



The formation of the investment optimal portfolio based on the approach of the analysis of social channels in Iran's equities market (Quantitative and qualitative attitude)

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ABSTRACT

This research point is to check the approach of analyzing social networks to form the investment optimal portfolio in Iran's equities market. This research is based on surveying-exploratory of the gathered sectional data. This research has been done in three phases which includes studying theoretical basics and the literature review, exploratory research, Delphi method and using a questionnaire through a process that was completed in 20 levels. In qualitative part and in respect to Delphi 15 experts in the first phase and 25 experts in the second phase were interviewed. For quantitative approach 384 persons were considered as the total sample of persons to be taken into account for Cochran formula and sampling method. The results showed that, assuming all the other conditions are constant, the investors were not affected by the political news in social networks, but were affected by the economical and corporate news.

Keywords:

Social network, Equities portfolio, optimal, investment

1. Introduction

Nowadays a lot of people are after gaining desirable income from their own investments and rely on numerous approaches such as optimal portfolio. The optimal portfolio of investment is type of portfolio in which the investor's return is maximum while its risk is minimum and creates the highest desirability in investors (adjusted return on risk) (Yoshino, et al. 2021). Considering the importance of the investors' desirability to the investment, it is critical to identify the dominant factors affecting investment optimal portfolio. Investors take into account various factors to make decision about investment in the asset market (Taghizadeh and colleagues, 2022). Nowadays news and information spread by social media are one of the important sources in the process of making a decision. The active social networks have turned into a forum to interchange financial and economic analysis in the asset market. The recognition of these social networks' effect on people's decision-making can provide a desirable service for the investors and a guideline for the legislators to improve the legislation in the asset market (Raii and the colleagues). In recent years the argument of recognizing social networks' effect at the asset market and decision making of investors has turned into one of the interesting and noted issues in behavioral financial area. Investigating the effects of social networks at equities market is somehow new in behavioral financial literature. Yet some researchers have investigated the relationship between equities market and social networks (Chahine and Malhorta).

On the other hand, some researchers studied the relationship between investors' attitude towards investment and messages published in cyberspace (Becker and Lee, 2019). Through most of the studies, the effect of people's experience and feeling have been explained as two main variables in describing the changes of equities price. One sample of the specialized social networks in US equities market social network is called stock tweet which was initiated in 2008. This network has a separate substructure from tweeter and only publishes the posts relating to the asset market. On this network, people publish their opinions, attitudes and news based on company's symbol. This social media matches the platform of other social networks and users of other social networks have the access to the content of its information (Fallahgoul, 2021). In USA, the commission of the stock exchange certainly has

determined that companies can communicate with their own investors and stock holders by any social networks such as Facebook, Tweeter, Weblogs, LinkedIn and Filker provided that the investors must be informed which certain platform for the company is chosen (Research center of stock exchange organization, 2019). On the other hand, based on privacy policy rules, determining one who is responsible for revealing information in social networks is critical, because the company's CEO and managers cannot become communication or social media directors and someone who is usually in touch with the investors of the companies and the professionals of the market must be chosen. The office of education and investors support of the stock exchange commission of USA has published a guideline to enhance the investors information about the fake news published in asset market. This commission has acted to increase investors' information by publishing key words and showing samples of fake news and investors' abuse by profiteers on the education part of their website. With respect to investors' successful experience in developed countries such as USA about forming equities optimal portfolio based on social networks attitude, this research is performed to investigate the possibility of forming an optimal portfolio in Iran's equity market based on investigating the influence of the news published in social media.

Theoretical literature

Portfolio (basket)

Portfolio or financial or investment basket, is a basket of different assets such as investment in housing market, bank, stock market, coin, currency, gold and etc. These assets can vary. For instance, if you buy equities chosen from different industries, in fact you have made a diverse equities portfolio, this portfolio is called to be stock exchange portfolio (Koumou, 2020).

Optimal portfolio

The subject of forming optimal equities portfolio is one of the essential issues for the investors. In investment portfolio issue, the one who makes a decision deals with different points and sometimes conflicting goals like the efficiency rate, cash flow and risk. In order to optimize a portfolio, the main issue is choosing optimal assets and stocks which can be

afforded with a certain amount of finance. But the uncertainty related to each stock and the optimal equities portfolio being multipurpose, adds on its complicity (Noori and colleagues, 2018). Choosing an optimal portfolio, is considered one of the important issues in financial literature that has points of maximizing efficiency and minimizing the risk of the investment with taking other preferences into consideration (Dehghan et al. 2017).

The goal of optimization of portfolio is to have access to a portfolio which can increase the expected efficiency to the highest possible amount without additional danger. To choose the optimal portfolio, some levels can be determined. These levels are as following;

- 1) Determining the guideline of portfolio management
- 2) Determining political management
- 3) Determining the method of allocating finance and choosing stocks (Parsaiian and Khodarahmi, 2019)

Choosing a box with an optimal portfolio helps the investor in achieving their final purpose (maximizing the profit). On the other hand, an increase in profit causes more motivation for the investors to initiate their assets into the financial market and consequently the economic cycle of country (Parsaiian and Khodarahmi, 2017).

Social networks

Social network is a collection of people who communicate with each other as a group by sharing their information, needs, activities and thoughts. On other words, social networks are forums which give the users the possibility to chat, text, communicate, share voice and video and etc. through a search engine. (Zolfaghary and the colleagues, 2013).

Social networks are of attractive forums which have collected users from various societies to share their ideas and discuss their opinions in a virtual cyberspace. These users have gathered around different subjects and forums (depending on the orientation and basis of the network) and these forums not just affect their thought and ideas but also their behavior. In fact, social networks' nature is of the kind that causes wide attacks and abuses which reveals information for the enemies and makes an easy way for the information to go out. (Noor Mohammady, 2011).

Social networks all across the world and specially in undeveloped and developing countries have not been in line with these countries' goals and policies due to various reasons. Among these reasons the following can be pointed out:

- Technologies are not native and especially digital web and in its more complicated case social networks are considered new-fangled and imported phenomenon.
- lacking of permanent and ingrained political constancy which leads to the lack of permanent security.
- The effect of some foreign countries on these countries by spreading new policies in order to accompany other countries' people's mind with themselves.
- The usual confliction among different forces like national sovereignty and ethnic nationalism.
- The social changes which are unavoidable segment of a vivid society and confronts with the relatively constant strategies and policies of the government (Einbeygi et al., 2015).

Literature review

Investigating the role of social networks in forming optimal portfolio is relatively new and there is not have many researches in this area. Yet the following paragraphs are the review of the results of some researches in this area.

Woo and colleagues (2021) studied the social networks and family's income in China. They investigated the role of social networks in family's income from 2011 to 2015 in China and discovered that gift expenses as a proxy for social networks have a positive correlation with the family's total income. The positive effect of social networks at estates income among urban residents is higher, whereas it has a greater effect at income, transfer income and operational income among rural residents. Furthermore, social networks largely affect at income sources by the improvement of financial complication, offering higher level jobs, easing the communication within the government and utilizing the access to executive loans. The results stay untouched after dealing with diagenesis issues, and are resistant toward replacement criterions of social networks. Data show

the importance of social networks on family economical welfare.

Zimao and the colleagues (2020) studied the stock exchange hierarchy for social business. In this article, a new hierarchy method is presented to discover professional merchants based on portfolio hypothesis. The experimental results with real data collection show that this method is superior toward the customary methods. Khiangtong et al. (2019) studied the effects of social networks on recognition of investor and equities' efficiency and revealed that investment strategies have a controllable efficiency along with risk based on social medias' factor, that show the importance of the right of insurance of social medias in paradigm management of works. Hershelifer (2002) studied the effect of internet conversation at the investors' decision through his research and concluded that internet conversations have an effective role in determining equities' price.

Bollen et al. (2011) investigated the effect of the news published on social networks on investors' feelings and DJI and concluded that both DJI and investors' feelings are extremely influenced by published news in social networks. Nagar and the colleagues (2013) in their research concluded that social medias have an influence on the active companies' equities' price in the asset market. But the amount of this impression is less than folk movements and cumulative intellect movements' influence.

Kortez and the colleagues (2013) presented that we can predict the bulk amount of deals with more accuracy by using Tweeter's social network. Ray et al. (2013) revealed that analyzing social networks decreases the error of predicting equities' efficiency compared to the other methods. Lee and the colleagues (2015) in their investigation concluded that the published financial and economic news in cyberspace affect the investors' behavior and feelings and consequently the profit of the companies' stocks. Raii (2016) studied social networks influence at equities' price and revealed that using nervous networks approach to analyze published data in social media it is possible to present a more accurate estimate of active companies' equities' price in the stock market.

Furthermore, Rana et al. (2021) presented a positive relation between marketing capability of social networks, hotel performance. In addition, Yost et al. illustrated a direct relation between highly engagement in social media and sales performance in

hospitality industry. Hajli (2014) declared that social media improves the interaction between consumers and leads to an increased trust as well as intention to buy. Hudson et al (2013) observed significant effect that social media has on consumers' decision-making process in tourism industry. Siamagka et al (2015) indicated the usefulness of the social media for organizations and the influence of the organization's innovativeness in adapting the social media. Qalati et al. (2021) investigated the social media adaption and performance in developing countries. Zagidullin et al. noticed social media's positive influence on users' attitude and mediated trust in Turkey by improving the awareness.

In this research the following hypotheses will be investigated with due attention to the previous investigations and above literature review,

- 1) Assuming all other conditions are constant, the published political news in social networks influence investors' decisions in forming an investment optimal portfolio.
- 2) Assuming all other conditions are constant, the published economic news in social networks affect investors' decisions in forming an investment optimal portfolio.
- 3) Considering that all the other conditions are constant, the published corporate news in social networks influence investors' decisions in forming an investment optimal portfolio.

Investigation method

This investigation is based on surveying-exploratory method in terms of gathering sectional data. In the first phase, after accurately and precisely describing the research's subject, the preliminary investigation of the theoretical basics and current literature was conducted both in total and in detail. The outcome of this phase is presented as explanations of the basics and concepts that in this research were used for the interviews and analysis of the qualitative content. Therefore, in the second phase, based on the exploratory research of Delphi method, the special components of the research were extracted and used in the next phases. In the next step, concepts of the interviews were prepared and wide and deep interviews were performed with separate specialists in the area. The output of this level was extracting and gathering qualitative data which was considered as a basis to design research's questionnaire. In the third phase of the research, the

questionnaire that its indexes were designed based on the exploratory data analysis of the results of the interview, the data collection was performed to be used for quantitative analysis. Accordingly, the research's questionnaire was distributed among experts. This questionnaire included 33 public and professional questions of Delphi output.

Finally, dimensions of optimal portfolio were presented based on the investigation and analysis of the experimental data gathered from Iran stock market and social networks. With respect to this research's condition and the importance of the interview processes in qualitative data gathering and due to the Delphi method's requirements for analysis, 15 experts in the first phase and 25 experts in the second phase were interviewed. For the quantitative analysis and with respect to Cochran formula the data of 384 persons were collected. In order to analyze data in this part, confirmation factor analysis test and the analysis of the course was used by exerting LISERL and PLS software.

Findings

At first, we proceed to study responsive people's public characteristics and then descriptive results of variables of the investigation.

- Gender, among 384 people, 244 were male (63.54%) and 140 were female (36.46%).
- Education, 30 people had PhD (7.81%) and respectively 155 people (40.36%) and 199 (51.83%) had Master's and Bachelor degree.

Table 1 presents the responsive ones' age separately.

Table 1. People's age

Age	Abundance	Abundance percentage
25>	19	95.4%
26-30	89	18.23%
31-35	96	25%
36-40	102	56.26%
41-45	45	11.71%
More than 45	33	8.59%
Total	384	100%

It is obvious from table 1 that 36-40 age range dedicates the most statistics with 36.46%.

In order to explain the investigation's variables, at the first step, we use Kolmogorov-Esmerine test to check

the normal distribution of the variables' data. The results are presented in table 2.

Table 2. The results of Kolmogorov-Esmerine test (Variables data have a normal distribution)

Variable	Meaningful level*	Result
The published political news in social networks	0.226	Normal
The published economic news in social networks	0.339	Normal
The published corporate news in social networks	0.288	Normal
Investors' decisions	0.211	Normal

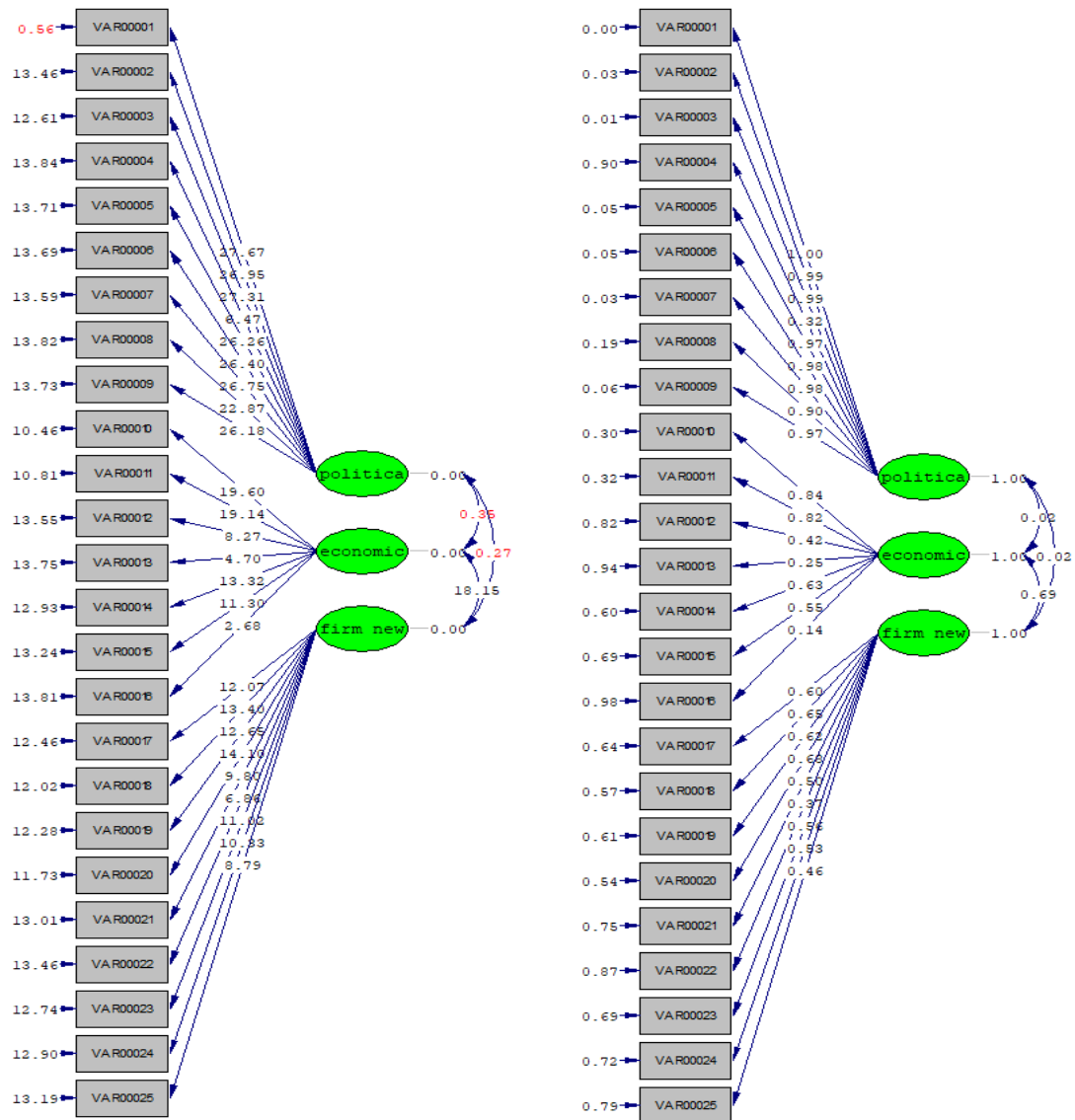
*Due to the fact that the magnitudes of meaningful level are more than 0.05, it can be stated that the assumption test zero (0) meaning data's normal distribution is confirmed, and therefore the data is distributed normally.

In the next step, we analyze the investigation's model's credit and confirmation factor (measuring model). Investigation model has three hidden variables and each one of them has components. In figure 1 the factor analysis model of the mentioned model is shown in two cases of coefficients are meaningful (figure A) and standard (figure B). then, fitting indexes of the investigation's model are presented in table 3.

Considering the fact that t-value is larger than 1.96, and with respect to the correlation coefficients presented in table 3, hence the intended objects which are considered to measure the above variable, are meaningful and there's no need to delete any components.

With respect to the fitting indexes presented in table 3, the fitting of the model is placed in a suitable situation, so the above model is fitting with the acquired data.

At this step we consider studying the structural model of the investigation in the case that coefficients are meaningful (figure 2A) and standard (figure 2B). table 4, too, presents the fitting indexes of the structural model.



Chi-Square=1175.55, df=489, P-value=0.00000, RMSEA=0.015

A) Confirmation factor analysis of the model X (coefficient in meaningful case)

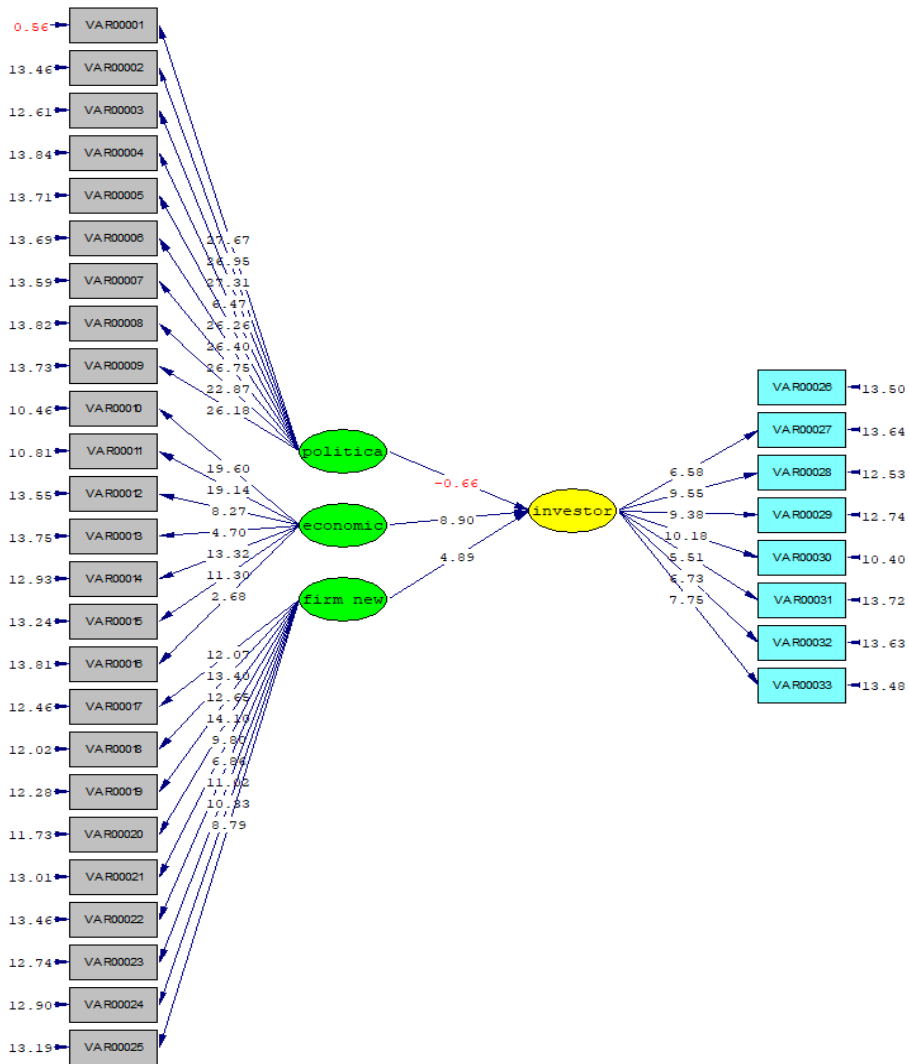
Chi-Square=1175.55, df=489, P-value=0.00000, RMSEA=0.015

B) Confirmation factor analysis of the model X (coefficient in standard case)

Figure 1: The confirmation factor analysis of the model of the investigation

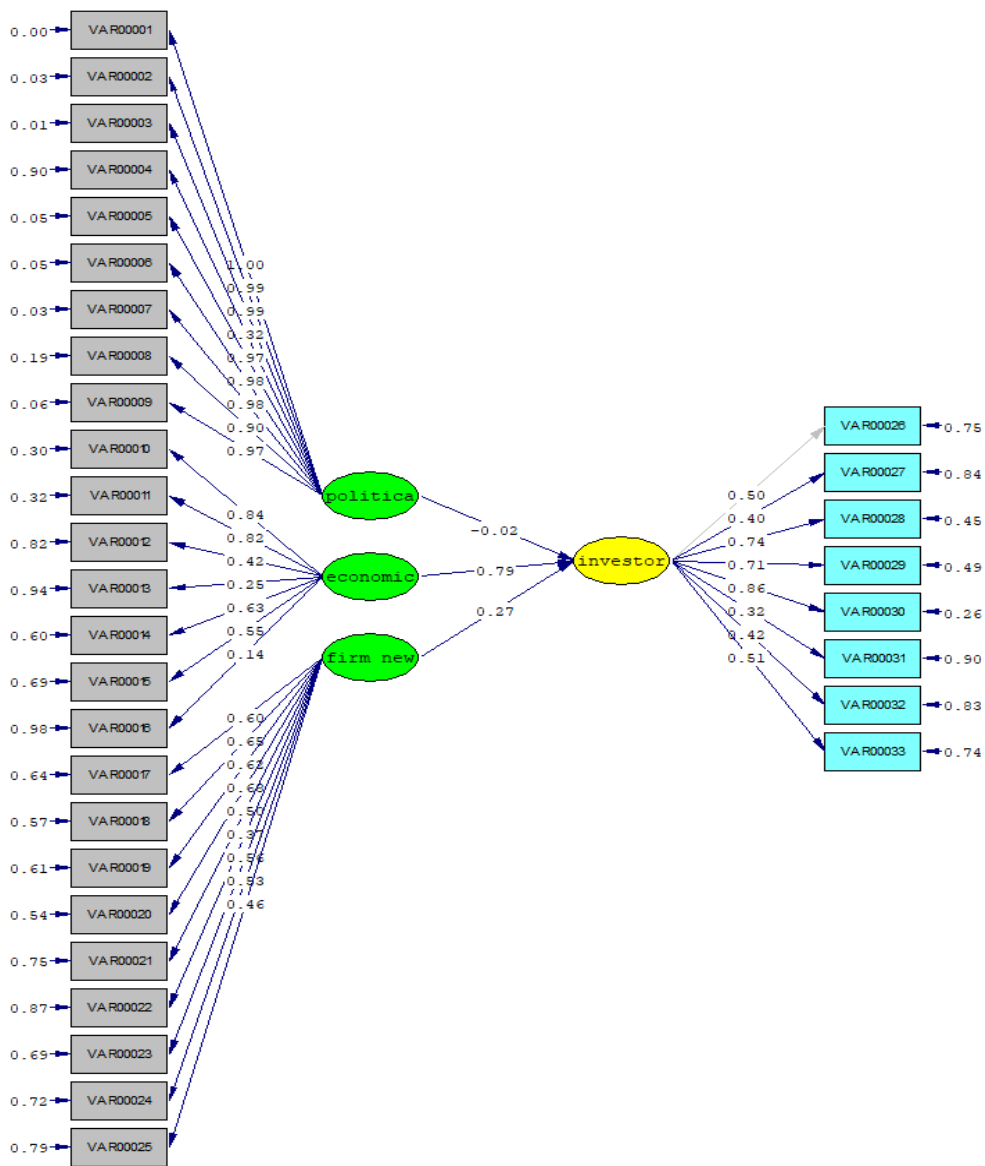
Table 3. The factor analysis fitting gnomons of the model of the investigation

Gnomon	Admittance extent	The grossed number
χ^2/df	$3 \geq$	2.40
RMSEA	Good fitting:0.05> Acceptable:0.05-0.08 Thought provoking:0.08-1 Poor fitting:1<	0.015
NNFI (or TLI)	0.9<	0.91
CFI	0.9<	0.91
AGFI	0.80<	0.83



Chi-Square=1175.55, df=489, P-value=0.00000, RMSEA=0.015

A) The organizational model of the investigation in the meaningful case and coefficients



Chi-Square=1175.55, df=489, P-value=0.00000, RMSEA=0.015

B) The organizational model of the investigation in the case that coefficients are standard

Figure 2. The organizational model of the investigation In the case that coefficients are meaningful (figure A) and standard (figure B)

Table 4. The fitting indexes of the structural model

index	Acceptable range	Acquired magnitude
x^2/df	$3 \geq$	2.40
RMSEA	Good fitting:0.05> Acceptable:0.05-0.08 Thought provoking:0.08-1 Poor fitting:1<	0.015
NNFI (or TLI)	0.9<	0.91
CFI	0.9<	0.91
AGFI	0.80<	0.83

With due attention to the acquired fitting indexes (table 4), the fitting of the model is in a very proper situation. Therefore, the conceptual model of the investigation has an appropriate fitting with the acquired data.

At the last step, based on the acquired results from analyzing the model with LISERL software, the results of the hypotheses of the investigation are presented in table 5.

table 5. The results of the hypothesis of the investigation

Suggestion	Path coefficient (Beta)	t	Result
Hypothesis 1	-0.2	-0.66	Rejected
Hypothesis 2	0.79	8.90	Confirmed
Hypothesis 3	0.27	4.89	Confirmed

Discussion

In this section, we discuss the results relating to the hypothesis of the investigation.

Hypothesis 1. Assuming that all other conditions are constant, the published political news in social networks influence investors' decisions in forming investment optimal portfolio. The data analysis by LISERL software and based on t values and subsequently Beta value, it was concluded that the published political news in social networks doesn't affect the investors decisions. The result of this investigation does not match the result of Dianti investigation and colleagues (2012) that much. The results of the investigation explain the existence of excessive reaction in investors' behaviors when desirable and undesirable economical-political news enter into the asset market. Of course, the case shows that Tehran stock exchange investors' reaction to

desirable news is faster compared with undesirable news. But the rate of the change in stock price is sharper in reaction to undesirable news. In addition, the findings of this investigation show this fact that the risk of investment after news' spreading (desirable and undesirable) is higher than usual days. Likewise, this result matches the investigation by Eskandari and Chashemi (2014) about the effects of considering the relationship between world's financial crisis news and investors' decisions in the stock exchange of Tehran. They represented that it proves the adoptability and uncertainty in decision making and behavior of investors in stock market in some sensitive stock exchange industries during the time that news about entering or exiting the global financial crisis spread. During this time, the current stock prices are estimators of their basic values which have adapted themselves with news and information about the unpredictable crisis based on investors' decisions and their intellectual reacting toward new information.

Hypothesis 2. Assuming all other conditions are constant, the published economic news in social networks influence investors' decisions in forming investment optimal portfolio. Analyzing the data by LISERL software and based on t and subsequently Beta values, it was concluded that the published economic news in social networks affect investors' decisions. The results of this hypothesis match with the results of Dianti and colleagues' investigation (2012). The results of the investigation express the existence of excessive reaction in the investors' behavior during the time that the desirable and undesirable economical-political news' enter into the asset market. Of course, the case shows that investors' reaction to desirable news in Tehran stock market is faster compared with undesirable news. But the rate of stock price change in reaction to undesirable news is sharper. Moreover, the findings of this investigation indicate that the risk of investment during the time that both desirable and undesirable news spread is higher than usual days. Likewise, it matches Mashayekh and colleagues' investigation (2014) about the effect of news and news' authority at the asset market. They achieved that internal and external economic news is effective at investors' decisions.

Hypothesis 3. Assuming all the other conditions are constant, the published corporate news in social networks influence investors' decision in forming investment optimal portfolio. Analyzing the data by

LISERL software and based on t and Beta values, it was concluded in this research that the published corporate news in social networks influence investors' decisions. The results of this hypothesis match with Hashemi and Moshasha's investigation (2018). The results of the investigation showed that the investors' feelings have a meaningful effect at the new investment level and companies' more investment. Likewise, the index of corporate sovereignty has a meaningful effect at the relationship between the investor's feelings and new and more investment. In other words, the impression of investors' feelings at company's investment decisions is improved in the companies with higher corporate sovereignty level. The results of this investigation are in accordance with the investigation performed by Heybati and Zandiye (2011) about the investors' excessive reaction against to the financial crisis news as well as the results of this investigation by Hossein (2011) and Ruhani (2011).

Conclusion

In the asset market and stock exchange receiving and studying daily events and news is an activity which most of the dealers consider among their important activity's category. People, while making decisions for the activities at the asset market and stock exchange use ever changing factors. In other words, many factors have an influence on choosing the best method among various possible solutions. Some of the decisions are made exclusively by the help of decision-making systematic models, using indexes, checking charts, studying prices process, considering stocks history, using stock exchange dealers and brokers' ideas and breakdown and analyzing financial bills relating to the intended equity are among the factors that have effects on decision making. Nowadays the importance and status of information in investment decisions isn't hidden and covered from anyone. Therefore, the approach of social medias underlining the main principles of informing and advising can play a significant role in the changes of stock price and investors' decision making. When a foreigner investor decides to invest in a special area, a collection of various factors will be effective at his deciding about the location or country which is proper for the investment. The asset market is effective at and affected by phenomenon that dealing with them intends its life continuation. The developing of the communication, thanks to developing of technology,

has made news' spreading easier. A part of this news is dedicated to the asset market and variables and the events relating to it. The investors of Tehran stock exchange react to the good and bad news but try to improve the prices of stocks as time passes and after the excessive reaction. Likewise investigating the variance after good and bad news days' pass illustrates that the risk of investment is less in usual days with comparison to the unusual days, specially the days after undesirable news' spreading. In conclusion, we can claim the investors of Tehran stock exchange, react to the published news at the asset market. Based on the results of this investigation, economical and corporate news are effective but the influence of the political news was not proved. Iran stock exchange investors' excessive reaction to the economical and corporate information is higher than political news. This may show the lack of attention to the political news about their investment or maybe they consider that news unreal or Propaganda or country's enemies' conspiracy. Oppositely, investors' more attention to the economical and corporate news is a mark of their attention to real news along with data and indexes.

The development of information technology and spreading news and clarifications about stock exchange will play a significant role on persuading people for investing in stock exchange and consequently, will improve the market's efficiency and country's economic development. On the other hand, along with the development of information technology in stock exchange, the possibility of predicting market's future behaviors will be achievable. Therefore, it is necessary to spread more proper information by TV, newspaper and internet about the educational, marketing communications and presenting companies' political, economic and financial news to help investors with their decisions on investment in stock market. In addition, it is important to present real, on time and updated news and information on social media, which are accessible by the investors. This research was carried out in the normal conditions of society. In a situation where social networks are terminated by the decision of the government, the social network loses its function.

Resources

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