International Journal of Finance and Managerial Accounting, Vol.4, No.16, Winter 2020

Identifying and categorizing of effective factors on individual investors behavior in Tehran's stock market (Behavioral finance perspective)

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ABSTRACT

Investors behavior is one of the most important discussion of the financial science in the financial market. Individual investors consider various factors when they buy and sell securities and show different behavior (Rational, Herding, Reaction and Heuristic). The main purpose of this research is to identify and categorize factors which impact individual investors behavior that are known as behavioral biases in behavioral finance literature. This research is practical as objective and implies a descriptive-survey research method. At the first phase of the research for the purpose of identifying those factors that impact the investors behavior, 30 behavioral finance experts participated. In the second phase of the research (examining the proposed model), statistical population consists of all investors in Tehran stock market of which 384 samples were selected randomly.. Questionnaires were made by researchers. Cronbach's alpha Coefficient is 0.79 and 0.82 Respectively that indicates suitable reliability. The SPSS software and Smartpls.2 software was used for analyzing the data. The result of statistical analysis revealed that, financial ratios, status market, market total index trend, and rumors, etc were identified as influential factors. Finally, factors was classified in four group(Company Internal, Transactional information, Environmental and Psychological). Research proposal model was confirmed by confirmatory factor analysis

Keywords:

Behavioral Biases, Behavioral Finance, Rational behavior, Herding Behavior, Reaction Behavior, Heuristic Behavior.

1. Introduction

Undoubtedly, the effectiveness of the financial system of a country as a subset of its economic system and with regard to interactions with other constructs can have an impact on the efficiency of the economic system. The capital market, as a subset of the financial system, has a special position and plays a fundamental role in attracting, directing and allocating existing capital in society to invest in production and employment (Yosefi &Shahrabadi,2009). Also, individual investors play a vital role in the stock market due to their appropriate savings (Shafi,2014).

The prevailing paradigm in financial theory is based on maximum of expected Utility and risk aversion, while empirical studies of the real world have brought a lot of criticism in recent years to modern financial theory and rational human assumptions. In a more practical scenario, studies conducted by psychologists indicate that humans beings exhibit a different behaviors from what modern financial theories of rational human beings have proposed. Other financial studies, including a scientific review of the price behavior of securities, revealed that there were contradictions in realities and efficient market assumptions. Therefore, scholars in the field of financial studies who always sought to identify and explain the behaviors and causes of the events of financial markets, tried to imply behavioral sciences in order to explain the behavior of decision makers in financial markets, and by considering limitations of rational financial theories in explaining the facts such as restrictions on Arbitrage and cognitive limitations of human being, the cause of irrational human behavior, along with other economic variables, were recognized as factors affecting economic behaviors (Rahnamh Roodpashti and Zandieh, 2012). Indeed, in the traditional financial economy model, it is assumed that decision-makers are fully rational and always seek to maximize expected utility. In other words, the two main bases in the traditional financial paradigm are the full rationality of the factors and decisions based on the maximization of Utility (Rai and Fallahpour, 2004). But in many cases, conflicting events with the predictions of this theory occurred that were not consistent with its initial assumptions (Bronmeier, 2001).

In order to justify these conflicting events, one of the studies that quickly expanded in this field was the integration of economic theories with the common psychology of the theory that was introduced as "behavioral finance". Behavioral finance aims to identify the influence of psychological processes in decision-making process, and it is an attempt to describe the reasons for the exceptions in the body of the finance literature. According to Linner, behavioral finance studies aim to how interpret and act on the basis of information to make structured investment decisions by individuals (Talangi, 2004). Behavioral finance is a category of financial issues that adds to standard financial theories, and behavioral aspects of decision making process (Olsen, 1998).

The behavior of investors in the stock market influence decision making, allocation of monetary resources, pricing and valuation of corporate returns. The ambiguous conditions and cognitive errors that rooted in human psychology contribute to investors mistakes in shaping their expectations, and consequently lead into manifesting special behaviors when investing in financial markets (Sinai and Daudi, 2009). Occasionally, investors may make decisions in the stock markets (securities market) intuitively, on the basis of trials and errors and experience. Also, investors' behavior may sometimes be a follow-up of mass or Herd behavior. In this kind of behavior, individuals tend to be in consonance with others' decisions. Another reason that financial markets are deprived from the logical behaviors are determined by impulsive behavior of investors in these markets. One of the most important assumptions of the capital Efficient market is that investors react logically to new information. There is plethora of evidences that indicate investors are over-reacting to the new information in the market, and they decide accordingly. Based on the research carried out in the country, various behaviors of investors such as rational behavior, Herd behavior, reaction behavior (Overaction and Underaction), and intuitive (huristic) decision making have been observed in Tehran Stock Exchange in different years (Vakili Fard et al., 2013).The emergence of Herd and reaction behaviors can lead to market volatility, market fragility and unfair prices, which is one of the most important goals of the functionality of the capital market. Herd behavior as a kind of behavioral biases is the origin of the occurrence of various malformations, such as: bubbles and falling prices, and the formation of fluctuations in the market, and ultimately, inefficiencies in the capital market (Mohammadi et al.,

2010). For example, the emergence of price bubble phenomena during the years 2003 to 2005 in the Tehran Stock Exchange and the fall of the stock market in 2004 (Saleh Iayadi and Hadi Delirian, 2010). It should be noted that up to date, there has been no study by any domestic researcher on identifying influential factors on the behavior of individual investors based on the financial approach (behavioral biases of individual investors).

As noted above, the lack of attention and overlooking of investors' behavior in the stock exchange can cause great damage to its growing market. Therefore, the significance of present study is better understanding of behaviors of individual investors by identifying factors affecting those behaviors (based on behavioral finance approach) in Tehran Stock Exchange.

2. Literature Review

The stock exchange is the main way of equipping and optimizing the allocation of capital in the country. Understanding of this market and its elements and relationships are one of the important factors in the development of the capital market. One of the key elements of this market is investors. Since the attraction of small funds and savings and channelizing them toward development of companies is very important, the recognition of the behavior of the suppliers of financial resources (investors) and the factors affecting their economic decisions have always been a challenging issue for academic circles and even the participants themselves. In general, investors when making decisions in the stock market act with two factors, risk and returns. Individual investors, in contrast to major investors, have fewer opportunities for balancing the two factors (Khademi and Ghazizadeh, 2007). Investors are implicitly or explicitly considering the risk appetite of the investor. Investors who take a high risk also expect high returns, and vice versa, investors who accept the low risk expect low returns (Jones, 2005).

One of the questions in the field of financial markets is how market agents behave. According to the standard economics and finance, they behave as rational economic factors. Theories such as Modern Marquette's Portfolio Theory (1952), Capital Assets Pricing Model (CAPM) Sharp (1964), Lepton (1965), and Black (1972), Arbitrage pricing theory (APT) Ross (1976), Theory of Net Present Value, Hirschifer (1964),Neumann and Morgenstern's expected utility theory (1944), and etc all emphasize that economic agents behave logically (Vickileard et al., 2013).

In the 1980s, there were many exceptions to the stock markets, such as high exchange rates, sharp fluctuations in the capital market, dividends, stock plots, and predictability (Rai and Fallahpour, 2004). Which cannot be explained by the Efficient market model and price changes by the discounted value of future returns. In fact, the Efficient market theory has not yet linked market fluctuations to its fundamental foundations (Khojavi and Ghasemi, 2005). To justify the exceptions found in stock markets, a new field has emerged in financial studies, which is called behavioral finance. Behavioral finance is a category of financial issues that adds to standard financial theories behavioral aspects of the decision making process. Contrary to the Sharp and Markowitz strategy, behavioral finance interacts with individuals and methods of collecting and using information. The paradigm of Behavioral Finance perceives other views such as full prediction, flexible prices, and complete knowledge of investment decisions to be unrealistic. In other words, behavioral finance is a new paradigm in theories that focus on systematic understanding and prediction of financial mechanism and decision making, with emphasis on behavioral principles, in order to analyze, along with classic financial models, market behavior more correctly and more accurately (Olsen, 1998).

In a summing up, it can be declared that in the debates on the behavioral characteristics that affect people's decision-making (Rakhneh Roodpashti, Zandieh, 2012), the issue of behavioral finance has been the most important financial discussion in the last two decades which has led to steady increase of the number of financial and economic researchers who are paying attention to it. In recent years, more financial experts have admitted that investors' expectations of the market are not entirely rational (Hakesheffer, 2001).

In the Tehran Stock Exchange, there are many studies in the field of behavioral finance and individual investor investment decisions. In a division, they can be grouped into two general groups: (Toloie et al., 2018).

A) In the first group, there are researches who investigate and identify factors affecting individual investor decisions in Tehran Stock Exchange. This

research has examined the behavioral, political, economic and financial factors affecting individual investor decisions.

B) The second group includes a research in which researchers examine individual investor behaviors and behavioral errors impact on individual investor decisions. These researches have been designed to investigate and test behavioral biases such as herd, overaction and underaction and heuristic decision making in Tehran Stock Exchange. Some of the research is illustrated below.

Toloie et al. (2018), in a study titled "The role of behavioral finance in understanding the behavior of individual investors was reviewed empirical evidence from Tehran Stock Exchange and gathered factors influencing on decision making of individual investors in Tehran Stock Exchange. Table 1 shows the results of this study.

Table 1. Summary of research carried out between 2004- 2015 (Toloei et al,2018)

No	Effective factors	Researchers
1	Financial ratio(earnings per share, P / E ratio and return on equity)	Sotoudeh and Mohammadi (2015), Imam &Shajari(2013),Moradi et al. (2013), Khanifar et al. (2012), Shirazi et al(2011,KhalifaSoltani et al(2010), Saedi&Mokhtarian(2009),Demoory et al(2008),Khademi&Ghazizadeh(2007),Tehrani&Khoshnood(2005),Aghaei&Mokhtarian(2004), Bharamfar&Mehrani (2004)
2	Supportive recommendation (broker & etc)	Sotoudeh&Mohammadi(1394),Imam&Shajari(2013),Saedi&Mokhtarian(2009),Khademi&Ghazizadeh (2007), Tehrani &Khoshnood (2005), Aghaii &Mokhtarian 1383)
3	Market status (growth of profit and stock prices)	Saedi&Mokhtarian (2009), Vediyy&Shokhizadeh(2012),Fallah Shams and Azizi (2008), Tehrani &Khoshnood (2005), Aghaei &Mokhtarian (2004)
4	Trend of stock price	Moradi et al. (1392) Wadeyy &Shokouhizadeh (1391), Saedi &Mokhtarian (2009), Aghaii and Mokhtarian (2004)
5	Fluctuations of Stock price	Shafi (2014), Kayoor &Wohra (2012), Saedi &Mokhtarian (2009), Fallah &Azizi (2008), Aghaiy &Mokhtarian (2004)
6	Management of corporate	Sotoudeh &Mohammadi (1394), Shafi (2014),Saedi &Mokhtarian (2009), Duab (2010, Khademi &Ghazizadeh (2007), Aghaiy &Mokhtarian (2004),
7	Rumors	Moradi et al (1392), Mousavi (2011), Khademi and Ghazizadeh (1386), Saedi &Mokhtarian (2009), Tehrani &Khoshnood (2005)
8	Basis cognition of investment	Sinai &Davoudi Investments (2008), Saedi &Mokhtarian (2009), Mokhtarian &Aghaei (2004)
9	Transparency	Imam &Shajari (2013), Mousavi (2011), Lari (2010) Sinai &Davoudi (2009)
10	Capital increase	Sotoudeh &Mohammadi (1394), Vediyyyah Shokohizadeh (2012), Moradi et al. (1392)
11	Leading groups	Tehrani &Khoshnood (2005)
12	hidden information	Aghaii &Mokhtarian (2004)
13	The depth of the stock market	Sotoudeh &Mohammadi (1394), Shafi (2014), Cayoor &Wohra (2012), Fallah &Azizi (2008)
14	Media	Khademi &Ghazizadeh (2007)
15	Trends of market index	Sotoudeh &Mohammadi (1394), Fallah &Azizi (2008), Khademi &Ghazizadeh (2007),
16	Inflation rate	Sotoudeh &Mohammadi (1394), Khademi &Ghazizadeh (2007), Imam &Shajari's (2013)
17	non-stockholders recommendation	Sotoudeh &Mohammadi (1394), Khademi &Ghazizadeh (2007),
18	stockholders recommendation	Sotoudeh &Mohammadi (1394), Shafi (2014), Kayoor &Wohra (2012), Doob (1389), Fallah &Azizi (2008)
19	types or stages of the industry	Saedi &Mokhtari (1388), Khademi &Ghazizadeh (2007), Aghaii &Mokhtarian (2004)

Also, these scholars, by summarizing and categorizing researches, in the field of behavioral biases testing in Tehran Stock Exchange, categorized the behavior of individual investors into four general categories, which are presented in Table 2 of this division: (Toloie et al., 2018).

Table 2.Summarizing research done in the field of individual investor behavior testing

No	Type of behavior	Researchers	Study Results
1	Rational behavior	Izydniya & Hajian Nezhad (2010) Khoshsirat and Salary(2011)	The behavior of investors in the Tehran Stock Exchange Rational.
2	Herd Behavior	Yousefi&Shahabadi(2009)Shahriari(2007)Mohammadi et al(2010),Ahmadi(2011),Fallahpour&Abdollahi(2011),Jahangiri (2013),Goodness&Seduction(2011),Pourzamani(2012),Pyroty (2010),Bahari (2013) Ziyachi (2013)	Investors in Tehran Stock Exchange have Herd behavior
3	Reaction behavior	Fallahpour&Abdollahi (2011)Moradi et al.(2011),Rostami &Hakimifar(1391)Moradi&Nikbakht(2005)Hibati&Zandieh (2011),Faramarzi(2012),Demoory et al.(2008),Motamedi (2012)Mehrani &Nunna Nahr (2008) Shahini Tiran (2009)	Investors in Tehran Stock Exchange at certain times have reactive behavior (positive or negative).
4	Heuristic behavior	Fallahpour &Abdollahi (2011)	Investors in the Tehran Stock Exchange decide on the basis of experience and error testing

Research hypothesis

Hypothesis 1: The financial ratio impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 2: The supportive recommendations impact the behavior (4 types of behavior)of individual investors.

Hypothesis 3: The Market status impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 4: The stock price trend impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 5: The stock price fluctuations impact the behavior (4 types of behavior) of individual investors.

Hypothesis 6: The Management of company impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 7: The rumors impact the behavior (4 types of behavior) of individual investors.

Hypothesis 8: The basis cognition of investment impacts on behavior (4 types of behavior) of individual investors is influential.

Hypothesis 9: The Transparency impacts the behavior (4 types of behavior) individual investors.

Hypothesis 10: The Capital increase impacts the behavior (4 types of behavior) affects individual investors.

Hypothesis 11: The Leading groups impact the behavior (4 types of behavior) of individual investors.

Hypothesis 12: The market efficiency impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 13: The hidden information impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 14: Professional Certification impacts the behavior or (4 Types of Behavior) of Individual Investors.

Hypothesis 15: The depth of stock market impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 16: The Mutual fund impacts the behavior (4 types of behavior)of individual investors.

Hypothesis 17: The Media impacts the Behavior (4 Types of Behavior) of Individual Investors.

Hypothesis 18: The Investment training impacts the behavior (4 types of behavior) affects individual investors.

Hypothesis 19: The Inflation rate impacts the behavior (4 types of behavior)of individual investors.

Hypothesis 20: The market index trend impacts the behavior (4 types of behavior)of individual investors.

Hypothesis 21: Non-Stockholder recommendation impacts on the Behavior (4 Types of Behavior) of Individual Investors.

Hypothesis 22: The Stockholder recommendation impacts the Behavior (4 Types of Behavior)of individual investors.

Hypothesis 23: The Gender impacts the behavior (4 types of behavior) of individual investors.

Hypothesis 24: The Age impacts the behavior (4 types of behavior)of individual investors.

Hypothesis 25: The Income impacts the behavior (4 types of behavior)of individual investors.

Hypothesis 26: The Education impacts the behavior (4 types of behavior)of individual investors.

Hypothesis 27: The stage or type of industry impacts the behavior (4 types of behavior) of individual investors.

3. Methodology

In terms of purpose, present research is practical, and in terms of collecting data, this research utilized descriptive method and of a survey type. Also, from the perspective of time, a cross-sectional study is considered quantitative in terms of data type. The statistical population of this study consists of two groups: the first group, experts in the field of behavioral finance (including prominent professors in the universities of the country and capital market activists), of which 30 were selected and participated in identifying the factors influencing the behavior of individual investors. The second group is the individual investors in the Tehran Stock Exchange who have at least once bought / sold shares during the year. Their number is unlimited and 384 people were randomly selected using Morgan's table. Two researcher-made questionnaires were used to collect data. The first questionnaire was designed to identify the factors impacting the behavior of individual investors and the second questionnaire to assess the decision making of individual investors. For validity of questionnaires, the method of face validity and reliability have been used from Cronbach's alpha coefficient. The Cronbach's alpha coefficient of the first questionnaire is 0.79 and for the second questionnaire is 0.72. In this research, the researcher used descriptive and inferential statistics to analyze the collected data. In descriptive statistics, binomial test was used to investigate the research hypotheses. Inferential statistics were used to test the normal distribution of the selected sample using the kolmogrov-Smirnov test. The results of the normal test are shown in Tables 3:

Table 3. Kolmogorov-Smirnov test results

Factors/variables	KS-Statistics	Significance level	Result
Financial ratio	0.189	0.000	Rejected
Supportive recommendations	0.219	0.000	Rejected
Market status	0.229	0.000	Rejected
Trend of stock price	0.193	0.000	Rejected
Flectional of stock price	0.180	0.000	Rejected
Management of company	0.205	0.000	Rejected
Rumors	0.209	0.000	Rejected
Basis cognition of investment	0.255	0.000	Rejected
Transparency	0.226	0.000	Rejected
Leading group	0.407	0.000	Rejected
Hidden information	0.225	0.000	Rejected
Media	0.253	0.000	Rejected
Trend of market index	0.216	0.000	Rejected
Stockholders recommendation	0.210	0.000	Rejected
Non-stockholders recommendation	0.239	0.000	Rejected

Based on the results of the above table, since the level of significance of the research variables is smaller than the assumed value (5%), there is evidence that null hypothesis is rejected, and the normal distribution of their sample is not accepted. Accordingly, in this study, in order to evaluate the proposed model (categorizing of factors), the researcher cannot use the covariance-based structural equation modeling. Therefore, the method of partial least squares modeling, which is not sensitive to the normal distribution of variables, is used. Confirmatory Factor Analysis of the proposed model is implemented using SmartPLS software.

4. Result

4.1. Identification of factors by experts

In addition to the factors listed in Table (1), factors such as gender, education level, income, age(Shafi,2014) and etc. were added to the table in determining the effective factors on the four types of Behavior. Using the first questionnaire (identifying factors), the opinions of the Experts Was Gathered

about the effect of each of the factors on the four types of individual investors' behavior. Initially, using the Kolmogorov-Smirnov test, the normal distribution of collected data was tested. The results of this test did not confirm the normal distribution of the data. Therefore, the use of the binomial test, which uses as non-parametric tests, has determined the factors/variables affecting individual investor behavior. In this test, the optimal value for choosing a factor/variable is assumed to be hypothesized 3 and P = 0.5 (based on experts opinion). Table 4 shows binomial test results.

Table 4.The results of statistical analysis of hypothesis

Factors	Rational behavior		Herding Behavior		Reaction Behavior		Heuristic Behavior		Final Result
	Sig[1]	Result	Sig	Result	Sig	Result	Sig	Result	
Financial ratio	0.043	Confirmed	0.000	Rejected	0.585	Rejected	0.585	Rejected	Confirmed
Supportive recommendations	0.585	Rejected	0.362	Confirmed	1.000	Confirmed	1.000	Confirmed	Confirmed
Market status	0.016	Confirmed	0.016	Confirmed	0.000	Confirmed	0.043	Confirmed	Confirmed
Trend of stock price	0.001	Confirmed	0.005	Confirmed	0.000	Confirmed	0.043	Confirmed	Confirmed
Flectional of stock price	0.099	Confirmed	0.099	Confirmed	0.000	Confirmed	0.016	Confirmed	Confirmed
Management of company	0.362	Confirmed	0.000	Rejected	0.043	Rejected	0.362	Rejected	Confirmed
Rumors	0.362	Rejected	0.000	Confirmed	0.585	Confirmed	0.016	Confirmed	Confirmed
Base of investment	0.099	Confirmed	0.005	Rejected	0.099	Confirmed	1.000	Confirmed	Confirmed
Transparency	0.016	Confirmed	0.000	Rejected	1.000	Confirmed	0.001	Rejected	Rejected
Increase	0.043	Rejected	0.585	Rejected	0.585	Rejected	0.200	Rejected	Rejected
Leading group	0.585	Rejected	0.043	Confirmed	0.200	Confirmed	0.362	Confirmed	Confirmed
Efficiency of market	0.200	Rejected	0.000	Rejected	0.043	Rejected	0.000	Rejected	
Hidden information	0.001	Confirmed	0.043	Confirmed	0.585	Confirmed	0.099	Confirmed	Confirmed
Certificate of professional	0.005	Rejected	0.000	Rejected	0.001	Rejected	0.000	Rejected	Rejected
The depth of the stock market	0.856	Rejected	0.099	Rejected	0.362	Rejected	0.099	Rejected	Rejected
Mutual funds	0.043	Rejected	0.016	Rejected	0.000	Rejected	0.016	Rejected	Rejected
Media	0.200	Rejected	0.362	Confirmed	0.585	Rejected	0.856	Confirmed	Confirmed
Investment training	0.200	Rejected	0.000	Rejected	0.016	Rejected	0.005	Rejected	Rejected
Inflation rate	0.856	Rejected	0.000	Rejected	0.362	Rejected	0.043	Rejected	Rejected
Trend of market index	0.099	Confirmed	0.856	Confirmed	0.099	Confirmed	0.856	Confirmed	Confirmed
non-stockholders recommendations	0.001	Rejected	0.362	Confirmed	0.043	Rejected	0.362	Rejected	Confirmed
Stockholders recommendation	0.000	Rejected	0.016	Confirmed	0.856	Rejected	1.000	Confirmed	Confirmed
Sex	0.000	Rejected	0.001	Rejected	0.000	Rejected	0.016	Rejected	Rejected
Age	0.099	Rejected	0.200	Rejected	0.362	Rejected	0.099	Rejected	Rejected
Income level	0.585	Rejected	0.585	Rejected	0.585	Rejected	0.043	Rejected	Rejected
Education	0.856	Rejected	0.001	Rejected	0.362	Rejected	0.200	Rejected	Rejected
stages of the industry	0.200	Rejected	0.001	Rejected	0.099	Rejected	0.016	Rejected	Rejected

Table 4 shows the results of testing the hypotheses of the research using the binomial test. According to the experts, the factors that were rejected in all four types of behavior were removed from the final list of influencing factors. Table (5) shows the endorsed factors/variables.

Table 5.List of confirmed effective factors

No	Factors	No	Factors	No	Factors
1	Financial ratio	6	Management of company	11	Hidden information
2	Supportive recommendations	7	Rumors	12	Media
3	Market status	8	Base of investment	13	Trend of market index
4	Trend of stock price	9	Transparency	14	Non-stockholders recommendations
5	Flectional of stock price	10	Leading group	15	Stockholders recommendation

4.2. Modeling and Verifying

In order to reduce diminution of the data and provide a new categorizing, first the factors were categorized into five groups by the experts. figure 1 shows the categorizing of factors/variables.

Table 6 shows the statistical indices of confirmed factors/variables, which are subjected to the second questionnaire (individual investors response).

A confirmatory factor analysis has been used to answer the question whether the number of factors measured is consistent with what is expected based on theory and theoretical model. The steps taken in this step are explained in more detail.

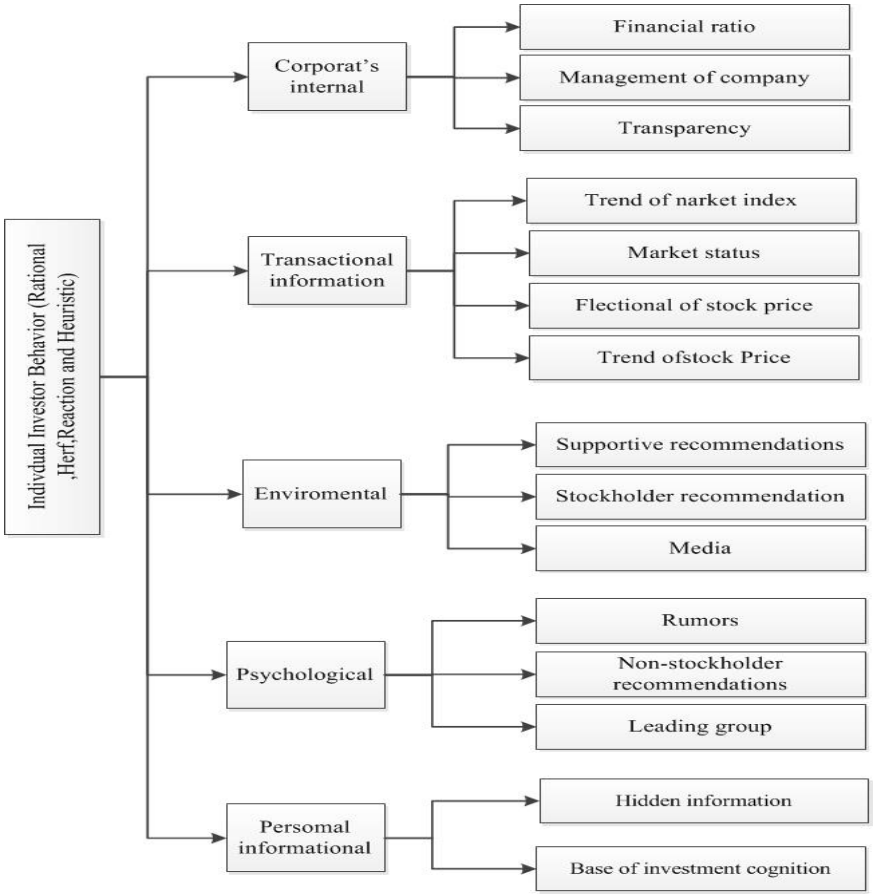

Figure 1.categorizing Factors by experts

Table 6.Research's Descriptive statistics of confirmed factors

Factors	N	Mean	St.Dev	Skewness	Kurtosis
Financial ratio	384	2.69	1.131	0.000	-0.915
Supportive recommendations	384	2.72	1.179	-0.062	-0.926
Market status	384	2.96	1.011	-0.283	-0.432
Trend of stock price	384	2.48	1.110	0.355	-0.581
Flectional of stock price	384	2.87	1.158	-0.117	-0.903
Management of company	384	3.14	1.257	-0.290	-0.935

Factors	N	Mean	St.Dev	Skewness	Kurtosis
Rumors	384	2.59	1.050	0.031	-0.744
Base of investment cognition	384	4.09	0.849	-0.826	0.750
Transparency	384	3.42	1.126	-0.469	-0.446
Leading group	384	3.01	1.025	-0.265	-0.314
Hidden information	384	3.18	1.315	-0.413	-0.984
Media	384	2.03	1.096	0.689	-0.560
Trend of market index	384	3.24	0.980	-0.404	-0.069
Non-Stockholders recommendation	384	1.50	0.885	1.869	2.964
stockholders recommendation	384	3.14	1.127	-0.297	-0.484

4.2.1. Testing the reflective measurement model

Structural Equation Modeling (PLS) involves two stages of testing the model of measurement and structural model test. Since there is no structural model here, only the test model test is performed. The measurement model test includes reliability and Validity

4.2.1.1. Reliability and validity of items

To verify the internal consistency of the model by the PLS method, there are several criteria:

A. first criterion: the Validity of each of the Items and observed variables

B-Second criterion: Composite Reliability of each Construct (CR)

C. Third criterion: Average Variance Extracted (AVE)

D. Forth criterion : Discriminant Validity

Each of these criteria is explained below:

To measure the first criterion, If the Outer loadings of each of items is significant on the Construct itself, it can be argued that the Items are sufficiently validable. Outer loadings are reported in the tables below(4 to11). Outer loadings are more than 0.4 acceptable.

Table 7. Outer loadings for Corporate's internal construct

Items(Symbol)	Factor Loads	t-value	Result
Financial ratio(x1)	0.52	5.458	Confirmed
Management of company(x2)	0.84	22.641	Confirmed
Transparency(x3)	0.78	16.608	Confirmed

As shown in Table 7, the Outer loadings of all items is higher than 0.4 and is significant at the error level of 0.01.

Table 8.Outer loadings for Transactional information construct

Items (Symbol)	Factor Loads	t-value	Result
Trend of market index(x4)	0.75	17.831	Confirmed
Market status(x5)	0.76	15.191	Confirmed
Trend of stock price(x6)	0.235	------	Rejected
Flectional of stock price(x7)	0.63	12.580	Confirmed

As shown in Table 8, the Outer loading of the stock price fluctuation is less than 0.4. Therefore, this question and as a result of this item are excluded from the subsequent analysis (this item, according to the experts, was reinstated in the group internal factors of the company, which also did not have a suitable load factor in this group).

Table 9. Outer loadings for Environmental construct

Items (Symbol)	Factor Loads	t-value	Result
Supportive recommendations(x8)	0.74	23.939	Confirmed
Shareholder recommendation(x9)	0.75	13.642	Confirmed
Media(x10)	0.68	16.321	Confirmed

As shown in Table 9, the outer loadings of all items is higher than 0.4 and is significant at the error level of 0.01.

As shown in Table 10, the outer loadings of all items is higher than 0.4 and is significant at the error level of 0.01.

Table 10. Outer loadings for Psychological construct

Items (Symbol)	Factor Loads	t-value	Result
Rumors(x11)	0.72	17.661	Confirmed
non-shareholder recommendations(x12)	0.71	18.991	Confirmed
Leading Group(x13)	0.48	7.110	Confirmed

Table 11. Outer loadings for Personal information construct

Items (Symbol)	Factor Loads	t-value	Result
Hidden information(x14)	0.980	8.118	Confirmed
Basisof investment cognition(x15)	0.111	-----	Rejected

As can be seen in Table 11, the Outer loading of the investment cognition is less than 0.4 and is not significant at the error level of 0.01. Therefore, this question and the result of this item are excluded from the subsequent analysis.

Removing this clause and re-calculating the PLS algorithm and the value of the t-value of the hidden information item will reach less than 1.96, which means that this relationship is not meaningful and should be deleted. By deleting this item, the group of personal information construct does not have a subset, which inevitably was deleted. Considering the importance of the hidden information item according to the experts' opinion, this item was placed in the group of Psychological construct and after PLS algorithm was re-implemented, the hidden information item had a outer loading of 0.5 and a significant level of 0.01 in this group. Based on the above, Figure (2) shows the outer loadings and the Figure(3) of the t-statistic (meaningful paths-the final model). As can be seen, the stock price fluctuations and the basis cognition of investment have been eliminated from the model.

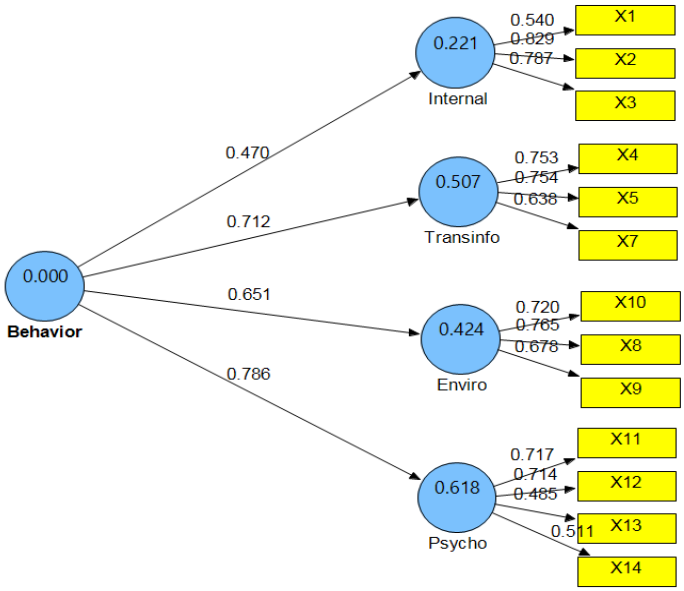

Figure 2.The results of the PLS analysis(Outer loadings)

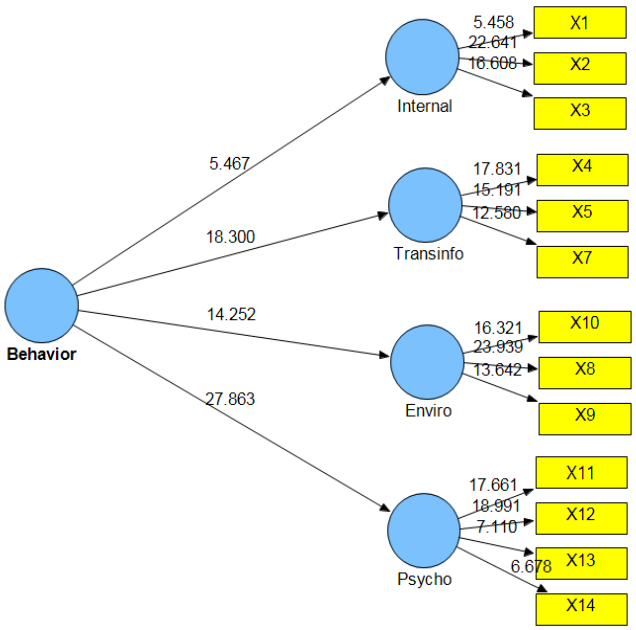

Figure 2.The results of the PLS analysis(t-vlue)

The second criterion is the examination of the Composite Reliability of each of the construct. Composite Reliability over Cronbach's alpha are a more modern benchmark for determining reliability This credit is obtained through the Dillon-Goldstein coefficient and values greater than 0.7 for this criterion are acceptable. The third criterion is the average extracted variance (AVE). The AVE benchmark represents the mean of the variance shared between each construct with its own indices. In fact, this criterion shows the degree of correlation between a construct and its indexes (items), the more correlation this model is, the better. Values greater than 0.5 for this criterion indicate the validity of the construct. In Table 12, two CR and AVE criteria for research constructs are presented:

Table 12. The convergent validity and reliability of measures for the model

Construct	Convergent validity	Reliability of measure	
	AVE	Composite reliability	Cronbach's alpha
Internal Company	0.532	0.766	0.72
Transactional Information	0.514	0.759	0.72
Environmental	0.524	0.767	0.73
Psychological	0.579	0.702	0.70

In order to investigate the validity of the research model, the criteria introduced by Fornell and Larker (1981) are used (fourth criterion). This criterion shows the relationship between a construct and its indices in comparing its construct with other research constructs. So that an acceptable divergent validity of a model implies that a construct in the model interacts more with its own Items than with other constructs. The Fornel and Larker criterion is obtained so that the rotation of the AVE of a construct should be more than the solidity of that construct with other constructs. This criterion is presented in Table 13:

Table 13. The discriminant validity measures for the model

Construct	Corporate's internal	Transactional information	Environmental	Psychological
Corporate's internal	0.72952[2]			
Transactional information	0.151259[3]	0.717003		
Environmental	0.111353	0.276797	0.724638	
Psychological	0.174706	0.361978	0.44401	0.616216

In this matrix, the correlation of the construct have been reported. The numbers on the original matrix's diameter are AVE. Based on this criterion, if these numbers are greater than their lower numbers, the construct has a proper validity. In Table (13), all constructs have a proper validity.

5. Discussion and Conclusions

In this study factors influencing the individual investor's behavior were examined .Investors behavior is one of the most important discussion of the financial science in the financial marketThe prevailing paradigm in financial theory is based on maximum of expected Utility and risk aversion, while empirical studies of the real world have brought a lot of criticism in recent years to modern financial theory and rational human assumptions .In the 1980s, there were many exceptions to the stock markets, such as high exchange rates, sharp fluctuations in the capital market, dividends, stock plots, and predictability (Rai and Fallahpour, 2004). To justify the exceptions found in stock markets, a new field has emerged in financial studies, which is called behavioral finance. Behavioral finance is a category of financial issues that adds to standard financial theories behavioral aspects of the decision making process.

Individual investors when buying and selling stocks decide on a variety of factors, such as financial ratios, Brokers Recommendations, market total Index trends, rumors, and so on, and they also show different behaviors. The results of the studies in the Tehran Stock Exchange indicate that individual investors do not always behave rationally, and have Irrational behaviors (Herd, reaction, and Huristics) (VakiliFred et al., 2013). So far, no study has been done to identify the factors influencing these behaviors. This study, using the results of the study of Toloie et al. (2018), has identified factors affecting investor behaviors (rational behavior, Herd behavior, Reaction behavior, and Heuristics behavior). The results of this study indicate that factors such as trend of market index, market status, stock price trends, stock price fluctuations and hidden information affect all four behaviors. The results of this study are consistent with the results of the study by Vakilifard et al (2014) and Aghaei and Mokhtarian (2004). Finally, the identified factors were divided into four categories (corporate's internal ,transactional information, environmental and Psychological). The proposed model of the research has been confirmed by Confirmatory factor analysis method.

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Note

[1] Significance level

[۲] The numbers on the diameter of the crater matrix are Average Variance Extracted..

[۳]All correlation coefficients are significant at the error level of 0.01.