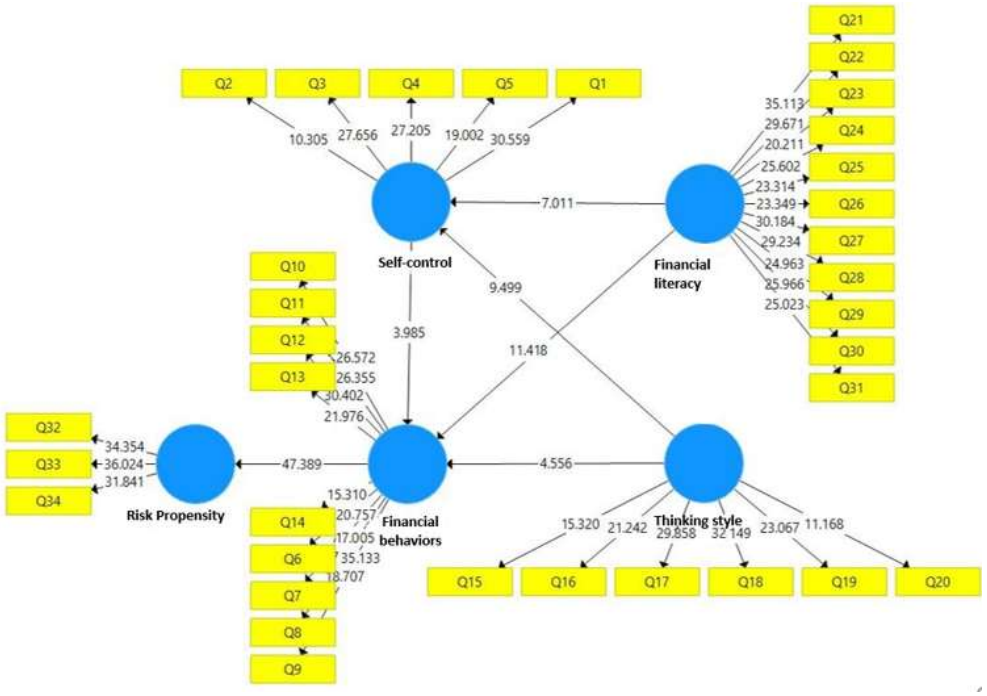

Figure 2. Significance of path coefficients (t-values)

According to Figure 2, the structural path coefficients show that the effect of each variable on the other variable is equal to the path coefficient value.

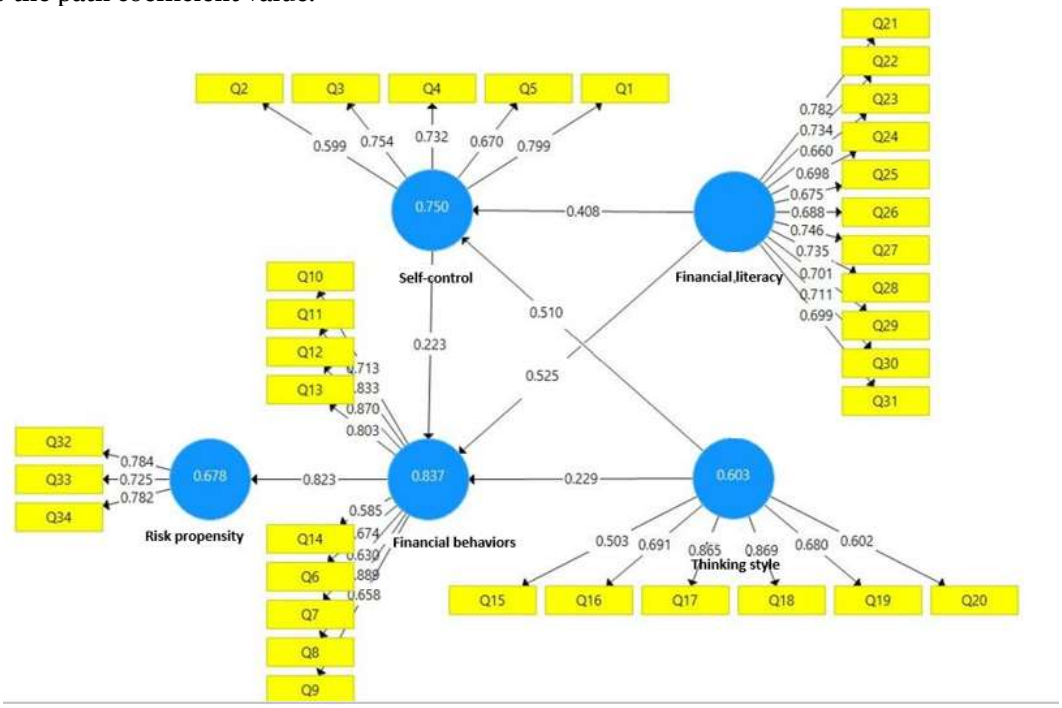

Figure 3. Structural path coefficients

The bootstrapping technique was used in SmartPLS3 to test the mediation effect. Previous tests for mediating effects, such as the Sobel test, compared the relationship between independent and dependent variables with the indirect relationship between in the presence of a mediator. The Sobel test assumed a normal distribution, which was not compatible with the PLS structural equation method. For this reason, researches did not use the Sobel test to assess the mediation effects, especially in structural equation studies in PLS. Instead of using the Sobel test, researchers set up an indirect effect sampling distribution that could be automatically implemented in SmartPLS3 (Hair et al., 2017). As stated in the PLS output (table of specific indirect effects), the coefficient of the effect of financial literacy on financial behaviors mediated by self-control was 0.091. The significance level of this effect was 3.850, greater than 1.96. Thus, it can be concluded that at the 95% confidence level, financial literacy had a significant effect on financial behaviors mediated by self-control. Therefore, the sixth research hypothesis could be accepted. Also, the coefficient of the effect of investors' thinking style on financial behaviors mediated by self-control was 0.114. The coefficient of significance of this effect was 3.274, greater

than 1.96. Thus, it can be concluded at the 95% confidence level that investors' thinking style had a significant effect on their financial behaviors mediated by self-control. Therefore, the seventh research hypothesis could be accepted. Table 5 shows a summary of the results of hypothesis testing.

Table 5. Hypothesis test results

#	Hypothesis	Path coefficient	significance	CI	result
1	Financial literacy → Financial behaviors	0.525	11.418	95%	accepted
2	Thinking style → Financial behaviors	0.229	4.556	95%	accepted
3	Financial literacy → Self-control	0.408	7.011	95%	accepted
4	Thinking style → Self-control	0.510	9.499	95%	accepted
5	Self-control → Financial behaviors	0.223	3.985	95%	accepted
6	Financial literacy → Self-control → Financial behaviors	0.091	3.850	95%	accepted
7	Thinking style → Self-control → Financial behaviors	0.114	3.274	95%	accepted
8	Financial behaviors → Risk propensity	0.823	47.389	95%	accepted

Conclusion and Discussion

The first hypothesis stated that investors' financial literacy significantly affected their financial behavior in Tehran Stock Exchange. Considering factors such as the increasing complexity and diversity of financial products and services, the complex financial decisions investors are faced with, the transfer of responsibility for financial security during retirement from governments to individuals and changing demographic and economic factors, there has been a growing attention to financial literacy. The lack of financial literacy among market participants, especially in the financial sector, violates the first precondition of the free market, equal access to information. It can affect the performance of those markets. Consequently, one key obstacle to the effective functioning of financial markets is the lack of financial literacy among participants, both currently and potentially. The minimum level of financial literacy required for market participants should be known in advance by policymakers who seek to create financial markets based on market economy theories to achieve desirable outcomes. In addition, it is important to accurately assess the participants' financial literacy at different points in time. When studies are critically analyzed to determine whether financial literacy education is beneficial, various problems generally arise. There was a correlation between financial literacy education programs and understanding basic financial concepts, at least in the short run. Although not conclusively shown, there was a causal relationship between financial literacy and the adoption of sound financial practices. According to the three primary studies conducted to show this relationship in different industries, the possibility of such a relationship was very low. As the data analysis showed, the first hypothesis was confirmed and this result is in line with a body of research by Molina-García et al. (2023), Song et al. (2023), Hermansson et al. (2022), Banthia et al. (2022), Goyal et al. (2021), Mpaata et al. (2021), Meneau and Moorthy (2021) and Younas et al. (2019).

The second hypothesis contended that investors' thinking style had a significant effect on their financial behavior in the Tehran Stock Exchange, which was confirmed by the present findings. Undoubtedly, the effectiveness of the financial system of a country as a subset of the economic system, considering the interaction between these two systems, may significantly affect the economic system. The capital market, a part of the financial system, has a unique position and is vital in attracting capital to society and allocating it for investment in production and providing employment. The stock market is an economic market where securities are bought and sold according to the rules and regulations. Considering the availability of shares of the country's largest and most prominent economic units in the stock market, any change in economic, political or other factors can quickly affect the stock market and cause fluctuations. While real-world empirical research has recently questioned contemporary financial theories and the rational-economic man hypothesis, the dominant paradigm in classical financial theories (modern finance) is based on the expected utility maximization and risk aversion. According to psychological research, human does not react as rationally as current financial theories would have us believe. As the data analysis showed, the second hypothesis was accepted and this result is in line with the research by Meneau and Moorthy (2021).

The third hypothesis maintained that investors' financial literacy had a significant effect on their self-control in Tehran Stock Exchange, which was confirmed by the present findings. Today, due to the complexity of modern business environments and the variety of services and products offered by credit institutions, it is necessary to have a detailed understanding of financial issues. Since the early 1990s, this need has grown under the heading of financial literacy and personal finance, and its importance has ever increased through time. This need has been recognized for long in most modern countries. Non-payment, consumer credit and financial statistics are all positively correlated with the lack of self-control and financial literacy. Consumers with poor

self-control usually purchase products using credit cards and payday loans, which provide quick but expensive access to credits. In addition, consumers struggling with self-control have income shock, credit loss, and uncertain costs for durable goods. According to the data analysis, the third hypothesis was accepted and this result is in line with the studies conducted by Mpaata et al.

The fourth hypothesis stated that investors' thinking style had a significant effect on their self-control in Tehran Stock Exchange, which was also confirmed by the present findings. Studies have shown that financial knowledge and self-control have positive effects on one's behavior and financial well-being. Subjective support for financial well-being in a sense refers to one's opinion about financial situation. Financial satisfaction is a different measure of subjective financial well-being. Personal finance involves measuring and analyzing all forms of budgeting, saving, purchasing, paying, choosing financial products, goals and control behavior. Moreover, all the information people have is useful for conveying the meaning of financial knowledge. In this regard, it has been shown that a correct understanding of finance is seen as a vital component of empowering people to make wise financial decisions. Financial knowledge can strengthen the effect of financial attitude on financial management behavior. Financial behavior and personal financing are important aspects of social behavior that can greatly affect the individual and social life. Since a primary motivation for promoting better financial decisions is the sense of satisfaction it can bring to people, increasing people's awareness of this issue and their knowledge can help them manage their financial resources more effectively. To live a successful life, it is also essential to understand the relationship between self-control and money management practices, because people's financial future largely depends on their self-control ability under different circumstances and their ability to make wise choices. To achieve a better performance, people often postpone their goals and try to regulate their behavior by imposing strict rules and regulations, but when deadlines are very tight, this rarely happens because the rules are not well established. In addition, people often lack control over their finance and spend most of their money on immediate needs instead of saving for retirement and so on. As a result, a central area in this study, which will also affect financial pleasure, is the effect of self-control on financial behavior. As the data analysis showed, the fourth hypothesis was accepted, and this result was in line with the research by Meneau and Moorthy (2021).
The fifth hypothesis speculated that investors' self-control had a significant effect on their financial behavior in Tehran Stock Exchange, which was confirmed by the present findings. The purpose of self-control is to evaluate people's mental and moral health and the level of self-resistance in face of challenges. Self-control is basically useful in improving one's performance because it is internal and done according to one's own will. In other words, the internalized and institutionalized person acts according to society's expectations and can create the best condition for society. As the data analysis showed, the fifth hypothesis was accepted and this result was in line with the studies by Zain ul Abdin et al. (2022) and Meneau and Moorthy (2021).

The sixth hypothesis stated that investors' financial literacy had a significant effect on their financial behavior mediated by self-control in Tehran Stock Exchange, which was confirmed by the present findings. The study of individual investors' financial literacy has attracted more attention in recent years. However, they have occasionally provided alarming reports on the low level of financial literacy. Wealth, savings, stock market participation and retirement planning can be accurately predicted by the level of financial literacy. The combination of awareness, knowledge, skills, attitudes and behavior required for financial decisions to achieve financial well-being is often referred to as financial literacy. In general, research shows that the public lacks financial literacy even in industrialized countries. Having the right information, abilities, and confidence to make wise financial decisions is the common definition of financial literacy. Self-control affects the financial behavior of all types of economic actors. When it comes to self-control, the individual is considered as an organization. People tend to be confused by the conflict between their actions and feelings. Yet, inner strength creates self-control. According to the data analysis, the seventh hypothesis was accepted and this result was in line with the research conducted by Meneau and Moorthy (2021).

The seventh hypothesis maintained that investors' rational-analytical thinking style had a significant effect on their financial behavior mediated by self-control in Tehran Stock Exchange, which was confirmed by the present findings. As the data analysis showed, the eighth hypothesis was accepted and this result was in line with the work of research by Meneau and Moorthy (2021).

The eighth hypothesis stated that financial behavior had a significant effect on investors' risk propensity in Tehran Stock Exchange. Financial behavior means how someone behaves in face of issues that significantly affect their financial situation and financial well-being. Financial behavior is the ability to understand the overall effects of financial decisions on one's current conditions (e.g., individual, family, community, country) and to make sound decisions on cash management, precautionary measures, and budget planning opportunities. Good financial behavior involves proper financial planning, paying bills on time, keeping track of expenses, efficient credit management, and saving money or strict budget control, among other measures. Regular engagement in appropriate financial behavior leads to the accumulation of experience in financial issues and their possible consequences, thereby increasing people's confidence in their ability to deal with them safely. The more financial experience people have, the more competent and specialized they are in financial

matters and the more likely they are to make risky decisions. In fact, positive decision-making experiences encourage greater risk tolerance and make people more confident to invest in riskier financial stocks. Therefore, the experience gained through financial behavior can reduce risk perception and increase riskier financial choices. Therefore, a better financial behavior can lead to easier management, better understanding of a risk level and a greater propensity to take risks. As the data analysis showed, the ninth hypothesis was confirmed and this result was in line with a body of research by Molina-García et al. (2023), Song et al. (2023) and Meneau and Moorthy (2021).

Suggestions for further research

In light of the present findings, here are some suggestions for future research:
According to the first hypothesis, investors' financial behavior is directly influenced by their level of financial literacy in the stock market. If investors have a sound understanding of how the stock market is organized and if they have had the right relevant training, they can behave appropriately in investment in the stock market, and as a result, they can experience less loss.

According to the second hypothesis, how an investor thinks about the stock market has a direct effect on his/her financial management. Thus, how the stock market investors behave affects their decision-making, price setting and corporate performance. Investors make mistakes when investing in financial markets despite the existing ambiguous conditions and cognitive fallacies.

According to the third hypothesis, the stock market investors' financial literacy has a direct effect on their self-control. Thus, if the investor lacks financial literacy and sufficient self-control, s/he may experience a big shock in face of unpredicted expenses and loss of credit. This can lead to a number of risks such as excessive debt and eventually bankruptcy.
According to the fourth hypothesis, how an investor thinks about the stock market directly affects his/her good level of control. Thus, if investors have a sound financial knowledge and a good mindset, they can manage their behavior and perform well in investment. As a result, one's mentality will be prioritized over one's level of financial security.

Concerning the fifth hypothesis, investors' self-control in the stock market has a direct effect on their financial behavior. Thus, if investors have not reached the right level of maturity and the necessary knowledge in investment, their incorrect financial behavior will follow. As a result, there may be irreparable consequences. However, with a correct understanding of the market and intellectual maturity, an investor can show appropriate financial behaviors.

Concerning the effect of financial behaviors on risk-taking propensity, it is suggested that investors gain more experience through financial behavior, which leads them to analyze financial states. Also, they should develop a higher self-confidence for riskier decisions, such as financial stock investments.

References

1. Abendroth, L. J., Diehl, K. (2006). "Now or never: Effects of limited purchase opportunities on patterns of regret over time". Journal of Consumer Research, 33(3), 342–51
2. Angeles, L., Uni, S. (1972). "Cognitive and attentional mechanisms in delay of gratification". American Psychologicl Association, 21(2), 204–218.
3. Banthia, D., & Dey, S. K. (2022). Impact of Financial Knowledge, Financial Attitude and Financial Behaviour on Financial Literacy: Structural Equitation Modeling Approach**.** *Universal Journal of Accounting and Finance,* 10(1), 327-337
4. Bhushan, P., Medury, Y. (2014). "An empirical analysis of inter linkages between financial attitudes, financial behavior and financial knowledge of salaried individuals". Indian Journal of Commerce and Management Studies, 5(3), 58-65.
5. Biljanovska, N., Palligkinis, S. (2018). "Control thyself : Self-control failure and household wealth". Journal of Banking and Finance, 92, 280–94.
6. Dew, J., Xiao, J.J. (2011). "The financial management behavior scale: development and validation". Journal of Financial Counseling and Planning, 22(1).
7. Fernandes, D., Lynch, J., Netemeyer, R. (2014). "Financial Literacy, financial education, and downstream financial behaviors". Management Science, 60(8), 1861-1883
8. Gignac, G. E., & Stevens, E. M. (2024). Attitude toward numbers: A better predictor of financial literacy and intelligence than need for cognition. *Intelligence*, *103*, 101808.
9. Glaser, M., Walther, T. (2014). "Run, walk, buy? Financial literacy, dual-process theories, rationalexperiential inventory", SSRN. doi: 10.2139/ssrn.2167270.

10. Goyal, K., Kumar, S., Xiao, J.J. (2021). "Antecedents and consequences of Personal financial management behavior: a systematic literature review and future research agenda". International Journal of Bank Marketing, 39(7), 1166-1207.
11. Grigorenko, E. L., Sternberg, R. J. (1997). "Styles of thinking, abilities, and academic performance". Exceptional children, 63(3), 295-312.
12. Grohmann, A., Klühs, T., Menkhoff, L. (2018). "Does financial literacy improve financial inclusion? Cross country evidence". World Development, 111, 84–96.
13. Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM), *Thousand Oaks, CA: Sage*.
14. Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in international marketing*, 20, 277-319.
15. Hermansson, C., & Jonsson, S. (2021). The impact of financial literacy and financial interest on risk tolerance. *Journal of Behavioural and Experimental Finance*, 29, 1-12.
16. Hermansson, C., Jonsson, S., Liu, L. (2022). "The medium is the message: Learning channels, financial literacy, and stock market participation". International Review of Financial Analysis, 79, 101996
17. Hsee, C.K., Yang, Y., Zheng, X.,Wang, H. (2015). "Lay rationalism: individual differences in using reason versus feelings to guide decisions". Journal of Marketing Research, 52(1), 134-146.
18. Lusardi, A. (2008). "Household saving behavior, The role financial literacy, information and financial education programs". Nber working paper series. 13824.
19. Lusardi, A. (2015). "Financial literacy: do people know the ABCs of finance?". Public Understanding of Science, 24(3), 260-271.
20. Meneau, L. K., & Moorthy, J. (2022). Struggling to make ends meet: can consumer financial behaviors improve?. *International Journal of Bank Marketing*, 40(2), 263-296.
21. Moko, W., Sudiro, A., & Kurniasari, I. (2022). The effect of financial knowledge, financial attitude, and personality on financial management behavior. *International Journal of Research in Business and Social Science (2147-4478)*, 11(9), 184-192
22. Molina-García, A., Cisneros-Ruiz, A. J., Lopez-Subires, M. D., & Di´eguez-Soto, J. (2023). How does financial literacy influence undergraduates' risk-taking propensity?. *The International Journal of Management Education*, 21, 1-15.
23. Mpaata, E., Koske, N., Saina, E. (2021). "Does self-control moderate financial literacy and savings behavior relationship? A case of micro and small enterprise owners". Current Psychology, 1-14.
24. Novak, T.P., Hoffman, D.L. (2008). "The fit of thinking style and situation: new measures of situationspecific experiential and rational cognition". Journal of Consumer Research, 36(1), 56-72.
25. Park, J.J., Sela, A. (2017). "Not my type: why affective decision-makers are reluctant to make financial decisions". Journal of Consumer Research, 45(2), 298-319.
26. Ruggiero, J. (2004). Performance Evaluation When Non-Discretionary Factors Correlate with Technical Efficiency. *EJOR*, 159(1), 250-257. https://doi.org/10.1016/S0377-2217(03)00403-X
27. Shagerdi, A. G., Behboodi, O., Mahdavipour, M., & Bodaghi, S. (2023). ANTECEDENTS OF INVESTORS'RISK-TAKING PROPENSITY AND THE ROLE OF FINANCIAL LITERACY AND CAPABILITY, THINKING STYLE AND FINANCIAL BEHAVIOR: THE CASE OF TEHRAN STOCK EXCHANGE INVESTORS. *Journal of Research Administration*, *5*(2), 8023-8042.
28. Song, C. L., Pan, D., Ayub, A., & Cai, B. (2023). The Interplay Between Financial Literacy, Financial Risk Tolerance, and Financial Behaviour: The Moderator Effect of Emotional Intelligence. *Psychology Research and Behavior Management*, 16, 535-548.
29. Stromback, C., Lind, T., Skagerlund, K., V€astfj€all, D., Tingh€og, G. (2017). "Does self-control predict financial behavior and financial well-being?". Journal of Behavioral and Experimental Finance, 14, 30-38.
30. Tangney, J., Baumeister, R., Boone, A. (2004). "High self-control predicts good adjustment, less pathology, better grades, and interpersonal success". Journal of Personality, 72 (2), 54.
31. Van Raaij, W. F., Riitsalu, L., & Põder, K. (2023). Direct and indirect effects of self-control and future time perspective on financial well-being. *Journal of Economic Psychology*, *99*, 102667.
32. Xiao, J. J., O'Neill, B. (2016). "Financial education and financial capability". International Journal of Consumer Studies, Early View. DOI: 10.1111/ijcs.12285.
33. Younas, W., Javed, T., Kalimuthu, K. R., Farooq, M., Khalil-ur-Rehman, F., Raju, V. (2019). "Impact of self-control, financial literacy and financial behavior on financial well-being". The Journal of Social Sciences Research, 5(1), 211-218
34. Zain ul Abdin, S., Qureshi, F., Iqbal, J., & Sultana, S. (2022). Overconfidence bias and investment performance: A mediating effect of risk propensity. *Borsa _Istanbul Review*, 22(4), 780-793.
35. Zhang, L. F. (2002). "Thinking styles: Their relationships with modes of thinking and academic performance". Educational Psychology, 22(3), 331-348.
36. Zhang, S.-N., Li, Y.-Q., Liu, C.-H., & Ruan, W.-Q. (2020). Critical factors identification and prediction of tourism and hospitality students' entrepreneurial intention. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 26(June 2020), Article 100234.