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The Impact of Media News on Investors' Decision-Making According to their Degree of Risk-Taking

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Abstract

Optimal investment in today's competitive market demands well-informed decisions by astute investors within the capital market. These decisions focus on identifying and prioritizing key factors influencing investor decision-making behavior. In this context, the present study is designed to explore the impact of mass media news on the decision-making styles of investors in the Tehran Stock Exchange. These decision-making styles include avoidant, dependency, spontaneous, intuitive, and rational approaches and their relationship with investors' level of risk tolerance. This research follows an experimental foundation approach regarding its objectives, nature, and execution methodology. It takes the form of a descriptive survey, with data collection carried out through administering a questionnaire. The questionnaires were distributed among investors selected via random sampling from the statistical population, encompassing all investors with a stock code on the Tehran Stock Exchange. Structural Equation Modeling (SEM) was employed to test the research hypotheses. The findings of this study reveal that mass media news exerts a positive and significant influence on avoidant, dependency, and spontaneous decision-making styles, contingent on the degree of risk tolerance of the investors. In contrast, mass media news does not significantly impact intuitive and rational decision-making styles relative to the investors' level of risk tolerance.

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1. Introduction

In recent years, finance has entered a new phase of contemplation, wherein it has critically scrutinized certain assumptions of modern economics and finance. Among these assumptions, the concept of investor rationality has faced substantial challenges, as evidenced by several studies. Presently, a majority of investors acknowledge that attitudes and psychological factors can play a pivotal role in response to market fluctuations, often surpassing the influence of fundamental variables. Consequently, in recent research endeavors, behavioral finance has gained increased prominence and importance (Nikoomaram et al., 2012).

One of the fundamental inquiries in behavioral finance centers around identifying critical factors that influence investors' decision-making behavior. Consequently, numerous studies have been conducted on this subject since the 1960s. In today's financial markets, investors' choices may often be grounded in intuition, trial and error, and practical experience. Moreover, investor behavior can sometimes manifest collectively, resembling a crowdfunding or mass phenomenon. The prevalence of mass behavior within financial markets can be attributed to several factors, including a lack of information transparency, societal and cultural norms, a relatively underdeveloped stock market, and inefficiencies in the financial market (Khoshnood et al., 2013). One of the critical assumptions underpinning an efficient market is that investors will respond rationally to new information, leading to well-informed decision-making. Evidence suggests investors may base their decisions on additional supplementary information (Nikbakht and Moradi, 2005).

In the capital market, investors have traditionally relied on information intermediaries, such as financial advisors, financial analysts, credit rating agencies, and auditors, to access timely and valuable information about prospective stocks. However, the past decade has witnessed a proliferation of new information sources that are readily accessible to participants in the stock market. The advent of the internet has led to investors' increasing reliance on social media platforms to stay abreast of the latest information, aiding in sound decision-making. Through social media, investors can readily access timely information about stocks and exchange views with fellow investors, ultimately leading to more informed investment choices (Miller and Skinner, 2015). Information technology has exerted a transformative influence on the information landscape within stock markets, impacting three key aspects: The application of information by investors to make informed decisions. The involvement of media and other information intermediaries (Lee et al., 2015). The methods investors use to acquire and interpret information (Drake et al., 2012). Various social media platforms have emerged as crucial information sources in recent years. The news and commentary shared on these platforms compensate for the lack of timeliness and feedback inherent in traditional media. With the rise of social media, a complete information dissemination chain for financial information generation and distribution has been established. Consequently, market participants have significantly changed their cognitive habits, behavioral patterns, risk management strategies, and even the pricing dynamics of financial assets (Larcker et al., 2013). Social media has been demonstrated to influence financial markets and other economic activities (Chen et al., 2014). In stock markets, social media platforms have expanded the channels through which listed companies can release information promptly and have provided investors with convenient access to a wealth of information (Li et al., 2021).

Nonetheless, most studies focus primarily on the utilization of social media and often overlook the pivotal role that social media can play, particularly in facilitating the timely utilization of information across various decision-making scenarios within financial markets. Harnessing the power of social media can significantly enhance investors' access to information and, as a result, effectively mitigate information asymmetry. An intriguing question that remains largely unaddressed is how the quantity of pertinent information exchanged among investors on social media impacts market efficiency. The

scarcity of available data has been a primary hindrance in investigating this matter (Xu et al., 2020). When investors do not have sufficient access to information, it can lead to uninformed decision-making, fostering collective behavior in the stock market and ultimately undermining the efficiency of the financial market.

In addition to the influence of social media on individuals' decision-making processes, when investors contemplate an investment and make their final decisions, they invariably weigh it against other prospective investments. Simultaneously, the degree of risk investors are willing to assume is contingent upon their psychological attributes, including their conservatism and risk aversion level. However, it is reasonable to expect that any prudent investor would opt for the investment with a higher potential return when the risks associated with the two investments are comparable (Jalilvand et al., 2015).

In this study, we aim to investigate the influence of social media news on the decision-making styles of investors in the Tehran Stock Exchange. Two primary objectives guide our research. Firstly, we aim to understand how investors rely on media news when making financial decisions. Secondly, we are interested in evaluating this information's timely and accurate utilization to make more informed decisions. This can potentially enhance the efficiency of the stock market, mitigate information asymmetry, and improve the precision of market earnings expectations. Our study is designed to encourage investors to make judicious decisions regarding their capital investments, thereby reducing the risk of incurring capital losses in the stock market.

The findings from behavioral finance research shed light on the various rational and irrational factors that impact investors' decision-making processes. The present study carries significant implications, particularly in highlighting the influence of social media news on investors' choices within the financial market. Correct utilization of information, as suggested by this study, can enhance market efficiency, thereby enriching Iran's financial market and economy. Furthermore, these findings can serve as a valuable resource for stock market authorities seeking to attract more investors. Based on this study's results, investors can gain insights into the factors that shape their decisions regarding securities investments, allowing for more informed choices. Additionally, scholars and individuals interested in behavioral finance theories can acquire essential and pertinent information concerning stock market investments and the factors that influence them. This is especially valuable considering the scarcity of research on these issues within the context of Iran.

One of the prominent issues observed in prior studies is the utilization of less objective assessments of the impact of news media on investor decisions, potentially resulting in irrational behavior among investors. Hence, the primary aim of this study is to address the central question: "To what extent do social media news affect investors' decisions in the stock market, taking into account their degree of risk tolerance?"

Reviewing existing studies, the researchers have observed a predominant focus on behavioral financial markets, with limited attention given to decision-making styles and influencing factors, such as media news. Recognizing this research gap and the significance of these factors in aiding investors in making more informed decisions within the stock market, this study seeks to contribute to the existing body of research. One noteworthy distinction between this paper and other studies in the media field is its comprehensive investigation of the impact of media news across four distinct components: websites, technical analysis websites, TV networks, newspapers, and social networks. This examination is conducted for investors' decision-making styles, considering factors such as avoidance, dependency, spontaneity, intuition, and rationality, all within their respective risk tolerance levels.

The remainder of this paper is organized as follows: In the second section, we conduct a comprehensive review of pertinent literature that explores the impact of social media on financial

markets. The third section provides a detailed account of this research's data sources and methodology. The fourth section rigorously assesses the robustness of our empirical findings. Finally, the fifth section presents our conclusions and provides recommendations informed by the results obtained in this study.

2. Literature Review and Prior Studies

In investment, the nature of investors' decisions and the forces influencing them hold paramount importance. In recent decades, financial theories and hypotheses have traversed two distinct paths. The first path aligns with the neoclassical perspective within financial sciences. Under this framework, market efficiency and rational behavior are foundational tenets underpinning assumptions and theories within the financial market. This approach originated in several models, including the Capital Asset Pricing Model (CAPM), the Efficient Market Hypothesis (EMH) of the 1960s, the Medium-Term Capital Asset Pricing Model, and the Arbitrage Pricing Theory. However, numerous investigations have unveiled instances of market turbulence and deviations from traditional financial theories over time. These observations ultimately paved the way for the emergence of the behavioral revolution in 1979, spearheaded by Kahneman and Tversky. Behavioral finance studies argue that investors are influenced not only by economic indicators and rationality but also by a plethora of other factors that significantly shape their behavior and decision-making styles.

One of the foundational assumptions in behavioral finance hinges on the utility theory originally developed by Von Neumann and Morgenstern in 2007. This theory posits that:

- Investors are entirely rational and capable of making logical decisions.
- They possess the ability to solve intricate problems.
- They exhibit risk-averse tendencies.
- Their primary objective is consistently maximizing their wealth (Barna, 1946).

Within the utility theory framework, it is postulated that investors seek to optimize their contentment by making informed choices that involve an interplay between irrational decisions and the correlation between returns and risks (Khaksarian et al., 2021).

The utility theory serves as a robust framework for predicting human behavior. Within this theory, individuals strive to optimize their desired utility rather than solely pursuing their intended income. A pivotal concept in utility theory is "risk acceptance," which holds considerable significance in both investment decisions and the management of investment firms (Sharma and Bikhchandani, 2000). In accordance with this theory, individuals aim to make optimal choices within risky scenarios to enhance their desirability, value, and wealth. Consequently, it can be posited that the theory of desirability is firmly grounded in the utility above theory when presented with two scenarios, each offering different levels of value but varying in terms of risk; risk-tolerant individuals opt for the higher-risk option in pursuit of greater future benefits. Conversely, risk-averse individuals are disinclined to take present risks to secure more substantial future gains. Neutral individuals, on the other hand, remain impartial in their acceptance or rejection of risk (McNichols and Stubben, 2008).

The relationship between risk and efficiency significantly impacts investors' choices and investment company managers' decisions. In decision-making contexts, risk represents the variance between an investor's actual and anticipated returns (Helland, 1990). Furthermore, risk encompasses any factor or event capable of altering the expected outcome for the investor (Economou et al., 2015).

According to utility theory, one of the decision-making styles that have gained attention from behavioral finance experts in recent years is the General Decision-Making style introduced by Scott and Bruce (1995). This comprehensive study will consider their classification, which includes five distinct decision-making styles. These five styles are as follows: Avoidant, Dependency, Spontaneous, Intuitive, and Rational.

One crucial psychological factor that significantly impacts investors' decision-making styles in

financial markets is the influence of social media news. Social media platforms are interactive technologies and digital channels that enable the creation and sharing of information, ideas, interests, and various forms of expression within online communities and networks (Kietzmann et al., 2011). These social networks play a substantial role in today's societies and, in turn, in the global economy. In Iran, investors often base their decisions on various mass media news sources, including professional and public websites, technical analysis software and websites, newspapers (news sites), and TV networks. These media outlets have had a notable influence on financial markets and stock exchanges, with their impact on mass behavior providing valuable insights for investors seeking better models for predicting market movements. The advantages of social media are evident, such as the rapid and cost-effective dissemination of news and information. However, they also carry the risk of spreading false information and rumors. Fortunately, social media empowers the audience to critically evaluate and compare different perspectives, enhancing their analytical capabilities. It is important to note that while social media offer the advantage of rapid information dissemination, they also have the potential to amplify the spread of false rumors and news (Raie et al., 2016).

Social media encompass interactive technologies and digital channels that facilitate the creation and sharing information, ideas, interests, and various forms of expression within virtual communities and networks (Kietzmann et al., 2011). These social networks play pivotal roles in today's communities and substantially impact the global economy. Investors in Iran often make decisions based on various mass media sources, including professional and public websites, technical analysis software and websites, newspapers (news sites), and TV networks. Notably, these networks have exerted influence on financial markets and stock exchanges. Analyzing the existence of mass movements and their effects can provide valuable insights for investors seeking to develop improved models for predicting market trends. The popularity of social media can be attributed to several advantages, including the rapid and cost-effective dissemination of news, information, and rumors. However, it is essential to acknowledge that these platforms also present risks, such as the high potential for spreading false information. Fortunately, social media empower their audiences to critically assess information and engage in discussions, enhancing their analytical capabilities. Nevertheless, it is crucial to recognize that social media news can sometimes lead to the swift dissemination of inaccurate information and unfounded rumors (Raie et al., 2016).

Fang and Peress (2009) assert that online social media plays a substantial role in disseminating information to a broad audience, particularly individual investors. To examine this hypothesis, they investigated the cross-sectional relationship between media coverage and anticipated stock returns. Their study outcomes reveal that stocks lacking media coverage yield higher returns than those with extensive media coverage, even after accounting for well-established risk factors. These results are notably more evident in the case of small stocks and those characterized by high levels of individual ownership, low analyst coverage, and elevated idiosyncratic volatility. Furthermore, their findings suggest that the scope of information dissemination has a discernible impact on stock returns.

Schniederjans et al. (2013) investigated the connection between a company's reputation and online social media. They uncovered a partially positive correlation between the use of online social media and investment choices, depending on the impression management strategy. Negative exposure on online social media platforms can significantly and promptly impact investment decisions made by investors.

Farokhi et al. (2016) conducted an empirical study on the Tehran Stock Exchange from 1393 to 1394. The research aimed to assess the impact of online support on generating herding behavior in stock trading. Data for the study were collected through a survey of 400 investors on the Tehran Stock Exchange. The gathered data were analyzed using Lisrel and SPSS software. The study's results indicate that online support plays a significant role in fostering herding behavior. Consequently, it

can be inferred that the actions of others influence investors' decisions; even if they are not part of virtual groups, their behavior is shaped by the collective actions of the masses.

Narayan and Bannigidadmath (2017) studied financial news predictability on Islamic and non-Islamic stocks. Their research covered the period from January 1, 2006, to August 31, 2012. The authors created a daily series of positive (good) and negative (bad) news and observed that these indicators successfully predicted the returns of Islamic and non-Islamic stocks. Furthermore, their results indicated that positive news had a more pronounced influence on stock returns in both cases.

Barzegari Khanghah et al. (2017) conducted a study to investigate the impact of social media on investors' decisions in the stock market. Their data were subjected to correlation and regression tests. The study's results revealed a significant relationship between the use of social media and investors' participation in the stock market and stock selection. Investors were found to utilize the internet and television-based mass media for participation and stock selection.

Ansary Khaledi (2020) examined the influence of mass media news on the stock indices of select companies on the Tehran Stock Exchange. Following an LSD test, the analysis showed that the publication of mass media news had a significant positive impact on the stock prices of companies listed on the Tehran Stock Exchange. Additionally, the study found that news related to GDP growth had a greater impact compared to news about oil prices and decreasing inflation.

Cu and Le (2021) conducted a study to assess the impact of social media marketing on attracting investment capital to industrial parks during the COVID-19 pandemic in Vietnam. This research aimed to analyze the factors influencing the attraction of investment capital to Vietnam's industrial parks, focusing on the role of social media marketing. Data for the study were collected through a survey of 256 enterprises operating in Vietnam and analyzed using factor analysis and multivariate regression. The findings indicated that social media marketing positively attracted investment capital to Vietnam's industrial parks. Other factors, such as human resources, industrial park infrastructure, and local policies, also had positive effects with varying degrees of influence.

Hatam et al. (2021) investigated the relationship between cyberspace rumors and the perceptions of stock market participants using a qualitative approach and a phenomenological method. Data for the study were gathered through interviews with 20 experts, including regional exchange managers, analysts, and experts from stock brokerage companies. The Dikelmann method was applied to analyze the data. The study's findings revealed that government involvement in the stock market and investors' emotional and mass behavior had heightened the spread of business rumors. According to investors, the Codal website was perceived as the most authentic and effective information network. However, recent political developments and negative sentiments toward the government have somewhat altered their attitudes and reduced confidence in Codal's network information.

Ren et al. (2021) focused on the influence of social media sentiment on mass media sentiment. Their study utilized Sina Weibo and Sina Finance data, encompassing around 60 million web posts and 6.2 million news articles. The research demonstrated that social media impacts the emergence of sentiment in mass media financial news. Furthermore, the consistency of sentiment between social media reactions and prior news articles amplified the persistence of sentiment in mass media over time.

Heidari Haratmeh (2022) explored the effect of mass media on the sentiment of stock market investors. The study aimed to investigate the impact of mass media on investors' inclinations and utilized data collected from a survey of 234 enterprises operating in Tehran. The data were analyzed using the Logit Model. The study's findings indicated that: 1. Mass media influenced fluctuations in investor sentiment and impacted their transaction decisions. 2. In a bear market, the influence of news media was greater than that of social and specialized media. 3. In a bull market or reform market, news media's impact was greater than social media's. 4. The impact of media reports on investor

sentiment was found to be asymmetric.

Wu et al. (2022) evaluated the model regarding the impact of real negative news on stock prices, utilizing China's A-share listed companies as a case study. The study began by defining online negative news and subsequently constructing a model to assess its influence on stock prices. It adopted the perspective of behavioral finance to systematically analyze the relationship between the stock market and investor sentiment. The research provided theoretical support by defining the concept of online negative news. It employed event studies, abnormal returns tests, regression analysis on a selected sample, observations of stock price reactions before and after abnormal returns, and changes in excess returns. The study's findings revealed that when online media disclosed negative information about listed companies from one day before to four days later, it led to significant stock price fluctuations, generating excess returns. This effect continued to make stock prices more volatile in the short term. Additionally, the study identified that the company's performance influenced stock price fluctuations.

Dong et al. (2022) conducted a comparative analysis of social media and mass media in the stock market, focusing on information coverage diversity and predictive value concerning future stock absolute returns. They examined a large dataset comprising nearly a million stock-related news articles from the Sina Finance news platform and 12.7 million stock-related social media messages from China's popular Weibo platform. The study's findings indicated that social media covered fewer stocks than mass media, and this effect became more pronounced as the volume of media information increased. Furthermore, the research revealed that both sources had some short-term predictive value, but their predictiveness differed. Mass media information coverage was more predictive than social media information coverage over a one-day horizon, while the reverse was true over a two-to-five-day horizon.

Drawing on theoretical foundations, the first hypothesis explored in this study pertains to assessing the relationship between the avoidant decision-making style and social media news, considering the degree of risk-taking. Individuals adopting an avoidant decision-making style tend to avoid decision-making positions as much as possible (Parker et al., 2007). Consequently, those who employ this style seek to minimize their involvement in decision-making scenarios. They tend to delay their decisions based on situational factors and opportunities. Consequently, it can be inferred that individuals with an avoidant decision-making style place greater emphasis on media news when making decisions. Thus, they are considered to exhibit a higher degree of risk-taking. This relationship is examined in the following hypothesis:

H1: Social media news positively impacts the avoidant decision-making style, considering the degree of risk-taking among investors in the stock market.

The dependent decision-making style indicates a lack of independent thinking on the part of the decision-maker (Robbins and Judge, 2009). Decision-makers with this style tend to rely on media news and the opinions of others when buying and selling stocks in the stock market (Pourmohammadshahini and Ranjbar, 2019). It has been observed that many investors and stock traders utilize information exchanged among investors. Notably, online conversations among investors have been found to influence stock prices (Raie et al., 2016).

Hence, it can be inferred that individuals adopting a dependency decision-making style exhibit a greater inclination for risk-taking. These individuals tend to align their behavior and decisions with the actions of others, often succumbing to mass behavior (Moghimi, 2018). Therefore, the second hypothesis explores the relationship between the dependency decision-making style and social media news, taking into account the degree of risk-taking.

H2: Social media news positively impacts the dependency decision-making style, considering the degree of risk-taking among investors in the stock market.

The third hypothesis delves into the relationship between the spontaneous decision-making style and media news with regard to the degree of risk-taking exhibited by investors. Spontaneous decision-making reflects the decision-maker's inclination to make quick decisions (Khaksarian et al., 2021). This style is typically employed in critical situations where prompt decision-making is imperative to avert potential disaster and harm. Decisions influenced by this style often rely more on media news than on the opinions of other investors. Investors employing the spontaneous style make their primary decisions swiftly when confronted with decision-making scenarios. Consequently, investors demonstrating a spontaneous style tend to exhibit a higher degree of risk-taking. Risk-taking in decision-making entails selecting the option with greater risk when faced with two scenarios of equal value but varying levels of risk. This implies that these individuals assume higher risks in pursuing greater future benefits (McNichols and Stubben, 2008).

H3: Social media news positively affects the spontaneous decision-making style according to the degree of risk-taking of investors in the stock market.

In the realm of intuitive decision-making, decision-makers lack a clearly defined logical basis for explaining the accuracy of their choices. They rely on their intuition and inner awareness to guide them in making what they perceive as the right decision (Robbins and Judge, 2009). Spicer and Sadler-Smith (2005) have identified three primary sources of intuition: intrinsic, innate responses, general experiences, and focused training. Individuals with an intuitive decision-making style believe that their intuition and inner insights are pivotal in guiding them to make the right decisions. Consequently, investors who favor this style tend to be more risk-averse in accordance with their degree of risk-taking. They are less willing to embrace the risks associated with the information presented in media news.

In line with the risk-efficiency relationship, investors who accept higher levels of risk anticipate greater returns, whereas those who are more risk-averse expect lower returns. Therefore, considering the investors' degree of risk-taking, the fourth hypothesis explores the correlation between the intuitive decision-making style and social media news.

H4: Social media news negatively affects the intuitive decision-making style according to the degree of risk-taking of investors in the stock market.

In the rational decision-making style, the decision-maker is willing to thoroughly evaluate all potential approaches before choosing the optimal option when faced with a decision-making scenario (Oliveira, 2007). Those who embrace the rational decision-making style do so by conducting a comprehensive search and analysis of all accessible information, including external and internal resources, encompassing information disseminated by mass media (Singh and Greenhaus, 2004). The rational style entails an exhaustive problem-solving process before selecting the most suitable option. Rational decision-makers tend to be risk-averse and anticipate higher returns in exchange for assuming risk (Helland, 1990). Consequently, social media news positively influences the rational decision-making style in line with the investors' degree of risk-taking in the stock market.

H5: Social media news negatively affects the rational decision-making style according to the degree of risk-taking of investors in the stock market.

3. Research Methodology

Considering the stated objectives, this research is primarily an experimental foundation study. Given the utilization of a questionnaire as a data collection tool, the study can also be classified as a field study. In terms of its nature and methodological approach, it is fundamentally a descriptive survey.

Smart PLS software was employed to analyze the data, aligning with the data measurement and statistical assumptions inherent in the study's design. The statistical population for this investigation

encompasses all individuals holding a stock exchange code in Iran. It is worth noting that, according to statistics reported in the Donya Eghtesad newspaper, more than 30 million people in Iran possess an active stock exchange code. Various methods exist for estimating sample sizes in structural equation modeling that require fewer samples. However, the researchers have chosen to work with a larger sample size by referencing the Krejcie and Morgan table to ensure increased accuracy in the results. They have specified that for a population exceeding 100,000 individuals, a minimum sample size of 385 is recommended, which was considered an appropriate figure for this particular study. Given the limitations imposed by the coronavirus pandemic, questionnaires were distributed to the sample through both in-person and electronic means. In the face-to-face approach, approximately 230 questionnaires were delivered to individuals, and 198 completed questionnaires were returned. Through electronic distribution, the process continued until 187 complete and analyzable questionnaires were obtained. Consequently, a total of 385 analyzable questionnaires were gathered. The available sampling method was used for this purpose. Questionnaires were disseminated to the sample electronically via email and social networks to 187 individuals and in person to 198 participants. Several members of the statistical community assessed the face validity of the questionnaires, while content validity was determined based on the input from experts and professors. Convergent validity was verified through factor load indices (with an optimal value exceeding 0.5) and the average variance extracted (with an optimal value exceeding 0.5). Diagnostic validity and reliability were established using the Fornell-Larker index and Cronbach's alpha coefficient, respectively. Lastly, the combined reliability (with an optimal value exceeding 0.7) was also confirmed.

In this research, the dependent variable is investors' decisions, a qualitative variable characterized by a relative scale. The Scott and Bruce (1995) Decision Style Questionnaire was employed to gauge these variables, encompassing Avoidant, Dependency, Spontaneous, Intuitive, and Rational styles. Responses were assessed using a 5-point Likert scale.

Conversely, media news serves as the independent variable in this study, representing the influence of news media on investors' decisions, another qualitative variable evaluated through relative comparison. To measure this variable, a researcher-designed questionnaire was initially comprised of 17 questions. Following feedback from several respected professors and stock exchange experts, it was expanded to include 24 questions. Subsequently, these questions were distributed among 50 participants for validation and reliability assessment. The questionnaire was structured around four components: websites (12 items), technical analysis websites (3 items), newspapers (3 items), TV networks (3 items), and social networks (3 items). Participants provided their responses using a 5-point Likert scale. Furthermore, the investors' level of risk-taking was considered a moderating variable. The Gomez-Mejia and Balkin (1989) Risk Questionnaire was employed to measure this variable, where a higher score denotes a greater propensity for risk-taking. Similar to the other questionnaires, it was scored using a 5-point Likert scale.

4. Findings

Based on the descriptive analysis of the data, the research samples were categorized by education level as follows: Eight people (2.1%) held a diploma, 151 people (39.2%) possessed a bachelor's degree, 163 people (42.3%) had a master's degree, and 63 people (16.4%) held a doctorate. In terms of age distribution, 81 people (21%) were between 20-30 years old, 209 people (54.3%) fell within the 31-40 age group, 62 people (16.1%) were in the 41-50 age range, and 33 people (8.6%) were over 50 years old. Regarding gender, 260 people (67.5%) were male, and 125 people (32.5%) were female.

In terms of professional experience, 145 people (37.7%), 60 people (15.6%), 39 people (10.1%), 68 people (17.7%), and 73 people (19%) had professional backgrounds spanning 1-3 years, 4-6 years, 7-10 years, and over ten years, respectively. It is essential to note that the research model becomes significantly more complex due to including demographic variables in the analysis. Consequently, these details have been omitted.

Subsequently, the adaptability of the proposed model is examined across three sections. The first section scrutinizes the research measurement model, focusing on reliability and validity indicators. The second section delves into the internal model of the research (structural model), encompassing path coefficients, the coefficient of determination (R2), and effect size (F2). Finally, the third section assesses the overall adaptability of the model. All criteria for the measurement model and the structural model are summarized in Table (1).

Table 1. Measurement model fit indices and structural model

		Indicator	Optimal Amount
Measurement Model	Validity	Convergent Validity	Loads Factor More than 0.5
			Amount of More than 0.5 AVE
		Divergent Criterion of Discriminant Validity Fornell-Larcker Validity[1]	
Reliability			Cronbach's alpha Reliability More than 0.7
			Composite Reliability More than 0.7
Impact Factor			The same beta coefficients are in regression and (standardizes) its values are evaluated in terms of the sign, value and significance
Structure Model			At the 95% confidence level, if the T statistic of Student's t-test, the path between the two variables is more than 1.96, indicating the significant effect of the independent variable on the dependent variable.
	R^2		However, R^2, the equivalent of 0.25,0.50 and 0.75 are considered weak, medium, and strong values, respectively, The higher the number of exogenous variables of an endogenous variable, the higher its the higher its R^2 is expected to be.
	F^2		The values of 0.02, 0.15, and 0.35 indicate the size of the small, medium, and large impact of one structure on another, respectively.
	Q^2		A value higher than zero is acceptable.

(Gholamzadeh and Azar, 2016; Davari and Rezazadeh, 2018)

Convergent validity was established through factor load indices, with the ideal value exceeding 0.5, and AVE value, with the ideal value surpassing 0.5, as well. Reliability was subsequently affirmed using both Cronbach's alpha coefficient and combined reliability, which exceeded the optimal value of 0.7. The outcomes for these indicators are displayed in the tables below. As demonstrated in Table (2), the values for combined reliability, Cronbach's alpha coefficient, and the mean of extracted variances exceed 0.7. This underscores the confirmation of the instrument's reliability and validity. It is worth noting that the factor load values in the model diagram are explicitly defined in the standard model, with all of them surpassing 0.5.

Moving on to Table (3), the research model's divergent validity is confirmed. The Fornell-Larcker criterion establishes that the square root of the mean values of the variances extracted from each structure (the principal diagonal of the matrix) should exceed its correlation values with other structures. Because each structure's correlation values are lower than those of other structures,

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[1] - The values of the original diameter are greater than the corresponding rows and columns

divergent validity is conclusively confirmed.

Table 2. The Combined reliability, Cronbach's alpha, and AVE

Construct Reliability and Validity	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Social Networks	0.842	0.904	0.760
TV networks	0.808	0.912	0.839
Technical Analysis Websites	0.759	0.813	0.594
Websites	0.893	0.912	0.502
Newspapers	0.777	0.829	0.627
News and social media	0.902	0.919	0.502
Risk-taking	0.760	0.843	0.592
Avoidance decision making	0.737	0.845	0.732
spontaneous decision making	0.818	0.916	0.846
Intuitive decision making	0.717	0.819	0.542
Rational decision making	0.894	0.927	0.759
Dependency decision making	0.730	0.803	0.581

Table 3. Divergent validity results (diagnostic validity)

	News and social media	risk-taking	Dependency decision making	Rational decision making	Intuitive decision making	spontaneous decision making	Avoidance decision making
Avoidance decision making							0.856
Spontaneous decision making						0.920	0.657
Intuitive decision making					0.736	0.211	0.183
Rational decision making				0.871	0.382	-0.020	-0.134
Dependency decision making			0.762	0.277	0.505	0.211	0.178
Risk-taking		0.755	0.116	0.488	0.202	-0.155	-0.274
News and social media	0.789	0.133	0.149	0.155	0.083	0.101	0.102

To fit the structural model, the coefficient of determination, R2, also shows the percentage of the dependent variable changes explained by the independent variables. Researchers have also stressed that the predictive power index, Q2, more than zero, is acceptable and that the closer it gets to one, the higher its predictive power. Accordingly, the obtained results are approved if the effect size, F2, means the model's explanatory power and determines the relationship between the structures of the model. The variance of inflation factor (VIF) measures the intensity of multiple alignments. As a rule of thumb, if the value of VIF is greater than 5, multiple lines are high. As Table (4) shows, all values obtained are above the average of the specified values.

Table 4. Results of predictive power, Q^2 values and determination coefficient, R^2

		Avoidance decision making	Dependency decision making	Spontaneous decision making	Rational decision making	Intuitive decision making
F2	Risk-taking	0.351	0.128	0.061	0.376	0.184
	News and social media	0.222	0.208	0.208	0.316	0.311
VIF	risk-taking	1.132	1.132	1.132	1.132	1.132
	News and social media	1.020	1.020	1.020	1.020	1.020
	R2	0.198	0.102	0.141	0.351	0.188
	Q2	0.130	0.06	0.087	0.249	0.127

One of the primary indicators for assessing the overall model's adaptability is the GOF (Goodness of Fit) criterion. This criterion pertains to the comprehensive aspects of both the structural and measurement models. It allows researchers to evaluate the overall model's fitness after scrutinizing the adequacy of the measurement section and the confirmatory factor model in their research. The GOF standard, initially formulated by Tenenhaus et al. (2005), is calculated using the following formula.

Communality: This value is obtained from the mean squared of the factor loads of each factor. $\overline{communality}$ is obtained from the average values of each endogenous factor of the model.

$\overline{R^2}$: The mean values of the coefficient of determination of endogenous factors of the model.

The calculated GOF value is as follows:

$$\text{GOF} = \sqrt{\overline{COMMUNALITY} * \overline{R^2}} = \sqrt{0.656 * 0.196} = 0.358$$

Wetzels et al. (2009) determined three values of 0.01, 0.25, and 0.36 as weak, medium, and strong values, respectively, for GOF, obtained a value of 0.368, indicating a good adaptability of the model. In addition, the findings related to other indicators of overall model adaptability are presented in Table (5). All the studied indicators have a good score, meaning the research model has a good adaptability.

Table 5. Indicators of research model adaptability

Indicator	Statistic	Standard value	Resource
SRMR	0.049	Less than 0.08	Hu and Bentle (1999)
RMS Theta	0.099	Less than 0.12	Ringle et al (2020)
GOF	0.358	More than 0.25	Wetzels et al (2009)
NFI	0.92	More than 0.9	Bentler and Bonett (1980)
d_ULS	0.455	Less than 0.95	Henseler et al (2016)
d_G	0.561	Less than 0.95	Henseler et al (2016)

The results of the implemented model, the regression coefficients or path coefficient, T value, and significant level are shown in Figures (1) and (2).
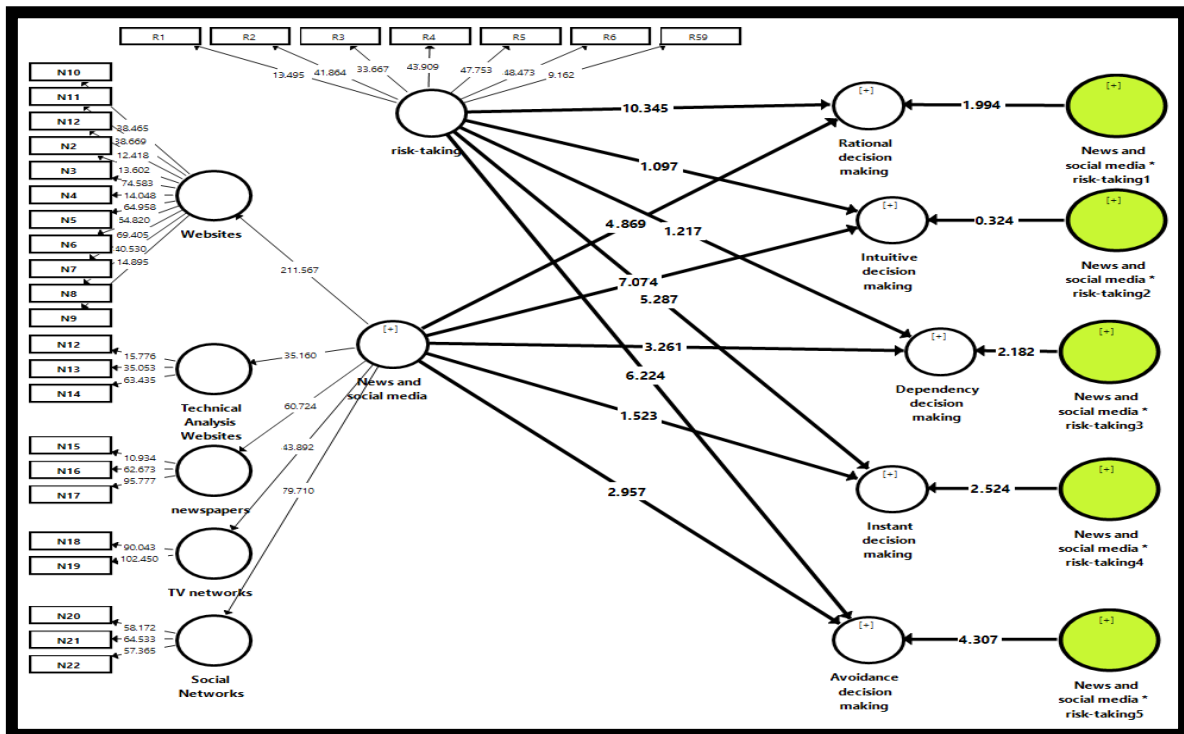
Figure 1. Results of the model implemented in PLS software for standard mod
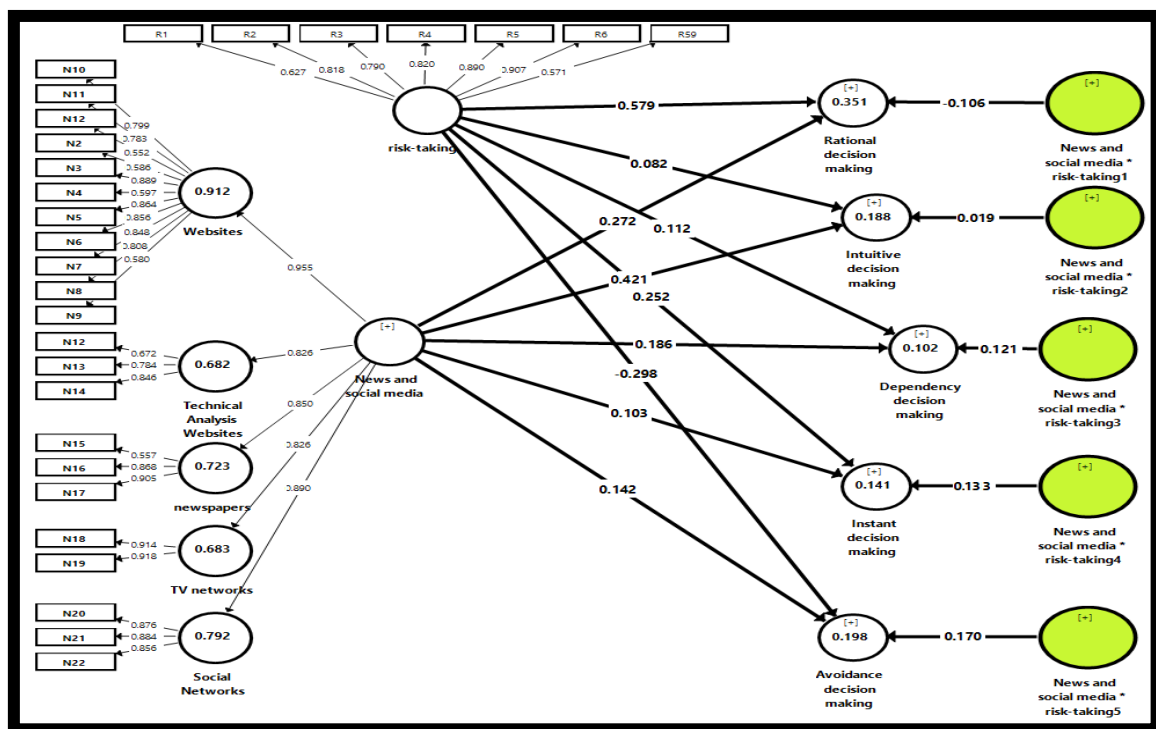

Figure 2. Results of the model implemented in PLS software for significance

The relationship between the research variables is significant or not based on the path coefficients, T-coefficients, and significance level. These results are presented more clearly in Table (6).

Table 6. Results of the relationship between research variables

Path Coefficients	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
News and social media -> Avoidance of decision-making	0.142	2.957	0.033
News and social media -> Dependency decision-making	0.186	3.261	0.012
News and social media -> spontaneous decision-making	0.103	1.523	0.128
News and social media -> Intuitive decision-making	0.421	7.077	0.001
News and social media -> Rational decision-making	0.272	4.869	0.002
risk-taking -> Avoidance decision making	-0.298	6.224	0.001
risk-taking -> Dependency decision making	0.112	1.217	0.224
risk-taking -> spontaneous decision making	0.252	5.287	0.027
risk-taking -> Intuitive decision making	0.082	1.097	0.293
risk-taking -> Rational decision making	0.579	10.345	0.001
News and social media * risk-taking5 -> Avoidance decision making	0.170	4.307	0.006
News and social media * risk-taking3 -> Dependency decision making	0.121	2.182	0.041
News and social media * risk-taking4 -> spontaneous decision making	0.133	2.524	0.037
News and social media * risk-taking2 -> Intuitive decision making	0.019	0.324	0.746
News and social media * risk-taking1 -> Rational decision making	-0.106	0.199	0.048

The results showed that the effect of news and social media on avoidant decision-making style (β = 0.142; P = 0.033) is positive and significant, while the effect of risk-taking on avoidant decision-making (β = -0.298; P = 0.001) is negative and significant. Also, the effect of news and social media on avoidance decision-making style has been positively and significantly confirmed according to the degree of risk-taking of investors in the Tehran Stock Exchange (β = 0.170; P = 0.006). Therefore, the avoidance decision-making style can be expected to increase by increasing the reading of news and social media and the high degree of risk-taking. Also, with the impact of news and social media and investors' risk-taking, approximately 20% (R^2 = 0.198) of changes in avoidance decision-making style can be predicted.

Findings indicated that the effect of news and social media on dependency decision-making style (β = 0.186; P = 0.012) was positive and significant, and the effect of risk-taking on dependency decision-making (β = 0.112; P = 0.224) was insignificant. Also, the effect of social media news on dependency decision-making style has been positively and significantly confirmed according to the degree of investor risk-taking (β = 0.121; P = 0.041). More specifically, increasing the degree of investor risk-taking can enhance the impact of news and social media on dependency decision-making style. Also, to the effects of news and social media and investors' risk-taking, approximately 10% (R^2 = 0.102) of changes in dependency decision-making style can be predicted.

Emphasizing the findings, the effect of news and social media on spontaneous decision-making style (β = 0.103; P = 0.128) was insignificant, but the effect of risk-taking on spontaneous decision-making (β = 0.252; P = 0.027) was positive and significant. On the other hand, risk-taking positively moderates the relationship between news and social media with a spontaneous decision-making style (β = 0.133; P = 0.037). It can be interpreted that increasing risk-taking increases the impact of news and social media on spontaneous decision-making style. Finally, with the impact of news and social media and investors' risk-taking, approximately 14% (R^2 = 0.141) of changes in spontaneous decision-making style can be predicted.

Based on the mentioned results, the effect of news and social media on intuitive decision-making style (β = 0.421; P = 0.001) was positive and significant, but the effect of risk-taking on intuitive decision-making (β = 0.082; 0.293 = P) was less significant. In addition, the impact of news and social media on intuitive decision-making style has been rejected due to the degree of risk-taking of investors in the Tehran Stock Exchange because the significance level is less than 0.05. In general, with the impact of news and social media and investors' risk-taking, approximately 19% (R^2 = 0.188) of changes in intuitive decision-making style can be predicted.

The results showed that news and social media positively affected the logical decision-making style (β = 0.272; P = 0.002), meaning that the more investors pay attention to news and social media, the higher the decision-making rate. Hence, they will be more logical. In addition, the effect of risk-taking on rational decision-making (β = 0.579; P = 0.001) was positive and significant. On the other hand, the impact of news and social media on the rational decision-making model has been negatively and significantly confirmed due to their degree of risk-taking in the Tehran Stock Exchange market (β = -0.106; P = 0.048). That means that, whatever the degree of investor risk is higher, the impact of news and social media on rational decision-making style is less. Finally, to the effects of news and social media and investor risk-taking, approximately 35% (R^2 = 0.351) of changes in rational decision-making style can be predicted.

5. Conclusion

The primary objective of this study was to investigate the influence of social media news on investor decision-making styles within the Tehran Stock Exchange, considering their risk tolerance level. Five hypotheses were formulated based on the research's theoretical foundations and the provided background to achieve this goal. In the first hypothesis, the study examined the impact of mass media news on the avoidant decision-making style concerning the investors' risk tolerance. The results of this hypothesis revealed a significant positive effect of media news on the avoidant decision-making style. In the context of the avoidant decision-making style, it can be described as a tendency to delay decisions whenever possible, avoiding decision-making situations, often leading to heightened stress during the decision-making process. According to Parker et al. (2007), this style involves deferring decisions when confronted with challenges and avoiding immediate reactions to events. Moghadam et al. (2008) suggest that individuals adopting this style avoid decision-making and actively seek to steer clear of decision-making situations. They are typically hesitant about making decisions, and concerned about the potential consequences of their choices. Consequently, decision-makers following this style tend to rely more heavily on external sources, such as media news and other external information. Furthermore, in terms of risk tolerance, individuals adopting the avoidant decision-making style are often categorized as risk-averse. Einav et al. (2012) conducted a study indicating that investors' risk tolerance can be influenced by their tendency to follow mass behavior.

The second hypothesis delved into the impact of mass media news on the dependency decision-making style in relation to the investors' risk tolerance. The results of this hypothesis indicate a significant positive association between investors employing the dependency style and media news, thereby confirming the hypothesis. As described in the theoretical foundations of this research, individuals who exhibit a dependency style in their decision-making processes often lack intellectual independence. They predominantly base their decisions on the input and guidance of others. When faced with significant and intricate choices, these individuals are highly influenced by external factors, including media news, and tend to seek the advice and support of others before arriving at a decision. Daniel et al. (2002) assert that many investors and traders place greater emphasis on information exchange and communication among investors when making decisions, largely due to their reliance on external input. Parker et al. (2007) also propose that individuals following this style lack practical and intellectual independence in their decision-making, and they heavily depend on the guidance and support of others, as well as media news, to inform their choices. Consequently, individuals adopting this style tend to anchor their decisions on the beliefs of others and may, at times, exhibit herding behavior in their choices. In light of the results of Hypothesis 2, it can be inferred that decision-makers who favor the dependency style tend to be more risk-tolerant. Their decision-making

strategy is oriented toward patience, increasing utility when investing. In other words, they are willing to take risks and inclined towards risk-seeking behavior (Ghalibaf Asl et al., 2015).

The third hypothesis investigated the influence of mass media news on the spontaneous decision-making style concerning investors' risk tolerance. The results of this hypothesis demonstrated a significant positive relationship between media news and the spontaneous decision-making style, with the degree of risk-taking positively moderating this association. According to Scott and Bruce (1995), individuals adopting the spontaneous decision-making style make their primary decisions in the shortest possible time without prior intellectual support, often relying on available news. However, utilizing this style does not imply making hasty or immature decisions, as individuals making decisions this way draw upon their experiences and available data. Barzegari Khanghah et al. (2017) explored the impact of media coverage on investors' decisions, specifically examining investors' use of social media. This study revealed that investors utilize various internet and television mass media forms to make immediate decisions, enabling them to participate in and select a wider range of stocks. Consistent with these findings, the third hypothesis suggests that individuals employing the spontaneous style are inclined towards risk-taking behavior. This aligns with the study conducted by Fallah Shams Leyalestani et al. (2011), which explored the relationship between risk-taking behavior and mass behavior. Their study concluded that there is indeed a correlation between risk-taking and mass behavior, supporting the results of this hypothesis.

The fourth hypothesis sought to examine the impact of social media news on the intuitive decision-making style, with consideration of the investors' risk tolerance. Surprisingly, the results of this hypothesis led to its rejection. Within the framework of the intuitive style, investors rely on their insights and adhere to them, although they may also incorporate external information and news into their decision-making process. According to Spicer and Sadler-Smith (2005), individuals with an intuitive decision-making style typically draw upon three primary sources of intuition: general experiences, focused education, and expertise. Robbins and Judge (2009) concur that this style represents an unconscious decision-making process where decision-makers do not adhere to a systematic approach but rely on their personal experiences and tacit knowledge when making decisions. In essence, individuals with less intuitive decision-making styles may be influenced by news and external factors in their decisions, playing a role as followers and relying more on their intuition and foresight. According to these results, investors within the capital market can be categorized as either risk-averse or demonstrating a neutral stance toward risk. Tehrani (2021) highlights that internal factors primarily drive individuals' degree of risk aversion and remain largely unaffected by external market considerations. Moreover, in some instances, investors exhibit a neutral approach to risk, strongly influenced by their individual preferences and financial circumstances. This neutral risk behavior is commonly observed among individuals with substantial wealth.

The fifth hypothesis aimed to explore the impact of social media news on the rational decision-making style. Interestingly, the results of this hypothesis revealed a negative and significant effect of news mass media on investors who adhere to a rational style, contingent upon their degree of risk tolerance. Individuals employing a rational style in their decision-making processes ultimately strive to make the most informed and meticulously evaluated choices. They meticulously analyze all accessible information sources, including social media news, newspapers, and websites. However, it can be argued that they ultimately rely more on their knowledge and experience in shaping their decisions rather than merely following media reports. This outcome aligns with findings from foreign studies, such as Maditinos et al. (2007), who contend that novice investors rely more on media news and market hearsay when making decisions, while professional investors prioritize fundamental and technical analysis and allocate less attention to news and rumors. Similarly, Fallah Shams et al. (2012) observed that individuals adopting a rational approach harness their knowledge, skills, and experience

to address and resolve issues actively. Consequently, they arrive at decisions characterized by sound and logical reasoning. By adeptly utilizing up-to-date knowledge and meticulous processing of information acquired from the media, these individuals mitigate the risk of cognitive and perceptual errors, such as herd behavior, in their decision-making. In summation, it can be asserted that this group tends to exhibit a degree of risk aversion due to their preference for the rational decision-making style.

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