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A Model of Investor Sentiment Based on Grounded Theory Approach

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ABSTRACT

Investor expectations regarding future economic processes are among the crucial factors that influence their decision-making. These expectations play a unique role as they are unmonitored variables capable of shaping observable economic phenomena. Psychological factors have a significant impact on both investor expectations and corporate market value. This study focuses on modeling investor sentiments with an emphasis on psychological factors, utilizing the Grounded Theory (GT) framework. The research is conducted through applied and mixed-methods at its initial and subsequent stages. The statistical population for this study comprises 13 experts, senior managers of investment companies, and university professors. Participants were selected using purposive and snowball sampling techniques, continuing until theoretical saturation was achieved. Data collection was carried out through semi-structured interviews, which were then coded using Atlas.ti 8 software. The research data were analyzed using an open coding method, leading to the identification of 46 categories and 6 key dimensions as the research results.

1 Introduction

The prosperity of the security market, i.e. the investment market has a pivotal role in the economic streams of a country. Increasing investor sentiment, creating confidence in the security market, and boosting investor confidence in this market through providing a stable environment for their activities and supporting them against disparate hazards in this market are among the main issues facing securities and exchange market, which play an important role in encouraging people to participate and develop investment in security markets [3].

A wide range of studies have been conducted around the world about based on different theories regarding the factors affecting risk perception, each of which has dealt with this phenomenon using a different approach. Pompian believes that factors affecting risk perception are classified into cognitive and emotional factors, both of which can lead to irrational judgments and behaviours. Several authors have regarrded behavioural sentiments as rules of thumb, while others have called them beliefs, judgments, or preferences. Chen proposed a framework to explain the effect of sentiments and found that

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investor sentiments can affect the dependency degree of accounting information. They demonstrated that sentiments can influence the growth of forecasted profit since normally investors have an optimistic attitude towards the future at times of high sentiments. Stock analysts are inclined to overrate a stock that you can hardly count on. Besides, sentiments can influence the return rate in a more complex way [7]. Brown and Cliff revealed that investors enjoy strong interpersonal emotions and they can affect small stocks. They manifested a strong relationship between the emotions of institutional shareholders and stocks of large companies [5].

Schmelling demonstrated that investor sentiment is a global phenomenon and investor self-confidence can affect the total return of the market and stock value. Other factors affecting investor sentiment are corporate disclosure and market liquidity [34]. Despite the theory of the traditional market, Grundy and Li manifested that investors use corporate discretionary accruals for their investment assumptions and the corporate process of investment can have a positive relationship with investor sentiments in companies that are at risk [14]. The results of financing studies based on a behavioural approach suggest that investors might behave irrationally. Given that, cognitive bias or psychological factors can affect investors' decisions. Thus, stock price fluctuations depend not only on the intrinsic value demonstrated by accounting information but also on the irrational behaviour of investors, which can be measured based on investor sentiments. Therefore, the question that arises here is: "What factors affect the investor sentiment in the Tehran Stock Exchange (TSE) Market?

Given the domestic studies conducted on the tendencies of stock exchange investors, there is a research gap in presenting a model for identifying factors influencing investor behaviour. Thus, the study's innovation was the presentation of a fundamental theory for identifying such factors. Furthermore, MICMAC, strategic management approaches, and futures studies were used in this study. The next chapter will first deal with the literature review, then, with the research methodology and data analysis.

2 Theoretical Foundations and Literature Review

The behavioral finance knowledge regarded as application of psychology in financial[22]. Behavioural financing is divided into two main behavioural finance categories, namely individual investor behaviour and behavioural biases. Behavioural finance examines the current abnormalities. Lindner et al in a study, they examined the role of Social motivation and risk-taking in investment decisions. The results of this study show that people's risk-taking increases due to intrinsic motivations. However, investor behavior however, is mainly driven by reputational motives with risk-taking levels.This indicates that professionals show higher levels of intrinsic incentives to outperform others compared to non-professionals, but a similar behavior can be sparked among the latter by adding reputational incentives [26]. Elgebily et al. in a study examined the impact of optimism on investment decisions.

The results of this study show that the level of optimism has a significant effect on the value of investment and leads to larger investments, while this effect is adjusted under conditions of lack of access to cash resource [12]. Kartini and Nahda have examined the impact of investors' behavioral biases on their investment decisions. The research findings show that all of the variables, anchoring bias, representativeness bias, loss aversion bias, overconfidence bias, optimism bias, and herding behavior have a significant effect on investment decision [21]. Igual and Santamaria revealed that behavioural financing lacks an integrated framework, thus, they proposed a conceptual map in this regard after revising and combining the current knowledge. This conceptual map provides an intuitive image of the psychological framework regarding the irrational behaviour of investors [19]. This framework organises the avail-

able literature into three main dimensions of unconventional preferences that result in a theoretical perspective [1]. Most of the modern financial theories are formed based on two fundamental assumptions, i.e. rational investors and market efficiency. However, in the past three decades, behavioural finance researchers studied praxeology, psychology, sociology, decision-making patterns, and behavioural models. Consequently, they generated their theories on the basis of assumptions contradicting the modern fundamental financial assumptions. According to these studies, modern finance is incapable of corresponding to various phenomena in financial markets. Thus, advocates of behavioural finance strongly believe that awareness regarding investor behavioural and psychological aspects and identification of the patterns of decision-making, sociological and behavioural models are essential in investment-related decisions. Given that, the present study sought to investigate investor decisions in the TSE market in order to provide a better insight into the decision-making patterns of investors and examine their behaviour. One of the phenomena disregarded in the modern financial models is the role of sentiments in investor decision-making. As shown by psychological studies, past rewards affect an individual's sentiments [17].

Revealing the importance of psychology in making economic and investment decisions resulted in the formation and development of behavioural finance knowledge. One of the subjects approved in psychology is the influence of individuals' sentiments on their decision-making and judgment process regarding future events. Individuals make optimistic choices when they have positive emotions, but they make pessimistic choices when they have negative emotions. Market emotions manifest investor emotions towards forecasted prices in the market. Taking into account that investors reflect their emotions in the investment market, investor emotions are expected to affect the herding behaviour. Market emotions mean the market prosperity or stagnation. When the market is prosperous, the investors are inclined to buy the stock even above its intrinsic value. In this case, the investors are more willing to take risks, which indicates their trust in the market and the economic conditions. In this state, they expect the market to continue the process and forecast that the prices will continue to increase [24].

Various studies have investigated the linear relationship between the stock exchange and investor emotions. Lan et al. investigated investor emotions and stock price in China. They revealed that investor sentiments and the earnings announcement date affected stock return [25]. Cagli et al studied the causal linkages between investor sentiments and the excess efficiency on Istanbul Stock Exchange. According to the results, there was a non-linear relationship between stock return and investor behaviour [6]. Takamatsu et al investigated investor emotions and the factors affecting them. The factors influencing the investor emotions are optimism and pessimism regarding the future cash flow. Investors might take more risks when they have optimistic feelings. However, when they have pessimistic feelings, they might employ a different orientation and have more inclination toward a safer stock [39]. Lutfur and Shamsuddin studied investor sentiments and the price-earnings ratio in the 7G stock exchange. They found that, after controlling the effects of fundamental factors, the P/E ratio increased as a result of the improved investor sentiments [27]. Blau examined the stock price clustering and investor sentiments. The results indicated that price clustering is considerably higher in technological sections than in non-technological stock. Special investor emotions had a greater effect in this increase [4].

Khalili Araghi et al researched the effect of investor emotions on skewness preferences and asset price. They revealed that positive skewness preferences have a direct effect on poor performance, which is confirmed considering the estimation of the research model. Given that, in the second assumption, it was claimed that high investor emotions have a negative impact on the performance that is accepted with regard to the obtained results [23]. Soroushyar investigated the role of momentum and investor

emotions on the herding behaviour in the Stock Exchange. They found that investor emotions negatively affect the herding behaviour of investors [36]. Mehrani and Madanchi Zaj explored the effect of investor emotions and trading behaviour patterns on the excess stock return in the TSE. Their goal was to examine the influence of investor emotions and trading behaviour patterns on the excess stock return nased on the Fama–French three-factor model. In their study, the data of 155 companies listed on the TSE from 2011 to 2015 were examined and the regression analysis was used to study the relationship of investor trading behaviour and emotions with excess stock return. They found that adding the investor emotion index to the Fama–French three-factor model improved the model and increased the excess stock return. Consequently, the results indicated that the emotion index is more applicable in the development of investment models than the trading index [28]. Besides, Dadras et al conducted a study entitled "Role of Behavioural Finance in Understanding Individual Investor Behaviour (A Review of Empirical Evidence from the TSE)". They identified the factors affecting the decision-making of individual investors as well as the behavioural biases in the TSE by conducting a comprehensive review of the previous domestic studies and comparing them to the results of those conducted about the investment markets of other countries. According to the results of this research, the domestic and foreign studies identified relatively similar effective factors such as financial ratios, recommendations, behavioural biases etc. In addition, the effect of demographic factors on investor behaviour has not been studied in the TSE yet [9]. Nikoo Maram et al used portfolio analysis to demonstrate that when the market emotions are normal, the majority of financial strategies are successful. In accordance with the results, creating a stock portfolio in the optimistic and pessimistic periods not only does not lead to an excess return but also results in loss [30].

Some foreign studies have evaluated sentiments based on transparent indicators. For instance, Brown and Cliff used the questionnaire information such as investors' views on the market orientation and reaction to the news [5]. Subramanian et al investigated the oscillations of cash flow and investor emotions. They indicated that investor self-confidence had a negative relationship with the return of companies with high liquidity oscillations [38]. The increased complexity of financial documents and instruments make customers face new and more complex products, which requires knowledge about financial matters (such as risk level of disparate securities, concepts pertaining to interest rate, and the logic of structured financial products). Lack of knowledge in this regard can cause investors to hold their assets and poor stocks for a longer period of time. For instance, knowledge on how valuation works can increase the trust in the price paid as a reference point instead of fundamental information available when inferring a value amount. Shapira and Venezia found that professional investors that enjoy a higher technical knowledge are less prone to be affected by the impact of positioning than nonprofessionals [35]. Cornell et al and Hribar and McInnis believe that that stock analysts are more optimistic regarding the future profitability of companies, thus, they are more inclined to examine the buy signal that one can hardly have hope for [31, 23, 27]. In addition, Baker and Wurgler [2] argued that sentiments can change an investor risk exposure and thus affect the stock price [20, 8, 16]. Holger investigated the disposition effect and loss aversion with regard to the gender differences and indicated that women are more loss-averse and more prone to disposition effect than men [15]. Valid Ahmed compared the trading patterns and performance of individual investors with the institutional investors in Qatar Stock Exchange and demonstrated that institutional investors seek positive feedback in their trading strategies while the individual investors follow herding behaviours in their trades [43]. Uygar and TAS revealed that investor emotions have a negative impact on various industries. A change in the investor emotions has crucial effects on changing the stock indices of the banking, food, and drink

industries in comparison with the retail and telecommunications industry [42]. Tehrani and Khoshnood identified and ranked the effective groups on the individual investor trading decisions. They found that individual investors are extremely affected by rumors and unconfirmed news as well as the market atmosphere. These investors rarely seek the consultation of financial specialists and brokers. In addition, individual investors believe that following the market atmosphere and the decisions of great and institutional investors can lead to higher profits for them [40].

3 Methodology

The grounded theory approach is an inductive-exploratory method of applications for different areas[13]. This is an applied and mixed-methods study. Mixed-method studies are carried out by combining the qualitative and quantitative research methods. The first stage entails collecting and analysing the qualitative data, while the second stage includes collecting and analysing the quantitative data. The collected and analysed data will be used to examine and determine the main aspects of the phenomenon. Then, these aspects will be considered in developing the data collection tool.

Accordingly, 13 managers, experts, and professors from the investment companies active in the investment market were selected through purposive and snowball sampling and this process was continued until data saturation. The data saturation method is used in qualitative studies to finish the sampling process [32]. Theoretical saturation refers to a stage in which no new data arise in relation to the issue [33]. The interviews were conducted face-to-face, and they were recorded following coordination with the interviewees. Afterwards, the interviews were fully transcribed and analysed. The Atlas.ta.8 and MICMAC applications were used for a more precise analysis. The experts' demographics are as follows:

Table 1: The experts' demographics

Participant	Sex	Age	Work Experience/Field of Activity	Academic Qualification	Quantity of Extracted Codes
1	Female	37	10 years/Investment director in brokerage	Ph.D. in Finance	185
2	Man	38	18 years/Brokerage CEO	Master's degree in Financial Administration	132
3	Man	39	12 years/Brokerage CEO	Master's degree in Accounting	188
4	Man	57	35 years/Board member of bank and investment company	Ph.D. in Political Science and Banking Management	34
5	Man	37	8 years/Portfolio director	Ph.D. in Financial Administration	53
6	Man	42	15 years/Brokerage CEO	Ph.D. in Financial Administration	96
7	Female	30	6 years/Consultant and capital market analyst in brokerage	Ph.D. in Finance	108
8	Female	32	10 years/R&D director in brokerage	Ph.D. in Finance	151
9	Man	56	34 years/CEO of investment company	Master's degree in Banking	145
10	Man	55	30 years/CEO of investment holding	Master's degree in Accounting	181
11	Man	52	10 years / CEO of development and investment company	Ph.D. in Accounting	68
12	Man	45	10 years/CEO of leasing company	Ph.D. in Entrepreneurship	81
13	Female	31	6 years/Stock market analyst in brokerage	Master's degree in Finance	130

4 Findings

The GT entails parallel analysis of each section of data immediately after its collection. Then, the researcher receives guidelines from analysis of the initial data to have access to the subsequent data [11,10]. The analysis process includes coding the interview and textual data. Data coding comprises three stages: open coding, axial coding, and selective coding. Open coding consists of two stages of initial and secondary coding. Initial coding is carried out through line-by-line, phrase-by-phrase, and paragraph-by-paragraph coding of the data, each of which is attached to a concept or a code. In the secondary coding, the concepts are compared and then similar cases are placed in single categories. Thus, the specific and limited number of data mass (codes - concepts) are reduced from the major categories. Then, these categories are placed and linked together [29].

1. Open Coding: Open coding is the line-by-line analysis method. In this study, the collected data from each interview were analysed and the concepts pertinent to the research were specified and classified in the general classes called categories. Then, the next samples were selected to develop the obtained categories including discovering the dimensions and properties of categories, and obtaining integration among the responses. Based on the results of the open coding of the qualitative output, 540 open codes were identified and selected from the concepts in the interviews using the interviews.

2. Axial Coding: Strauss and Corbin's codng[37]. paradigm model was used for axial coding in this study. This stage of coding seeks to establish a relationship between the generated classes in the open coding stage, which is carried out on the basis of the paradigm model and facilitates the process of theory generation for the theorist. Axial coding leads to the creation of groups and categories. All similar codes were placed in their special group. Given that, all created codes were revised and compared to the texts to prevent the loss of any content. In the axial coding section, 450 initial codes were classified into 46 categories:

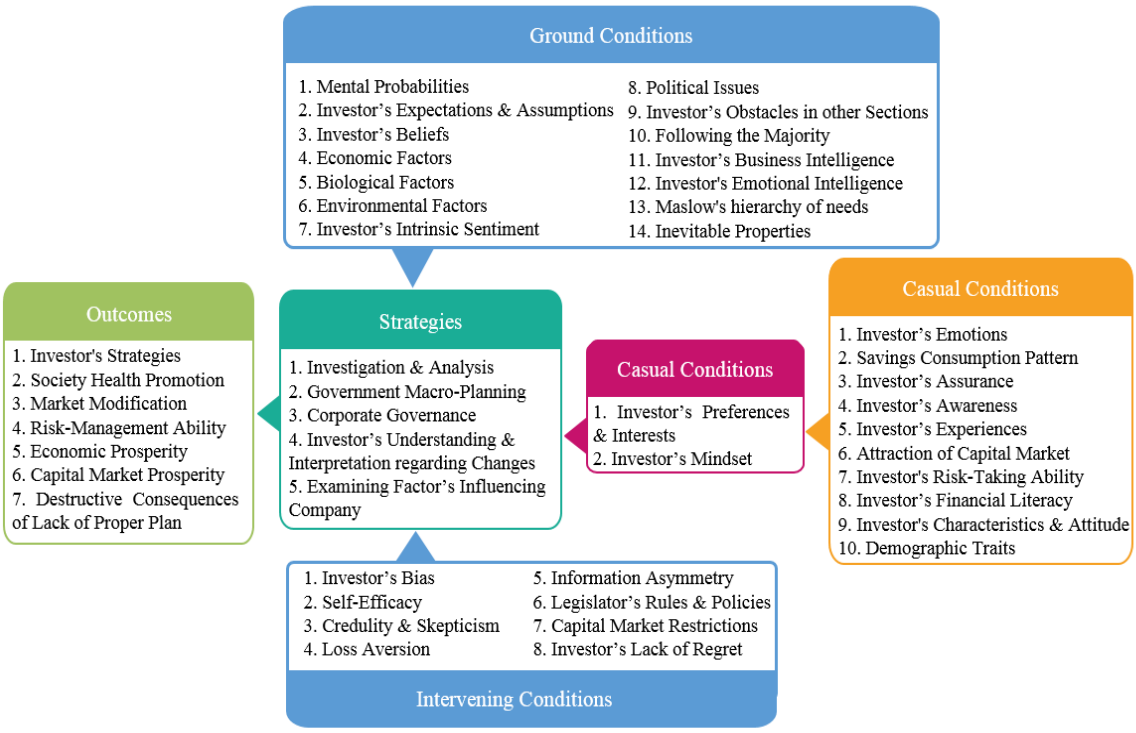

Fig. 1: Conceptual Model of Investors' Sentiment

3. Selective Coding: Selective coding is the process of integrating and refining the theory [29]. Finally, at the selective coding stage, the main coding category was selected, and it was systematically related to other categories taking into account the previous coding steps. Then, the relations were validated and the categories that required more refinement and development were improved. The above steps were carried out in a reciprocal process. Therefore, the steps of selective coding are not clearly distinguished and are carried out through an interactive process together with open and axial coding. To integrate and propose an investor sentiment design, after identifying the axial category and relating other categories based on the systematic paradigm of GT, the designed model was refined and the main factors were developed. Accordingly, the final model of research was obtained as follows (Figure 1).

4.1 Model Reliability

The Kappa index was employed to assess the reliability of the designed model. In this method, another individual (from the field experts) classified the codes without any knowledge regarding how the codes and concepts created by the researcher were coded. Then, the concepts proposed by the researcher were compared with those provided by that expert. Finally, the Kappa index was calculated considering the similar and different number of created concepts. As can be seen in Table 2, the researcher created 46 concepts and that expert created 40 concepts, out of which 38 concepts were the same.

Table 2: Status of Converting Codes into Concepts by the Researcher and Expert

Researcher's Opinion				
Total	No	Yes		Expert's Opinion
40	B=2	A=38	Yes	
8	D=0	C=8	No	
48	2	46	Total	

$$\text{Observation}=\frac{A+D}{N}=\frac{38}{48}=0.792$$

$$\text{Random Agreements}=\frac{A+B}{N}*\frac{A+C}{N}*\frac{C+D}{N}*\frac{B+D}{N}=\frac{40}{48}*\frac{46}{48}*\frac{8}{48}*\frac{2}{48}=0.006$$

$$K=\frac{Observation\ Agreement-Random\ Agreements}{1-Random\ Agreements}=\frac{0.792-0.006}{1-0.006}=0.791$$

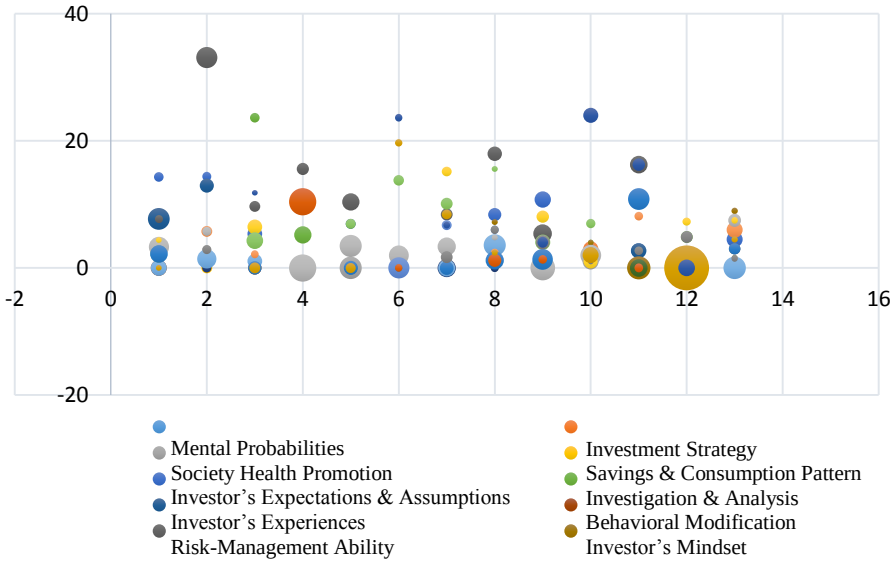

Fig. 2: Frequency of Coding the Investor sentiment categories

In accordance with the observations, the value of the Kappa index equals 0.791, which is a valid level of agreement. Having identified the categories by axial coding, their importance can be specified via the frequency of codes given to the categories. The following tables and figures show the software output pertinent to the frequency of the codes given to the categories for each interviewee.

4.2 Fuzzy Delphi Technique

The Fuzzy Delphi Technique was used to screen the indices and identify the final indices, and the expert's opinions were used to determine the importance of the indices. Even though experts use their mental capabilities to carry out the comparisons, it should be noted that the traditional process of quantifying an individual's viewpoint is not fully capable of reflecting the human thinking styles. In other words, using the Fuzzy collection is more compatible with the lingual and sometimes vague human explanations. Thus, the Fuzzy collections (using Fuzzy numbers) should be used to carry out long-term predictions and decision-making in the real world. The present research used the triangular fuzzy numbers (TFN) for fuzzification of experts' opinions.

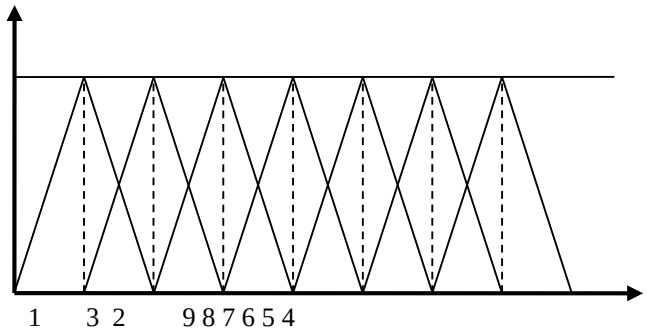

Fig. 3: Valuating the Indices in relation to each other using TFNs

At the next step, the fuzzy mean of an individual's fuzzy numbers was calculated. To calculate the mean value of the opinions of n interviewees, the Fuzzy mean is calculated as follows:

Each TFN is dislayed for each index as follows [44]:

$$\tau_j = (L_j, M_j, U_j \tag{1}$$
$$L_j = \min(X_{ij})$$
$$M_j = \sqrt[n]{\prod_{i=1}^{n} X_{ij}}$$
$$U_j = \max(X_{ij})$$

i index represents the expert, so:
τj: Fuzzy mean of i criteria
Xij: Amount of assessmet of i expert from j criteria
Lj: Minimum amount of assessment for j criteria
Mj: Geometric mean of amout for expert assessment from performance of j criterion
Uj: Maximum assessment for j criterion

In fact, these integration methods are experimental methods proposed by various researchers. For instance, a common method for integrating the collection of TFN considers the minimum to be l, the mean to be m, and the maximum to be u [18].

$$F_{AGR} = \left(\min\{l\}, \left\{\frac{\sum m}{n}\right\}, \max\{u\}\right) \quad (2)$$

The mean fuzzy method was used in this research. The fuzzy mean of n TFN is calculated via Equation 3:

$$\tilde{F}_{AVE} = (L, M, U) = \frac{\sum l_i^k}{n}, \frac{\sum m_i^k}{n}, \frac{\sum u_k^i}{n} \quad (3)$$

In this equation, the TFN $\dot{f}i = (lki, mki, uki)$ is the fuzzy equivalent of the expert's opinion of k regarding the i criterion. The fuzzy mean of the viewpoint of the experts' panel for each index is presented in the table.

4.3 Defuzzification of Amount

The centre of area method (COA) is used for defuzzification, which is as follows [41] :

$$DF_{ij} = \frac{\left[\left(u_{ij} - l_{ij}\right) + \left(m_{ij} - l_{ij}\right)\right]}{۳} + l_{ij} \quad (4)$$

Round One

The following is the fuzzy mean and output of defuzzification amount pertinent to indices. The threshold in this research was considered to be 7. The acceptable defuzzified value is above 7 and each index that obtained a score of less than 7 is rejected.

Table 3: Fuzzy Mean & Fuzzy Screening of Indices (First Round).

R1	L	M	U	Mean	Crisp	Result
C1	6.58	7.58	8.25	(8,25,7,58,6,58)	7.77	Acceptance
C2	6.92	7.92	8.42	(8,42,7,92,6,92)	7.75	Acceptance
C3	6.50	7.50	8.25	(8,25,7,5,6,5)	7.42	Acceptance
C4	6.50	7.50	8.25	(8,25,7,5,6,5)	7.42	Acceptance
C5	6.42	7.42	8.17	(8,17,7,42,6,42)	7.28	Acceptance
C6	6.50	7.42	7.92	(7,92,7,42,6,5)	7.17	Acceptance
C7	6.25	7.25	8.00	(8,7,25,6,25)	7.75	Acceptance
C8	6.92	7.92	8.42	(8,42,7,92,6,92)	7.76	Acceptance
C9	6.50	7.50	8.08	(8,08,7,5,6,5)	7.61	Acceptance
C10	6.75	7.75	8.33	(8,33,7,75,6,75)	7.22	Acceptance
C11	6.25	7.25	8.17	(8,17,7,25,6,25)	7.06	Acceptance
C12	6.25	7.17	7.75	(7,75,7,17,6,25)	7.08	Acceptance
C13	6.25	7.25	7.75	(7,75,7,25,6,25)	7.86	Acceptance
C14	7.00	8.00	8.58	(8,85,8,7)	7.74	Acceptance
C15	6.42	7.42	8.17	(8,17,7,42,6,42)	7.28	Acceptance
C16	6.25	7.25	7.92	(7,92,7,25,6,25)	7.17	Acceptance
C17	6.50	7.50	8.42	(8,42,7,5,6,5)	7.75	Acceptance
C18	6.25	7.25	7.92	(7,92,7,25,6,25)	7.76	Acceptance
C19	6.42	7.42	8.17	(8,17,7,42,6,42)	7.61	Acceptance

Table 3: Fuzzy Mean & Fuzzy Screening of Indices (First Round).

C20	7.00	8.00	8.67	(8,67,8,7)	7.22	Acceptance
C21	6.67	7.67	8.42	(8,42,7,67,6,67)	7.06	Acceptance
C22	6.83	7.75	8.17	(8,17,7,75,6,83)	7.08	Acceptance
C23	6.92	7.92	8.67	(8,67,7,92,6,92)	7.86	Acceptance
C24	6.50	7.50	8.42	(8,42,7,5,6,5)	7.47	Acceptance
C25	6.75	7.75	8.25	(8,25,7,75,6,75)	7.58	Acceptance
C26	6.92	7.92	8.42	(8,42,7,92,6,92)	7.75	Acceptance
C27	7.00	8.00	8.67	(8,67,8,7)	7.89	Acceptance
C28	6.50	7.50	8.08	(8,08,7,5,6,5)	7.36	Acceptance
C29	6.08	7.08	8.00	(8,7,08,6,08)	7.05	Acceptance
C30	6.58	7.58	8.33	(8,33,7,58,6,58)	7.50	Acceptance
C31	6.42	7.42	8.08	(8,08,7,42,6,42)	7.31	Acceptance
C32	6.50	7.50	8.08	(8,08,7,5,6,5)	7.36	Acceptance
C33	6.58	7.50	8.00	(8,7,5,6,58)	7.36	Acceptance
C34	6.33	7.33	8.08	(8,08,7,33,6,33)	7.25	Acceptance
C35	6.67	7.67	8.33	(8,33,7,67,6,67)	7.56	Acceptance
C36	6.50	7.50	8.17	(8,17,7,5,6,5)	7.39	Acceptance
C37	6.42	7.42	8.08	(8,08,7,42,6,42)	7.31	Acceptance
C38	6.58	7.58	8.33	(8,33,7,58,6,58)	7.50	Acceptance
C39	6.42	7.42	8.25	(8,25,7,42,6,42)	7.36	Acceptance
C40	6.08	7.08	7.92	(7,92,7,08,6,08)	7.03	Acceptance
C41	6.50	7.50	8.33	(8,33,7,5,6,5)	7.44	Acceptance
C42	6.92	7.92	8.33	(8,33,7,92,6,92)	7.72	Acceptance
C43	6.33	7.33	8.17	(8,17,7,33,6,33)	7.28	Acceptance
C44	6.67	7.67	8.25	(8,25,7,67,6,67)	7.53	Acceptance
C45	6.50	7.50	8.42	(8,42,7,5,6,5)	7.47	Acceptance
C46	6.67	7.67	8.25	(8,25,7,67,6,67)	7.53	Acceptance

Round 2

Fuzzy Delphi analysis for the remaining indices was continued in round two. Table 4 reports the results of the defuzzification of the elements in round two:

Table 4: Fuzzy mean and Fuzzy Screening of Indices (Round Two).

R2	L	M	U	Mean	Crisp	Result
C1	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C2	6.42	7.42	8.33	(8,33,7,42,6,42)	7.39	Acceptance
C3	6.67	7.67	8.58	(8,58,7,67,6,67)	7.64	Acceptance
C4	6.83	7.83	8.50	(8,5,7,83,6,83)	7.72	Acceptance
C5	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C6	6.75	7.75	8.42	(8,42,7,75,6,75)	7.64	Acceptance
C7	6.75	7.75	8.50	(8,5,7,75,6,75)	7.67	Acceptance
C8	6.83	7.83	8.67	(8,67,7,83,6,83)	7.78	Acceptance
C9	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C10	6.83	7.83	8.58	(8,58,7,83,6,83)	7.75	Acceptance
C11	7.25	8.25	8.83	(8,83,8,25,7,25)	8.11	Acceptance
C12	6.58	7.58	8.50	(8,5,7,58,6,58)	7.55	Acceptance
C13	6.83	7.83	8.67	(8,67,7,83,6,83)	7.78	Acceptance
C14	6.42	7.42	8.17	(8,17,7,42,6,42)	7.34	Acceptance
C15	6.25	7.25	7.92	(7,92,7,25,6,25)	7.14	Acceptance
C16	6.50	7.50	8.42	(8,42,7,5,6,5)	7.47	Acceptance
C17	6.25	7.25	7.92	(7,92,7,25,6,25)	7.14	Acceptance
C18	6.42	7.42	8.17	(8,17,7,42,6,42)	7.34	Acceptance

Table 4: Fuzzy mean and Fuzzy Screening of Indices (Round Two).

C19	7.00	8.00	8.67	(8,67,8,7)	7.89	Acceptance
C20	6.67	7.67	8.42	(8,42,7,67,6,67)	7.59	Acceptance
C21	6.83	7.75	8.17	(8,17,7,75,6,83)	7.58	Acceptance
C22	6.92	7.92	8.67	(8,67,7,92,6,92)	7.84	Acceptance
C23	6.83	7.83	8.67	(8,67,7,83,6,83)	7.78	Acceptance
C24	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C25	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C26	7.42	8.42	8.83	(8,83,8,42,7,42)	8.22	Acceptance
C27	7.42	8.42	8.83	(8,83,8,42,7,42)	8.22	Acceptance
C28	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C29	7.33	8.33	8.83	(8,83,8,33,7,33)	8.16	Acceptance
C30	6.92	7.92	8.58	(8,58,7,92,6,92)	7.81	Acceptance
C31	7.08	8.08	8.75	(8,75,8,08,7,08)	7.97	Acceptance
C32	6.67	7.67	8.58	(8,58,7,67,6,67)	7.64	Acceptance
C33	7.17	8.17	8.75	(8,75,8,17,7,17)	8.03	Acceptance
C34	7.25	8.25	8.75	(8,75,8,25,7,25)	8.08	Acceptance
C35	6.83	7.83	8.50	(8,5,7,83,6,83)	7.72	Acceptance
C36	6.58	7.58	8.33	(8,33,7,58,6,58)	7.50	Acceptance
C37	6.42	7.42	8.25	(8,25,7,42,6,42)	7.36	Acceptance
C38	6.08	7.08	7.92	(7,92,7,08,6,08)	7.03	Acceptance
C39	6.50	7.50	8.33	(8,33,7,5,6,5)	7.44	Acceptance
C40	6.92	7.92	8.33	(8,33,7,92,6,92)	7.72	Acceptance
C41	6.33	7.33	8.17	(8,17,7,33,6,33)	7.28	Acceptance
C42	6.67	7.67	8.25	(8,25,7,67,6,67)	7.53	Acceptance
C43	6.50	7.50	8.42	(8,42,7,5,6,5)	7.47	Acceptance
C44	6.67	7.67	8.25	(8,25,7,67,6,67)	7.53	Acceptance
C45	6.58	7.58	8.33	(8,33,7,58,6,58)	7.50	Acceptance
C46	6.25	7.25	8.25	(8,25,7,25,6,25)	7.25	Acceptance

4.4 End of the Rounds of Delphi Technique

In the second round, no questions were deleted, which indicates the end of the round of the Delphi Technique. In general, an approach regarding the end of the Delphi technique is to compare the mean scores of the questions of the first and second rounds. In case the difference between the two stages is far less than the threshold limit (0.8), the survey process will be ended.

4.5 Analysis of MICMAC

The present research employed the expert Delphi model, MICMAC software, approaches of strategic management, as well as future studies. MICMAC software is used to carry out the heavy calculations of mutual influence matrix, plus to facilitate the designed structural analysis.

Per the results of the software, the filling degree of the matrix equaled 97.5%, which indicates that the selected factors had a great effect on each other. Among 1560 assessable relations in this matrix, 40 relations resulted in zero, which means that the factors had no impact on each other. Among them, the final number of 35 relations was one, meaning that they had a slight impact on each other, 274 relations obtained two, i.e. they had a relatively strong influential relationship, and 1251 relations ended in three, which means that the key factors had a great relationship and they had a strong influence on each other. Finally, no relation was reported to result in the number P, which is an indication of a lack of potential and indirect factors. In the cross matrix, the sum of the rows of each variable shows the influence, and the sum of the columns of each variable shows the dependence of that variable on other variables. The

direct influence matrix is presented below. The degree of desirability of matrix enjoys a 100% optimisation effect that is an indication of the higher validity of the inventories and the respective responses.

Table 5: Results of Sum of Direct Influence Matrix

	Categories	Influence	Dependence		Categories	Dependence	Influence
1	Investor Emotions	117	107	21	Investor Risk-Taking	109	109
2	Investment Strategy	107	109	22	Credulity & Skepticism	117	109
3	Investor's Belief	109	109	23	Investor Loss Aversion	117	99
4	Society Health Promotion	117	99	24	Investor's Financial Literacy	117	110
5	Investor Expectations & Assumptions	117	110	25	Investor's Characteristic & Attitude	113	107
6	Investor's Awareness	112	107	26	Demographic Traits	108	110
7	Investigation & Analysis	110	110	27	Information Asymmetry	98	107
8	Government Macro-Planning	109	107	28	Economic factors	117	108
9	Investor's Experiences	117	108	29	Biological Factors	117	112
10	Investor's Preferences & Interests	103	112	30	Environmental Factors	94	113
11	Behaviour Modification	111	113	31	Factors Affect a Company	113	110
12	Investor's Bias	110	109	32	Legislation Rules & Politics:	114	109
13	Risk Management Ability	117	109	33	Investor's Intrinsic Sentiment	106	105
14	Capital Market Attractions	117	104	34	Capital Market Restrictions	96	110
15	Investor's Mindset	117	109	35	Political Issues	111	108
16	Corporate Governance	104	109	36	Destructive Results of Lack of Appropriate Plan	117	107
17	Investor's Understanding of Changes	78	108	37	Investor Following the Majority	97	108
18	Investor Avoiding Regret & Remorse	111	108	38	Investor's Business Intelligence	97	112
19	Economic Prosperity	78	112	39	Investor's Emotional Intelligence	109	107
20	Capital Market Prosperity	115	107	40	Inevitable Properties	93	110

4.6 Output Maps

The MICMAC software and the variable analysis diagram at direct influence matrix were employed to examine the map of direct output influence from MICMAC software (Figure 1):

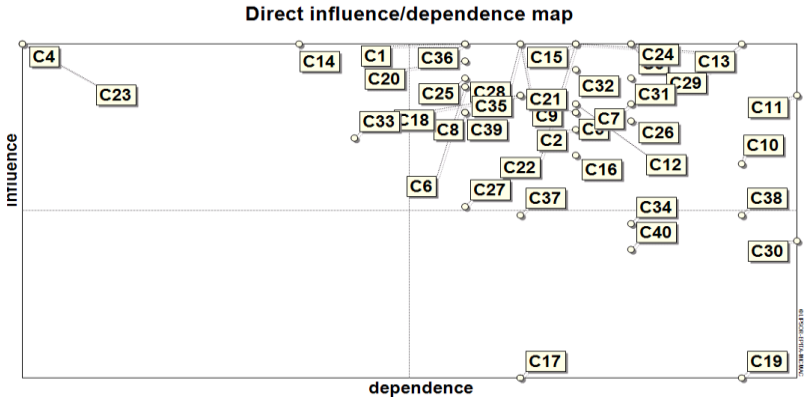

Fig. 4: Map of Direct Influence and Dependence of Factors

Following the results obtained from Figure 4, the map of direct influences of several indices such as

C4, C23, etc. was placed in an independent matrix. It signifies that these variables have a low dependency and high conductivity. In other words, high influence and low dependence are among the properties of this variable. C11, C13, etc. were placed in the interface Matrix, meaning that these factors enjoy high dependency and high conductivity. In other words, these criteria have quite high influence and dependence, and any small change on these variables results in major changes in the system. C19, etc. were placed in the dependent matrix. It signifies that these indices have a high dependency and low conductivity. These variables have high dependence and low influence on the system.

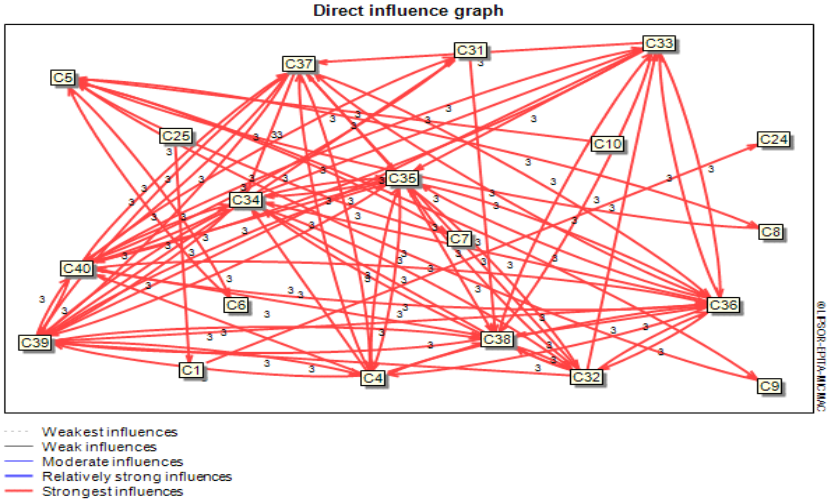

Fig. 5: Direct Influences between Variables

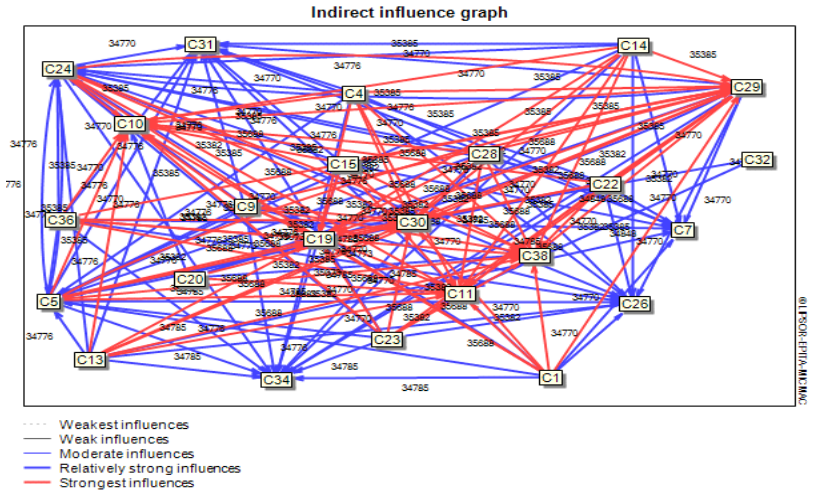

Fig. 6: Indirect Influences between Variables

Figures 5 and 6 show the map of relations between variables. According to the results of the diagram, the majority of factors are strong. Other factors have a minor role in stronger relations. Consequently, in a direct influence matrix, the X axis represents dependence and the Y axis represents the influence of factors. Factors with higher influence and lower dependence were selected as the key propellants. (The propellants are the most effective forces on a subject that are capable of changing the orientations in the mutual relationships between components and processes). Apparently, there is no one official

united reading of the results of MICMAC, in the course of time there will be disparate or new interpretations, especially regarding the scenarios. Taking into account the location of each key factor on the map:

5 Results and Suggestions

The problems discussed in behavioural finance have changed the assumptions and attitudes regarding different theories and issues, and provided the researchers with a new perspective to perceive and interpret external events and realities, particularly concerning the capital market. One of the main issues in behavioural finance is the disparate behavioural biases in the process of decision-making and selecting investors in the stock markets. However, the main goal of investors from investing in the stock market is to obtain reasonable returns. The results suggested that 1552 open codes were identified in the interviews and after elimination of the repetitive codes, it was declined down to 540 open codes from the available concepts. Given that, they were classified into 46 categories in 6 fields in the axial coding section. The analysis of the collected data indicated that the category of risk management with 92 code repetition ranked first, economic factors with 91 codes ranked second, and the characteristics and sentiment of investors with 88 codes ranked third. All interviewees mentioned the category of risk management ability, up to 100%. Therefore, in addition to the number of repetitions of codes, the risk management category was the priority regarding the generality and comprehensiveness in the responses, which signifies the importance of this category. Besides, categories such as economic factors, investor's mindset, investor's preferences & interests, investigation and analysis of the investor emotions are among the categories that all experts mentioned in the interviews.

The category of self-efficacy and mental probabilities were mentioned by about 31%, which is the minimum frequency. In the dimension of risk management, the investor's decision, the principles of risk and return in investment, in-time decision to enter or exit the investment, and separation of assets in the investment portfolio were repeated the most. In the economic dimension, the experts emphasised the most on exchange rate criteria and their fluctuations, economic status, economic variables, and enforced-domestic pricing laws. In the dimension of investor's preferences and interests, the most repeated codes were factors, speculative motives, the expected returns, and investor's interests. In regard to the category of investor's mindset the issues such as feeling left out by the new investors, mental accounting, investment on the basis of dreams, subconscious and spiritual sentiments of the investor were repeated the most by the experts. In the dimension of investigation and analysis, factors of investor's analyses, knowing the industry of subject of investment, investor's model of analysis, market psychology, and shareholders had the highest repetition rate. In addition, factors such as the influence of psychological status on investment, trust in the advice of investor's trusted individuals, obtaining professional profits from the greed of other shareholders were the most mentioned factors in the category of investor emotions. The results of the research suggested that the investors are willing to make investments with speculative motives, to obtain a return on investment, and achieve appropriate returns. Regardless of the current market inflation, in which real estate has always played the role of incentive in the economy, and there is always a demand for speculation in this market. Investors are drawn to invest in the stock exchange to earn more benefits and make optimal use of the available resources or preserve their existing benefits. Investors expect returns from the market with respect to their risk-taking or risk-aversion status, and the time they have determined for investment. Given that, they compare the parallel markets with the stock market to achieve this return.

However, the reason for new investor's orientation towards this market is that individuals observe

the rise in the prices of foreign currency, vehicles, housing, real estate, etc. in the parallel markets, and it makes them feel left out on account of the increase of prices, plus they are of the opinion that the stock exchange has not reached its desirable growth yet and hope to obtain a suitable return and compensate for their delay in entering this market. However, this ideology results in the increase of investor sentimental behaviour and behavioural bias regarding investment in this market. Given that, regardless of the risk-taking limit, by investing in stocks with high variance, these types of investors will seek to obtain the maximum return in the minimum time possible. While professional investors with more experience in this market or surfer investors will make the best use of the behaviour of these types of individuals that enter the market with this strategy and the ones that behave on the basis of this ideology. Another emotional behaviour that is observed in both professional and novice investors is the mental and emotional sentiments that direct them towards their interests regardless of the fundamental analyses, which is in fact due to the positive mental history in this regard. Mental accounting is one of the influential factors on investors' return analysis, and it affects their decision-making process.

The behavioural finance viewpoint indicated that changes in the price of the securities have no fundamental reason and the investor emotional sentiments have a crucial role in determining the prices. Taking into account the results of the present research and the opinion of experts, investors make decisions about investment under the influence of their emotional sentiments. Among the indices detected in this dimension, the mental status of the investors has a considerable impact on their decisions. Depending on the type of their characteristics, investors increase the value of their transaction volume to deal with the mental crisis they are experiencing, and other investors try to restrict their transactions. Therefore, the economic decisions made in this situation are undoubtedly influenced by the psychological and mental state of the investors, which varies per moment, and the outcome of these actions is the increased investor sentimental behaviours. Concerning the field of investor sentiments, fear is the origin of all irrational and emotional behaviours of an investor. Given that, the investors try to follow the behaviour of the majority and base their investment decisions on the advice by their trusted individuals or the advice by individuals that the investor has witnessed their success in this market.

The trait of greed in some investors provides professional investors with the opportunity to ride the waves in this market. The professional individuals use the greed of such investors, fabricate rumors and trade signals, and as a result, provide the highest amount of profitability for themselves. Other investors sustain loss since they do not determine investment assumptions and are unable to make proper decisions regarding buying or selling a stock on account of their greed.

The economic factors are among the underlying indices that were repeated the most by the experts. These factors are not included in the scope of authorities of the management of the company underinvestment and have a crucial impact on the performance of companies, and consequently, on the decisions of the investors. Therefore, in the capital market, the detailed description of all indicators of political and economic factors is discussed in the section of underlying factors. There are a variety of effective political and economic factors that play a determining role in this market and affect the activities of individuals working in the capital market. These factors are important for the shareholders to some extent and disregarding them by some investors leads to their loss.

To execute a successful investment in the capital market, the investors should determine their target investment market and select the stock market among the parallels markets, then, they should have suitable knowledge regarding the capital market, oscillating industries in the market, the industry of the subject of investment, plus identify the factors causing prosperity and stagnation in the respective in-

dustry, gain knowledge regarding investment and all factors influencing the profit margin of the company, as well as the future path of the respective company, and have the ability to change investment assumption with regard to the conditions caused by political, economics, etc. issues. Besides, the government plays a vital role in the correct movement of the investor in this path. The government creates comprehensive, accurate, and int-time rules and regulations, develops the culture, creates the required incentives and supporting policies for institutions to motivate the investors. Thus, it can have a key role in directing the investors towards this market. In addition, authorities should take into account that several macro-economic factors such as inflation, gross domestic product, etc. can have a great influence on the emotions and sentiments of investors, which can result in the increase or decline of the performance of the capital market. Besides, considering that corporate governance is an essential issue in the economy, it appears to be a necessary method to provide security, safety, and health in the capital market as well. The main objective of corporate governance is to emphasise preserving the interests of stakeholders along with the public interests on the basis of stable procedures. In accordance with the corporate governance, the stock companies shall establish supervision committees, provide correspondence, develop charters and bylaws regarding the company rules taking into account the considerations of preserving the interests of investors, and ensure the investors regarding the existence of supervising institutions at the stock exchange. Considering the aforementioned solutions, the consequences include 1. taking into consideration that every investor has their different investment strategy, thus, factors such as education, financial literacy, age, income, the amount of initial capital, risk-taking, risk-taking value, etc. are influential in determining the investment strategy. 2. Even though the subjects of the principle of risk and return and single-dimensional attitude towards investment are two main subjects in investment management, employing the aforesaid solutions increases the risk management ability, which leads to 3. modification of investor's behaviour, and consequently, the capital market, such that it highlights the professional behaviour throughout the total course of the investment, plus reduces and minimises the emotional behaviours. Consequently, 4. it causes economic prosperity, 5. improves capital market, and 6. promotes social health. The capital market as one of the main pillars of the financial market plays a crucially important role in the growth and development of the counties' economy through employing financial equipment. Therefore, economic analysts always pay special attention to the stock exchange as the economic stream of the country. This market centralises the small and uncontrolled capital in the economy to be used optimally, which promotes the economic cycle and is significantly important in controlling inflation and increasing the products.

Based on the findings, stock exchange brokers and financial advisors are advised to pay attention to behavioral characteristics of investors in addition to economic and accounting variables influencing stock price fluctuations. Additionally, in order to improve the quality of accounting data, the regulation of accounting data on companies listed on stock exchanges should be improved.

The Tehran Stock Exchange (TSE) and investors should hold training sessions to improve investors' knowledge and information. When market transparency improves and sufficient information is made available to investors at the earliest, the risk of information asymmetry among investors is reduced, and thus investors' herding behavior is reduced.

Given the effect of investor emotions on stock price, investors should pay more attention to trading stock when there is emotional, temporary, and sentimental news in the market. In this regard, the best way to combat herding behavior is for investors to have a trading plan, stop loss and take profit (SL/TP), and fully follow their trading strategy even when the trend is going against their analysis, and to wait until the trading plan allows them to close a position. Thus, strengthening willpower and putting the

trading plan into action will boost investor confidence and make the trading space more transparent in both positive and negative trading conditions.

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