

Designing a Conceptual Model of the Impact of Signals Embedded in Fake News on the Cryptocurrency Market

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Abstract: This study aimed to design a conceptual model of the impact of signals embedded in fake news on the cryptocurrency market. The research method was qualitative and was conducted using the Delphi technique in five rounds with the participation of five experts in the fields of media and business. The interview data were coded and analyzed using MAXQDA software, and seven main concepts were ultimately extracted: the legal status of cryptocurrency, cryptocurrency management strategies, factors affecting the cryptocurrency market, the type of impact of fake news on cryptocurrency, understanding the effects of signals in fake news, methods for detecting signals in fake news, and strategies for managing fake news, signals, and the cryptocurrency market. The findings showed that fake news, whether explicit or implicit, can lead to severe price fluctuations, reduced public trust, the growth of informal markets, and intensified instability. Accordingly, improving media literacy, formulating transparent regulations, using advanced technologies, and strengthening cooperation between public and private institutions are proposed as key strategies for managing these challenges. The results of this study can help policymakers and cryptocurrency market actors in Iran reduce the destructive effects of fake news through a comprehensive approach and benefit from the economic opportunities offered by this technology.

Keywords: conceptual model, signal, fake news, market, cryptocurrency

1. Introduction

The cryptocurrency market has emerged as one of the most dynamic, volatile, and information-sensitive domains of contemporary financial activity. Unlike traditional financial markets, which are often supported by established regulatory institutions, mature disclosure systems, and relatively standardized mechanisms of valuation, cryptocurrency markets operate within a hybrid environment shaped by technological innovation, speculative expectations, decentralized governance, investor sentiment, social media dynamics, and regulatory uncertainty. The valuation of crypto assets is therefore not determined solely by conventional economic indicators or asset fundamentals; rather, it is strongly affected by information flows, emotional reactions, public narratives, and signals embedded in news and digital communication channels. In this context, news does not merely describe market events but often participates in producing market reactions by influencing expectations, perceptions of risk, and collective investor behavior. Previous research has shown that news shocks and information events can play an important role in explaining

cryptocurrency market volatility, particularly because crypto assets are highly responsive to both formal announcements and informal media narratives [1-3].

The sensitivity of cryptocurrency markets to news is closely connected to the nature of these markets as decentralized, digitally mediated, and sentiment-driven financial ecosystems. In conventional securities markets, institutional investors, audited financial reports, and regulatory disclosures often provide a degree of informational structure. In contrast, cryptocurrency investors frequently rely on online news platforms, social media discussions, influencer commentary, blockchain-related announcements, and informal market signals. Such dependence on fragmented and heterogeneous information sources increases the likelihood that market participants will respond rapidly to both accurate and inaccurate information. In this regard, the cryptocurrency market is not only a financial market but also a communicative environment in which narratives, rumors, signals, and emotional cues can shape demand, liquidity, price expectations, and risk perception. Empirical studies comparing cryptocurrency markets with foreign exchange and other financial markets have shown that news sentiment has a distinct role in cryptocurrency price movements and may generate stronger reactions than in more mature financial settings [3-5].

The role of sentiment is particularly important in understanding cryptocurrency market behavior. Investor sentiment refers to the beliefs, emotions, and expectations that market participants hold toward assets, often beyond what can be justified by objective fundamentals. In cryptocurrency markets, sentiment may be formed through news headlines, social media trends, online communities, public statements, regulatory announcements, and broader economic uncertainty. Positive sentiment may encourage speculative buying, while negative sentiment may trigger panic selling, herd behavior, and liquidity withdrawal. Studies have emphasized that sentiment can produce bubbles, amplify volatility, and create non-linear relationships between information and price behavior in cryptocurrency markets [6-8]. Therefore, any conceptual model of cryptocurrency market fluctuation must account not only for the content of news but also for the emotional and behavioral mechanisms through which news is interpreted and transformed into market action.

Fake news adds a further layer of complexity to this environment. Fake news can be understood as false, misleading, manipulated, or intentionally distorted information that is circulated as if it were credible. In financial markets, fake news is especially consequential because market participants often act under uncertainty and time pressure. In the cryptocurrency market, where price movements may occur rapidly and where many investors are non-institutional actors with varying levels of financial and media literacy, fake news can have particularly disruptive effects. Fake news may be designed to create fear, encourage excessive optimism, provoke panic selling, promote fraudulent schemes, or manipulate the perceived legitimacy of particular cryptocurrencies. The “economy of emotions” surrounding fake news is central here: fake news often gains influence not because it is rationally persuasive, but because it activates fear, greed, anxiety, distrust, or urgency among audiences [9, 10]. In cryptocurrency markets, such emotional activation can quickly translate into trading behavior.

The relationship between fake news and cryptocurrency markets must also be interpreted through the concept of signals. Signals are not always direct statements; they may appear as repeated phrases, coded language, selective emphasis, exaggerated claims, visual cues, suspicious timing, manipulated narratives, or indirect references to regulatory, technological, or political developments. In markets characterized by uncertainty, even weak signals can influence investor expectations when they are perceived as indicators of future opportunity or risk. Cryptocurrency markets are particularly vulnerable to such signals because they are highly speculative and because many investors use indirect cues to infer future movements. A misleading signal embedded in fake news may suggest, for example, that a government is preparing to ban or support crypto trading, that a major exchange has

been hacked, that a cryptocurrency is about to be listed or delisted, or that a large institutional actor is entering or exiting the market. Even when such claims are not verified, their signaling function can produce market reactions before corrective information becomes available [1, 2, 11].

The importance of signals becomes clearer when cryptocurrency markets are analyzed as behavioral markets rather than purely rational markets. Behavioral finance suggests that investors do not always act according to complete information and rational calculation; instead, they are influenced by heuristics, biases, emotions, imitation, and social pressure. In cryptocurrency markets, these behavioral features are intensified by high volatility, the promise of extraordinary returns, low barriers to entry, and the constant circulation of market commentary. Irrational investment behaviors may include overreaction to negative news, overconfidence after positive price movements, fear of missing out, herding around influential figures, and excessive reliance on unverified information. These behaviors can increase the effect of fake news and weak signals, especially when investors lack the capacity or willingness to verify information before acting [8, 10, 12]. Therefore, the effect of fake news on cryptocurrency markets should be understood as a behavioral, informational, and technological phenomenon.

The COVID-19 period and subsequent global financial uncertainty further demonstrated the interconnectedness of investor sentiment, cryptocurrency markets, and broader financial systems. During periods of crisis, uncertainty, or macroeconomic instability, investors may turn to cryptocurrencies either as speculative assets or as alternative stores of value. At the same time, crises increase sensitivity to news and rumors, making markets more vulnerable to misinformation and emotional contagion. Research has shown that the relationship between cryptocurrencies, investor sentiment, and traditional financial markets intensified during and after the COVID-19 crisis, indicating that cryptocurrency markets are increasingly integrated into broader financial and psychological systems [13-15]. This means that fake news about crypto assets can no longer be treated as a marginal digital problem; it may contribute to wider patterns of financial instability, investor loss, and distrust in digital financial ecosystems.

The issue of spillover is also central to understanding the impact of news and fake news in cryptocurrency markets. Spillover refers to the transmission of shocks, volatility, risk, or sentiment across markets or assets. Cryptocurrency markets are increasingly connected with stock markets, stablecoin markets, investor sentiment indices, and global financial uncertainty. As a result, news affecting one segment of the crypto ecosystem may influence other segments, and fake news may amplify existing market stress through cross-market transmission. Studies have shown that spillover effects between cryptocurrencies and financial markets are significant, particularly in periods of uncertainty, crisis, or changing investor sentiment [5, 14, 16]. In such conditions, signals embedded in fake news may not only affect the price of a single cryptocurrency but may also contribute to broader changes in liquidity, risk perception, and market confidence.

Stablecoins introduce another important dimension to this discussion. Stablecoins are often used as liquidity instruments within cryptocurrency markets, functioning as a form of “dry powder” that investors can deploy rapidly when opportunities or risks emerge. Because stablecoins are closely linked to trading liquidity and capital movement within crypto markets, fake news and sentiment shocks may influence how investors move between volatile cryptocurrencies and more stable digital assets. When negative fake news circulates, investors may shift assets toward stablecoins; when positive signals dominate, stablecoins may be used to re-enter riskier crypto positions. Thus, stablecoins can act as both stabilizing instruments and channels through which sentiment-driven market movements are transmitted [16]. This further supports the need for a conceptual model that integrates news, sentiment, signals, liquidity, and market volatility.

The Iranian cryptocurrency market provides a particularly important context for examining these relationships. Cryptocurrency activity in Iran is shaped by regulatory ambiguity, international sanctions, currency depreciation, inflationary pressures, restrictions on financial transactions, and the development of domestic exchange platforms. In such a context, cryptocurrencies may be perceived not only as speculative financial assets but also as mechanisms for preserving value, transferring capital, bypassing restrictions, or accessing global markets. These conditions make the market highly sensitive to domestic and international news, including news about government decisions, Central Bank policies, payment gateway restrictions, sanctions, exchange activity, blockchain technology, and global cryptocurrency prices. When the information environment is uncertain, fake news and weak signals can have disproportionate effects because investors may interpret ambiguous information as evidence of future regulatory or market change. This creates a strong need to examine the mechanisms through which fake news signals affect the cryptocurrency market in Iran.

Another important dimension is the regulatory and institutional management of fake news and cryptocurrency-related information. Cryptocurrency regulation remains an evolving issue in many countries, and regulatory uncertainty itself can become a source of volatility. Sudden policy announcements, unclear rules, inconsistent enforcement, or lack of transparent communication may create informational gaps that fake news can exploit. When official institutions fail to provide timely and credible information, investors may turn to unofficial sources, which increases vulnerability to rumors and manipulative signals. Regulatory clarity, public communication, anti-money laundering frameworks, exchange supervision, and cooperation between public and private actors are therefore essential for reducing the harmful effects of fake news on cryptocurrency markets. Event-based analyses and market studies indicate that regulatory events and policy signals can meaningfully influence crypto asset markets, particularly when they are interpreted as changing the legitimacy, accessibility, or risk profile of digital assets [1, 2, 4].

Media management is therefore a critical component of cryptocurrency market stability. Managing fake news does not mean merely denying false claims after they spread; it requires a multidimensional strategy that includes media literacy, information transparency, technological monitoring, crisis response, regulatory communication, and cooperation with digital platforms and market actors. Advanced data analytics and machine learning can be used to detect abnormal information patterns, identify suspicious narratives, and monitor the circulation of false or manipulative content. At the same time, media literacy can help investors recognize unreliable sources, coded language, exaggerated claims, contradictions, and emotionally manipulative content. Research on deep learning and sentiment analysis has indicated that computational methods can be useful for analyzing market sentiment and predicting cryptocurrency price behavior, although such tools must be used carefully and in combination with institutional judgment [6, 17]. Thus, technological and educational strategies should be integrated into a broader governance framework.

Despite the growing body of research on news sentiment, investor behavior, market volatility, and cryptocurrency spillovers, there remains a conceptual gap in explaining how signals embedded in fake news affect cryptocurrency markets, especially in regulatory contexts marked by uncertainty and institutional transition. Many studies examine news sentiment or volatility statistically, but fewer studies conceptualize the pathway through which fake news signals are produced, recognized, interpreted, and translated into market fluctuations. This gap is particularly important because fake news rarely operates only through explicit false statements; it often works through indirect signs, emotional cues, selective framing, repeated messages, and hidden signals that influence investor perception. Therefore, developing a conceptual model can provide a clearer understanding of the

relationship between fake news, weak signals, investor sentiment, regulatory ambiguity, and cryptocurrency market volatility [7, 11, 15].

Furthermore, a conceptual model is useful because the problem is not limited to market prediction; it also involves market governance, communication management, and public trust. If fake news reduces trust in domestic platforms, encourages informal market activity, intensifies capital outflow, or amplifies panic during periods of uncertainty, then its consequences extend beyond individual investment decisions. It becomes an issue of financial stability, digital governance, media responsibility, and economic policy. For countries facing external restrictions and internal regulatory challenges, the management of fake news and weak signals in cryptocurrency markets requires coordination among regulators, media institutions, technology providers, exchanges, and investors. Such coordination can help reduce information asymmetry, strengthen transparent communication, and limit the destabilizing influence of manipulative narratives [9, 12, 13].

In sum, cryptocurrency markets are deeply influenced by information flows, sentiment dynamics, behavioral responses, and institutional signals. Fake news can affect these markets not only through direct misinformation or disinformation but also through hidden and weak signals that influence investor interpretation and market behavior. In highly volatile and regulation-sensitive environments such as the Iranian cryptocurrency market, these signals may contribute to severe price fluctuations, reduced trust, growth of informal markets, and intensified instability. Accordingly, a conceptual approach is needed to identify the core dimensions of this phenomenon and to clarify how fake news signals interact with legal status, market management strategies, investor behavior, technological tools, and media governance. The aim of this study was to design a conceptual model of the impact of signals embedded in fake news on the cryptocurrency market.

2. Methodology

This study was conducted using the Delphi method. The research questions were asked five times of five experts in the fields of media and business. At each stage, the responses were compared with and revised according to the previous responses, and the conceptual model was ultimately designed based on the codes and the diagram obtained from the final round of interviews.

3. Findings and Results

The materials obtained from each round of interviews with experts were compared in the subsequent rounds, and the data obtained from the fifth round were coded and conceptualized using MAXQDA software. At each stage, the experts' views on the questions changed and became more focused. Ultimately, the conceptual model was designed based on the codes and the diagram obtained from the final interview round. The table and diagram related to the first and final interviews are presented below. In the first section, 89 codes were obtained from five interviews, which were ultimately classified into seven conceptual categories. These concepts were as follows:

"The legal status of cryptocurrency," "cryptocurrency management strategies," "factors affecting the cryptocurrency market," "the type of impact of fake news on cryptocurrency," "understanding the effects of signals in fake news," "methods for detecting signals in fake news," and "strategies for managing fake news, signals, and the cryptocurrency market." As shown in the table below, each concept was derived from a number of codes and subcodes.

Table 1. Initial Coding Matrix of Expert Interviews on Fake News Signals and the Cryptocurrency Market

Concept	Code	Secondary Subcode	Primary Subcode	Interview Text
Legal status of cryptocurrency	Types of authorized and unauthorized cryptocurrencies in Iran			In Iran, cryptocurrencies are divided into authorized and unauthorized categories.
Legal status of cryptocurrency		Authorized cryptocurrency; government mining license		Authorized cryptocurrencies are those digital currencies whose related activities, such as mining, are considered legal after obtaining a license from the Ministry of Industry, Mine and Trade and complying with the relevant regulations.
Legal status of cryptocurrency		Unauthorized cryptocurrency; illegal mining		On the other hand, unauthorized cryptocurrencies are those used outside the legal framework and without the required licenses.
Legal status of cryptocurrency			Prohibition of the use of unauthorized cryptocurrency and fear of money laundering	For example, buying and selling cryptocurrencies in informal markets or using them as a payment instrument inside the country has been declared prohibited due to concerns related to money laundering, tax evasion, and the financing of illegal activities.
Legal status of cryptocurrency		Cryptocurrency mining industry		In fact, cryptocurrency mining in Iran has been recognized as an industry, and regulations have even been enacted for the export of electricity consumed in this process.
Legal status of cryptocurrency	Lifting the prohibition on cryptocurrency use through the formulation of comprehensive regulations			In previous years, the Central Bank of Iran had also prohibited the use of cryptocurrencies in the banking system; however, it has recently adopted a more regulatory approach and is developing more comprehensive rules for this field.
Legal status of cryptocurrency	Continued evolution of cryptocurrency law			Currently, the laws related to cryptocurrencies in Iran are still evolving.
Legal status of cryptocurrency	Ambiguity in cryptocurrency regulations			Currently, the laws related to cryptocurrencies in Iran are still evolving, and some ambiguities remain.
Legal status of cryptocurrency	Benefiting from the economic opportunities of cryptocurrency through proper regulation			It is necessary to benefit from the economic opportunities of this emerging technology.
Cryptocurrency management strategies	Preventing financial and security risks by establishing a legal framework			
Cryptocurrency management strategies	Efforts to establish an appropriate legal framework			Nevertheless, the government and regulatory institutions, such as the Central Bank, are attempting to establish appropriate legal frameworks.
Cryptocurrency management strategies	Necessity of obtaining required licenses			Therefore, activity in the field of cryptocurrencies in Iran requires strict compliance with regulations, obtaining the necessary licenses, and cooperation with regulatory institutions.
Cryptocurrency management strategies	Necessity of compliance with the law			Therefore, activity in the field of cryptocurrencies in Iran requires strict compliance with regulations, obtaining the

		necessary licenses, and cooperation with regulatory institutions.
Cryptocurrency management strategies	Cooperation with regulatory institutions	Cooperation with regulatory institutions.
Factors affecting the cryptocurrency market		First, government decisions and Central Bank policies have a direct effect on this market.
Factors affecting the cryptocurrency market		Finally, social networks and influencers also play an important role in shaping news and its effect on the market. Their analyses and forecasts can increase or decrease demand for specific cryptocurrencies.
Factors affecting the cryptocurrency market		Blocking exchange payment gateways or announcing new regulations can cause severe fluctuations and even reduce users' trust in domestic platforms.
Factors affecting the cryptocurrency market		Finally, social networks and influencers also play an important role in shaping news and its effect on the market. Their analyses and forecasts can increase or decrease demand for specific cryptocurrencies.
Factors affecting the cryptocurrency market		Second, international sanctions also play an important role. An increase in sanctions may increase demand for cryptocurrencies as an instrument for transferring capital, whereas a reduction in sanctions may have the opposite effect.
Factors affecting the cryptocurrency market		Third, fluctuations in the global prices of cryptocurrencies such as Bitcoin and Ethereum have a direct effect on the Iranian market.
Factors affecting the cryptocurrency market	Impact of news on the cryptocurrency market	The cryptocurrency market in Iran is strongly influenced by domestic and international news and developments.
Factors affecting the cryptocurrency market		Because of its decentralized nature and high sensitivity, this market reacts rapidly to various types of news.
Factors affecting the cryptocurrency market		News related to the rise or fall of the prices of these currencies in global markets is immediately reflected in the domestic market.
Factors affecting the cryptocurrency market		In addition, news related to blockchain technology, such as the introduction of new cryptocurrencies or security vulnerabilities, can also affect the market.
Factors affecting the cryptocurrency market		Even domestic news, such as changes in the inflation rate or the value of the rial, can increase demand for cryptocurrencies as an instrument for preserving asset value.
Factors affecting the cryptocurrency market		In general, the cryptocurrency market in Iran is highly dynamic and sensitive to news, and investors must constantly monitor these developments in order to make more informed decisions.
Type of impact of fake news on cryptocurrency		In the field of cryptocurrencies in Iran, fake news can appear both as misinformation, meaning unintentionally incorrect information, and as disinformation, meaning deliberately distorted information. Both forms of news have significant effects on the market.

Type of impact of fake news on cryptocurrency		However, their mode of influence and degree of transparency differ.
Type of impact of fake news on cryptocurrency		This type of news is usually disseminated because of a lack of accurate information or misunderstanding. For example, an analyst or domestic media outlet may mistakenly interpret global cryptocurrency price changes or may incorrectly communicate news about new Central Bank regulations. Such news is usually published in an ambiguous form and can create short-term fluctuations in the market. The effect of this type of news is usually temporary, because the market returns to equilibrium after accurate information is released.
Type of impact of fake news on cryptocurrency		This type of news is usually disseminated with the aim of manipulating the market or influencing investors' behavior. For example, a particular group or individual may fabricate news about the approval of new supportive laws for cryptocurrencies or the hacking of a major exchange. Such news is often published explicitly and with detailed information in order to gain more credibility. Its impact can be very severe and long-lasting, because it may create panic or false excitement in the market and push investors toward hasty and incorrect decisions.
Type of impact of fake news on cryptocurrency		Price fluctuations: fake news, especially disinformation, can cause severe and irrational fluctuations in cryptocurrency prices.
Type of impact of fake news on cryptocurrency		Reduced trust: the repeated dissemination of fake news can reduce investors' trust in the cryptocurrency market and lead to capital withdrawal from this market.
Type of impact of fake news on cryptocurrency		Growth of informal markets: fake news may lead to the expansion of underground and informal markets, where there is less control and supervision.
Type of impact of fake news on cryptocurrency		Intensification of instability: under conditions in which the cryptocurrency market is already unstable due to sanctions and domestic policies, fake news can intensify this instability.
Type of impact of fake news on cryptocurrency		In the Iranian cryptocurrency market, both misinformation and disinformation are influential.
Type of impact of fake news on cryptocurrency		However, disinformation usually has more destructive effects and is disseminated explicitly. This type of news can cause severe price fluctuations, reduced trust, and the growth of informal markets.
Type of impact of fake news on cryptocurrency	Broad effects	In many cases, fake news is disseminated indirectly through hidden signals.
Type of impact of fake news on cryptocurrency		Broad effects.

Type of impact of fake news on cryptocurrency	Explicit	Explicit.
Type of impact of fake news on cryptocurrency		These signals can have explicit effects, such as creating fear and anxiety.
Type of impact of fake news on cryptocurrency		Creating fear and anxiety.
Type of impact of fake news on cryptocurrency		Changing social behaviors.
Type of impact of fake news on cryptocurrency	Hidden	Hidden.
Type of impact of fake news on cryptocurrency		They may also have hidden effects, such as weakening public trust.
Type of impact of fake news on cryptocurrency		Weakening public trust.
Type of impact of fake news on cryptocurrency		Shaping public opinion.
Understanding the effects of signals in fake news		In many cases, fake news is not expressed directly.
Understanding the effects of signals in fake news		It is transmitted through "hidden signals" or "coded language."
Methods for detecting signals in fake news	Coded language and indirect references	Coded language and indirect references.
Methods for detecting signals in fake news	Repetition of specific messages	Repetition of specific messages.
Methods for detecting signals in fake news	Use of unreliable sources	Use of unreliable sources.
Methods for detecting signals in fake news	Attention to contradictions	Attention to contradictions.
Strategy for managing fake news, signals, and the cryptocurrency market	Improving media literacy	Improving media literacy, using advanced technologies, and clarifying information are essential. Through these measures, the destructive effects of fake news on society can be prevented.
Strategy for managing fake news, signals, and the cryptocurrency market		Improving media literacy and public awareness.
Strategy for managing fake news, signals, and the cryptocurrency market		User education: improving media literacy and educating users about how to detect fake news and hidden signals can help reduce the negative effects of this news on the market. Such education should include how to examine news sources, identify contradictions, and use analytical tools.

Strategy for managing fake news, signals, and the cryptocurrency market			Public awareness: governmental institutions and credible media outlets should continuously publish accurate and up-to-date information about the cryptocurrency market in order to prevent the spread of fake news.
Strategy for managing fake news, signals, and the cryptocurrency market			Improving media literacy.
Strategy for managing fake news, signals, and the cryptocurrency market			Improving media literacy.
Strategy for managing fake news, signals, and the cryptocurrency market	Use of advanced technologies		Use of advanced technologies.
Strategy for managing fake news, signals, and the cryptocurrency market	Information transparency		Information transparency.
Strategy for managing fake news, signals, and the cryptocurrency market			To control fluctuations in the cryptocurrency market in Iran, managing fake news and its related signals is highly important.
Strategy for managing fake news, signals, and the cryptocurrency market	Establishing a transparent legal and regulatory framework		Establishing a transparent legal and regulatory framework.
Strategy for managing fake news, signals, and the cryptocurrency market			Formulating transparent regulations: the Central Bank and related institutions should formulate transparent and precise regulations for the activities of cryptocurrency exchanges and users. These regulations should include requirements for financial transparency, regular reporting, and compliance with anti-money laundering rules.
Strategy for managing fake news, signals, and the cryptocurrency market	Smart supervision		Smart supervision.
Strategy for managing fake news, signals, and the cryptocurrency market			The use of intelligent monitoring systems that identify and block suspicious transactions can help reduce fluctuations caused by fake news. These systems should be capable of detecting abnormal activities and market manipulation.
Strategy for managing fake news, signals, and the cryptocurrency market	Comprehensive and multidimensional approach	Cooperation among different institutions	Cooperation between governmental institutions and the private sector.

Strategy for managing fake news, signals, and the cryptocurrency market		Formation of professional associations	Formation of professional associations.
Strategy for managing fake news, signals, and the cryptocurrency market			Establishing professional associations for exchanges and cryptocurrency actors can contribute to greater coordination between governmental institutions and the private sector. These associations can actively participate in the development of laws and regulations.
Strategy for managing fake news, signals, and the cryptocurrency market			Comprehensive and multidimensional approach.
Strategy for managing fake news, signals, and the cryptocurrency market	Regulatory measures		Regulatory measures.
Strategy for managing fake news, signals, and the cryptocurrency market	Educational measures		Educational measures.
Strategy for managing fake news, signals, and the cryptocurrency market	Technology-oriented measures		Technology-oriented measures.
Strategy for managing fake news, signals, and the cryptocurrency market	Cooperation among different institutions		Cooperation among different institutions.
Strategy for managing fake news, signals, and the cryptocurrency market			Transparent blockchain: developing blockchain-based infrastructures that increase transaction transparency can help reduce fluctuations caused by fake news. These systems can provide accurate and reliable information about market activities.
Strategy for managing fake news, signals, and the cryptocurrency market		Constructive interaction	Constructive interaction.
Strategy for managing fake news, signals, and the cryptocurrency market			Cooperation between governmental institutions and the private sector.
Strategy for managing fake news, signals, and the cryptocurrency market		Constructive interaction	The Central Bank and other regulatory institutions should interact with the private sector in order to effectively resolve existing problems and challenges. This interaction may include regular meetings and consultation about new policies.

Strategy for managing fake news, signals, and the cryptocurrency market	Use of advanced technologies	Use of advanced technologies.
Strategy for managing fake news, signals, and the cryptocurrency market		Advanced data analytics and machine learning: using advanced data analytics and machine learning technologies can help identify fake news and hidden signals rapidly. These technologies can detect abnormal patterns in the market and issue the necessary warnings.
Strategy for managing fake news, signals, and the cryptocurrency market	Crisis management and rapid response	Crisis management and rapid response.
Strategy for managing fake news, signals, and the cryptocurrency market		Rapid response to fake news: regulatory institutions should have the capacity to respond rapidly to fake news and hidden signals. This response may include publishing accurate information, blocking fake news sources, and taking legal action against those who disseminate incorrect news.
Strategy for managing fake news, signals, and the cryptocurrency market		Crisis planning: developing crisis management plans to deal with severe cryptocurrency market fluctuations is essential. These plans should include short-term and long-term measures to reduce the negative effects of fake news.
Strategy for managing fake news, signals, and the cryptocurrency market	Supporting domestic exchanges and reducing dependence on foreign exchanges	Supporting domestic exchanges and reducing dependence on foreign exchanges.
Strategy for managing fake news, signals, and the cryptocurrency market		Supporting domestic exchanges: the government and regulatory institutions should support domestic exchanges so that users use domestic platforms instead of migrating to foreign exchanges. This can be achieved by providing financial and legal facilities.
Strategy for managing fake news, signals, and the cryptocurrency market		Reducing dependence on foreign exchanges: by strengthening domestic exchanges and establishing transparent regulations, users' dependence on foreign exchanges can be reduced and capital outflow from the country can be prevented.
Strategy for managing fake news, signals, and the cryptocurrency market	Necessity of a comprehensive approach to controlling cryptocurrency market fluctuations	Managing fake news and its related signals to control fluctuations in the cryptocurrency market in Iran requires a comprehensive approach.
Strategy for managing fake news, signals, and the cryptocurrency market	Information transparency	Formulating transparent regulations.
Strategy for managing fake news, signals, and the cryptocurrency market	Use of advanced technologies	Use of advanced technologies.

news, signals, and the cryptocurrency market		
Strategy for managing fake news, signals, and the cryptocurrency market		To counter these effects, investors should rely on credible news sources and examine news more carefully.
Strategy for managing fake news, signals, and the cryptocurrency market	Crisis management	Crisis management.

The concept of “the legal status of cryptocurrency,” which emerged from the codes “types of authorized and unauthorized cryptocurrencies in Iran,” “authorized cryptocurrency; government mining license,” “unauthorized cryptocurrency; illegal mining,” “lifting the prohibition on cryptocurrency use through the formulation of comprehensive regulations,” “ambiguity in cryptocurrency regulations,” and “benefiting from the economic opportunities of cryptocurrency through regulation,” refers to the points raised by the interviewees. In Iran, cryptocurrencies are divided into authorized and unauthorized categories. Authorized cryptocurrencies are those digital currencies whose related activities, such as mining, are considered legal after obtaining a license from the Ministry of Industry, Mine and Trade and complying with the relevant regulations. On the other hand, unauthorized cryptocurrencies are those used outside the legal framework and without the required licenses. Buying and selling cryptocurrencies in informal markets or using them as a payment instrument inside the country has been prohibited because of concerns related to money laundering, tax evasion, and the financing of illegal activities. Cryptocurrency mining in Iran has been recognized as an industry, and regulations have even been enacted regarding the export of electricity consumed in this process. In previous years, the Central Bank of Iran had also prohibited the use of cryptocurrencies in the banking system; however, it has recently adopted a more regulatory approach and is developing more comprehensive rules for this field. At present, the regulations related to cryptocurrencies in Iran are still evolving, and some ambiguities remain. Therefore, measures should be taken so that, by creating proper regulations, it becomes possible to benefit from the economic opportunities of this emerging technology.

The concept of “cryptocurrency management strategies,” which emerged from the codes “preventing financial and security risks by establishing a legal framework,” “efforts to establish an appropriate legal framework,” “necessity of obtaining required licenses,” and “cooperation with regulatory institutions,” indicates that activity in the field of cryptocurrencies in Iran requires strict compliance with regulations, obtaining the necessary licenses, and cooperation with regulatory institutions. The government and regulatory institutions, such as the Central Bank, are attempting to control cryptocurrency-related affairs by establishing appropriate legal frameworks.

The concept of “factors affecting the cryptocurrency market” was emphasized considerably by the interviewees. These factors are presented as follows:

Government decisions and Central Bank policies have a direct effect on this market.

Social networks and influencers also play an important role in shaping news and its effect on the market. Their analyses and forecasts can increase or decrease demand for specific cryptocurrencies.

Blocking exchange payment gateways or announcing new regulations can cause severe fluctuations and even reduce users’ trust in domestic platforms.

International sanctions also play an important role. An increase in sanctions may increase demand for cryptocurrencies as an instrument for transferring capital, whereas a reduction in sanctions may have the opposite effect.

Fluctuations in the global prices of cryptocurrencies such as Bitcoin and Ethereum have a direct effect on the Iranian market.

The most important point is that the cryptocurrency market in Iran is strongly influenced by domestic and international news and developments. Because of its decentralized nature and high sensitivity, this market reacts rapidly to various types of news. News related to the rise or fall of the prices of these currencies in global markets is immediately reflected in the domestic market. In addition, news related to blockchain technology, such as the introduction of new cryptocurrencies or security vulnerabilities, can also affect the market. Even domestic news, such as changes in the inflation rate or the value of the rial, can increase demand for cryptocurrencies as an instrument for preserving asset value. In general, the cryptocurrency market in Iran is highly dynamic and sensitive to news, and investors must constantly monitor these developments in order to make more informed decisions.

The concept of “the type of impact of fake news on cryptocurrency” was another concept emphasized by the interviewees. In the field of cryptocurrencies in Iran, fake news can appear both as misinformation, meaning unintentionally incorrect information, and as disinformation, meaning deliberately distorted information. Both forms of news have significant effects on the market, although their mode of influence and degree of transparency differ. Misinformation is usually disseminated because of a lack of accurate information or misunderstanding. For example, an analyst or domestic media outlet may mistakenly interpret global cryptocurrency price changes or may incorrectly communicate news about new Central Bank regulations. Such news is usually published in an ambiguous form and can create short-term fluctuations in the market. The effect of this type of news is usually temporary, because the market returns to equilibrium after accurate information is released. Disinformation is usually disseminated with the aim of manipulating the market or influencing investors’ behavior. For example, a particular group or individual may fabricate news about the approval of new supportive laws for cryptocurrencies or the hacking of a major exchange. Such news is often published explicitly and with detailed information in order to gain more credibility. Its impact can be very severe and long-lasting, because it may create panic or false excitement in the market and push investors toward hasty and incorrect decisions. Fake news, especially disinformation, can cause severe and irrational fluctuations in cryptocurrency prices. The repeated dissemination of fake news can reduce investors’ trust in the cryptocurrency market and lead to capital withdrawal from this market. Fake news may lead to the expansion of underground and informal markets, where there is less control and supervision. Under conditions in which the cryptocurrency market is already unstable due to sanctions and domestic policies, fake news can intensify this instability. In the Iranian cryptocurrency market, both misinformation and disinformation are influential; however, disinformation usually has more destructive effects and is disseminated explicitly.

“The type of impact of fake news on cryptocurrency” is another concept extracted from the interviews. In many cases, fake news is disseminated indirectly and through hidden signals with broad effects. These signals can create explicit effects, such as fear, anxiety, and changes in social behaviors. In some cases, their effects are hidden and become visible in the long term, including the weakening of public trust and the shaping of public opinion. This impact can also be observed in relation to cryptocurrencies.

The concept of “understanding the effects of signals in fake news” refers to the fact that fake news is often not expressed directly, but is instead transmitted through “hidden signals” or “coded language.”

The concept of “methods for detecting signals in fake news” indicates that, in order to identify signals in fake news, attention must be paid to coded language and indirect references. In addition, attention to the repetition of specific messages, citations from unreliable sources, and contradictions can help identify the signals embedded in fake news.

The concept of “strategies for managing fake news, signals, and the cryptocurrency market” was derived from numerous codes: “improving media literacy,” “using advanced technologies,” “information transparency,” “establishing a transparent legal and regulatory framework,” “smart supervision,” “a comprehensive and multidimensional approach,” “using advanced technologies,” “crisis management and rapid response,” and “supporting domestic exchanges and reducing dependence on foreign exchanges.”

The concept of “the necessity of a comprehensive approach to controlling cryptocurrency market fluctuations” was formed from the codes “improving media literacy,” “information transparency,” “using advanced technologies,” “establishing a transparent legal and regulatory framework,” “smart supervision,” “a comprehensive and multidimensional approach,” “using advanced technologies,” “crisis management and rapid response,” “supporting domestic exchanges and reducing dependence on foreign exchanges,” and “the necessity of a comprehensive approach to controlling cryptocurrency market fluctuations.” Improving media literacy is essential in the use of advanced technologies and the clarification of information. Through this measure, the destructive effects of fake news on society can be prevented, and media literacy and public awareness can be improved. Improving media literacy and educating users about how to detect fake news and hidden signals can help reduce the negative effects of this news on the market. Such education should include how to examine news sources, identify contradictions, and use analytical tools. Governmental institutions and credible media outlets should continuously publish accurate and up-to-date information about the cryptocurrency market in order to prevent the spread of fake news. To control fluctuations in the cryptocurrency market in Iran, managing fake news and its related signals is highly important. The Central Bank and related institutions should formulate transparent and precise regulations for the activities of cryptocurrency exchanges and users. These regulations should include requirements for financial transparency, regular reporting, and compliance with anti-money laundering rules. The use of intelligent monitoring systems that identify and block suspicious transactions can help reduce fluctuations caused by fake news. These systems should be capable of detecting abnormal activities and market manipulation. Establishing professional associations for exchanges and cryptocurrency actors can contribute to greater coordination between governmental institutions and the private sector. These associations can actively participate in the development of laws and regulations. Developing blockchain-based infrastructures that increase transaction transparency can help reduce fluctuations caused by fake news. These systems can provide accurate and reliable information about market activities. The Central Bank and other regulatory institutions should interact with the private sector in order to effectively resolve existing problems and challenges. This interaction may include regular meetings and consultation about new policies. Using advanced data analytics and machine learning technologies can help identify fake news and hidden signals rapidly. These technologies can detect abnormal patterns in the market and issue the necessary warnings. Regulatory institutions should have the capacity to respond rapidly to fake news and hidden signals. This response may include publishing accurate information, blocking fake news sources, and taking legal action against those who disseminate incorrect news. Developing crisis management plans to deal with severe cryptocurrency market fluctuations is essential. These plans should include short-term and long-term measures to reduce the negative effects of fake news. The government and regulatory institutions should support domestic exchanges so that users use domestic platforms instead of migrating to foreign exchanges. This

can be achieved by providing financial and legal facilities. By strengthening domestic exchanges and establishing transparent regulations, users’ dependence on foreign exchanges can be reduced and capital outflow from the country can be prevented.

Managing fake news and its related signals to control fluctuations in the cryptocurrency market in Iran requires a comprehensive approach.

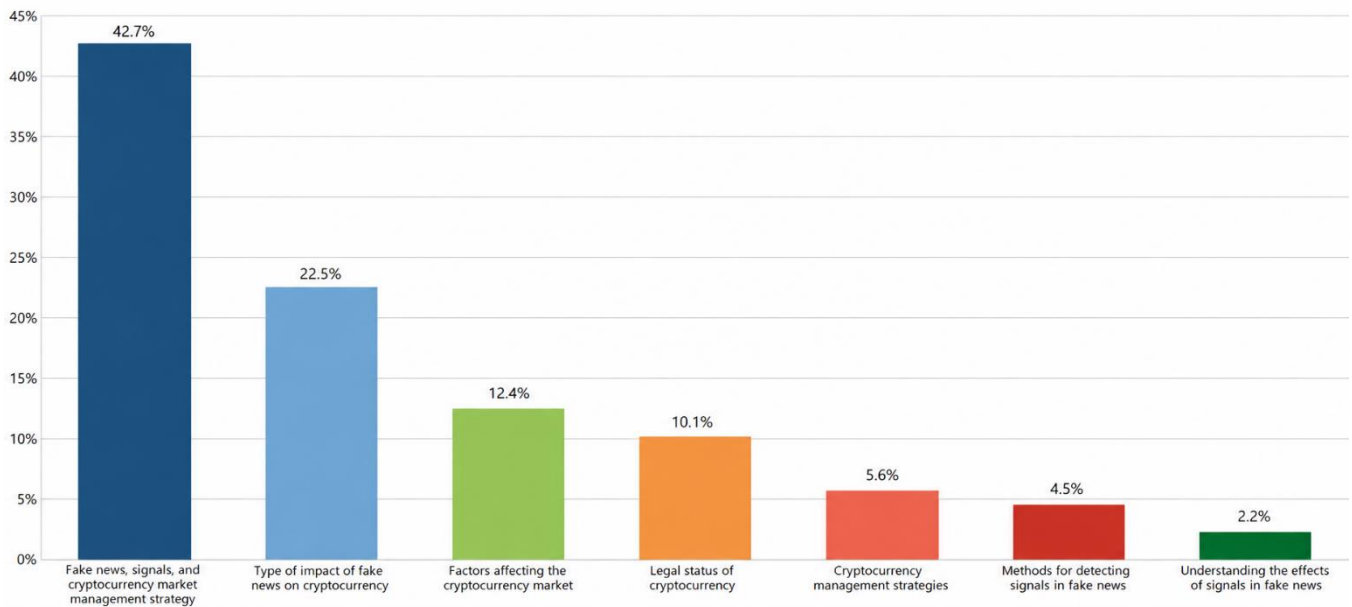


Figure 1. Frequency and Relative Importance of Concepts Repeated by Interviewees

As stated earlier, in the subsequent interview rounds, the experts’ views changed to some extent. As a result, some concepts changed and new concepts emerged. The final concepts were as follows: “the nature of cryptocurrency,” “the legal status of cryptocurrency,” “factors affecting cryptocurrency management with regard to fake news and signals,” “the impact of news on the cryptocurrency market,” “the type of impact of fake news on cryptocurrency,” “understanding the effects of signals in fake news,” and “strategies for managing fake news, signals, and the cryptocurrency market.” As shown in the following table, these seven concepts emerged from more coherent and mature codes.

Table 2. Final Coding Matrix Extracted from the Fifth Delphi Round

Concept	Code	Interview Text
Nature of cryptocurrency	Cryptocurrencies as digital assets	Cryptocurrencies as digital assets.
Nature of cryptocurrency	Cryptocurrencies as blockchain-based assets	Cryptocurrencies as digital assets based on blockchain technology.
Legal status of cryptocurrency	Different cryptocurrency laws in different countries	Different countries face different regulations.
Legal status of cryptocurrency		In some countries, the use and trading of cryptocurrencies are completely permitted, whereas in others, restrictions or prohibitions have been imposed.
Legal status of cryptocurrency	Changing status of cryptocurrency in Iran	In Iran, the status of cryptocurrencies is also changing and evolving.
Legal status of cryptocurrency	Authorized cryptocurrency as officially recognized by the government of a country	Authorized cryptocurrency refers to cryptocurrencies that are recognized by the government or regulatory institutions of a country and whose use is permitted under specific regulations.
Legal status of cryptocurrency	Authorized cryptocurrency under specific regulations	Authorized cryptocurrency refers to cryptocurrencies that are recognized by the government or regulatory institutions of a country and whose use is permitted under specific regulations.

Legal status of cryptocurrency	Authorized cryptocurrency under the supervision of national financial institutions	These cryptocurrencies are usually supervised by financial institutions.
Legal status of cryptocurrency	Unauthorized cryptocurrency prohibited by the government	Unauthorized cryptocurrency refers to cryptocurrencies whose use has been prohibited by the government or regulatory institutions.
Legal status of cryptocurrency	Control of the country's monetary system as a reason for classifying cryptocurrency as unauthorized	This prohibition may be due to security or financial concerns or concerns about control over the country's monetary system.
Legal status of cryptocurrency	Security concerns as a reason for declaring cryptocurrency unauthorized	This prohibition may be due to security or financial concerns or concerns about control over the country's monetary system.
Legal status of cryptocurrency		This prohibition may be due to security or financial concerns or concerns about control over the country's monetary system.
Legal status of cryptocurrency	Changing status of cryptocurrency in Iran	In Iran, the status of cryptocurrencies has undergone many changes in recent years.
Legal status of cryptocurrency	Paradox of cryptocurrency law	There are specific regulations for cryptocurrencies, but some ambiguities and limitations still remain.
Legal status of cryptocurrency	Authorized cryptocurrency; mining permit from the Ministry of Industry, Mine and Trade	Cryptocurrency mining: cryptocurrency mining in Iran is permitted after obtaining a license from the Ministry of Industry, Mine and Trade.
Legal status of cryptocurrency	Paradox of cryptocurrency law	This activity is recognized as a legal industry, and specific regulations have even been enacted for the export of electricity consumed in mining.
Legal status of cryptocurrency		Buying and selling cryptocurrency: buying and selling cryptocurrencies in Iran has not officially been declared illegal; however, using them as a payment instrument inside the country is prohibited. This is due to concerns related to money laundering and terrorism financing.
Legal status of cryptocurrency		Central Bank regulation: the Central Bank of Iran recently approved a document entitled "Framework for Central Bank Policy-Making and Regulation in the Field of Crypto-Money." This document emphasizes the need to supervise activities related to cryptocurrencies and to cooperate with other institutions in regulating this field.
Legal status of cryptocurrency		Restrictions: in previous years, the Central Bank of Iran had prohibited the use of cryptocurrencies in the banking system. This prohibition was imposed because of security and financial concerns; however, a more active regulatory approach has recently been adopted.
Legal status of cryptocurrency	Framework for Central Bank Policy-Making and Regulation in the Field of Crypto-Money	Framework for Central Bank Policy-Making and Regulation in the Field of Crypto-Money.
Factors affecting cryptocurrency management with regard to fake news and signals	Government decisions and Central Bank policies affecting cryptocurrency market fluctuations	Government decisions and Central Bank policies.
Factors affecting cryptocurrency management with regard to fake news and signals		Sudden decisions by the government and the Central Bank, such as blocking the payment gateways of cryptocurrency exchanges, have a direct effect on the market. For example, in December 2024–January 2025, the Central Bank blocked the payment gateways of cryptocurrency exchanges, which caused severe fluctuations and reduced users' trust in domestic platforms. Such decisions, when made without prior notification, lead to the expansion of underground markets and reduced transparency in transactions.
Factors affecting cryptocurrency management with	International sanctions affecting cryptocurrency market fluctuations	International sanctions.

regard to fake news and signals		
Factors affecting cryptocurrency management with regard to fake news and signals		International sanctions against Iran, especially financial sanctions, have caused cryptocurrencies to attract attention as an instrument for bypassing these restrictions. News related to the intensification or reduction of sanctions can affect the demand for and price of cryptocurrencies.
Factors affecting cryptocurrency management with regard to fake news and signals	Global cryptocurrency price fluctuations affecting the domestic cryptocurrency market	The cryptocurrency market in Iran is strongly influenced by global price fluctuations. News related to price changes in Bitcoin, Ethereum, and other major cryptocurrencies can increase or decrease the value of these assets in the domestic market.
Factors affecting cryptocurrency management with regard to fake news and signals		Global cryptocurrency price fluctuations.
Factors affecting cryptocurrency management with regard to fake news and signals	Transparent blockchain: development of blockchain-based infrastructure	Transparent blockchain: development of blockchain-based infrastructure.
Factors affecting cryptocurrency management with regard to fake news and signals	Role of social networks and influencers in cryptocurrency market fluctuations	Role of social networks and influencers.
Factors affecting cryptocurrency management with regard to fake news and signals		Social networks and influencers also play an important role in shaping news and its effect on the market. Analyses and forecasts provided by influencers can increase or decrease demand for specific cryptocurrencies. For example, promotion of a specific cryptocurrency by a famous influencer may increase its price in the Iranian market.
Impact of news on the cryptocurrency market	Cryptocurrency market affected by news	In Iran, the cryptocurrency market is strongly influenced by domestic and international news and developments.
Impact of news on the cryptocurrency market		These fluctuations may result from various factors, such as government decisions, sanctions, changes in global cryptocurrency prices, and even news related to blockchain technology.
Impact of news on the cryptocurrency market	Blockchain technology-related news affecting cryptocurrency market fluctuations	News related to blockchain technology.
Impact of news on the cryptocurrency market		Advances in blockchain technology and the introduction of new cryptocurrencies can also affect the market. For example, the introduction of a new cryptocurrency with unique features may attract investors and increase market demand. On the other hand, news related to security vulnerabilities or exchange hacks can reduce trust and lead to widespread selling.
Impact of news on the cryptocurrency market	Domestic news and political atmosphere affecting cryptocurrency market fluctuations	Domestic news and the political atmosphere.
Impact of news on the cryptocurrency market		Domestic news, such as changes in economic policies or the country's political atmosphere, can also affect the cryptocurrency market. For example, an increase in the inflation rate or a decline in the value of the rial may increase demand for cryptocurrencies as an instrument for preserving asset value.
Types of fake news affecting cryptocurrency	Impact of different types of fake news on the cryptocurrency market	In the field of cryptocurrencies in Iran, fake news can appear both as misinformation, meaning unintentionally incorrect information, and as disinformation, meaning deliberately distorted information. Both types of news have significant effects on the market, but their mode of influence and degree of transparency differ.

Types of fake news affecting cryptocurrency		Misinformation, meaning unintentionally incorrect information. This type of news is usually disseminated because of a lack of accurate information or misunderstanding. For example, an analyst or domestic media outlet may mistakenly interpret global cryptocurrency price changes or may incorrectly communicate news about new Central Bank regulations. Such news is usually published ambiguously and can create short-term fluctuations in the market. The effect of this type of news is usually temporary, because the market returns to equilibrium after accurate information is released.
Types of fake news affecting cryptocurrency		Disinformation, meaning deliberately distorted information. This type of news is usually disseminated with the aim of manipulating the market or influencing investors' behavior. For example, a particular group or individual may fabricate news about the approval of new supportive laws for cryptocurrencies or the hacking of a major exchange. Such news is often published explicitly and with detailed information in order to gain more credibility. Its impact can be very severe and long-lasting, because it may create panic or false excitement in the market and push investors toward hasty and incorrect decisions.
Types of fake news affecting cryptocurrency		Price fluctuations: fake news, especially disinformation, can cause severe and irrational fluctuations in cryptocurrency prices.
Types of fake news affecting cryptocurrency		Reduced trust: the repeated dissemination of fake news can reduce investors' trust in the cryptocurrency market and lead to capital withdrawal from this market.
Types of fake news affecting cryptocurrency		Growth of informal markets: fake news may lead to the expansion of underground and informal markets, where there is less control and supervision.
Types of fake news affecting cryptocurrency		Intensification of instability: under conditions in which the cryptocurrency market is already unstable due to sanctions and domestic policies, fake news can intensify this instability.
Types of fake news affecting cryptocurrency		Reports by the Central Bank of Iran and economic analyses by domestic research institutions have examined the impact of fake news on financial markets.
Understanding the effects of signals in fake news	Signals embedded in fake news affecting cryptocurrency market fluctuations	In many cases, fake news is not stated directly, but is transmitted through "hidden signals" or "coded language." These signals can be "explicit" or "hidden" and may have different effects on audiences and society.
Methods for detecting signals in fake news	Attention to coded language and indirect references in fake news	Coded language and indirect references.
Methods for detecting signals in fake news	Attention to the repetition of specific messages in fake news	Repetition of specific messages.
Methods for detecting signals in fake news	Attention to contradictions in fake news	Attention to contradictions.
Strategy for media management of fake news, signals, and the cryptocurrency market	Use of advanced technologies to reduce the impact of fake news signals	Use of advanced technologies.
Strategy for media management of fake news, signals, and the cryptocurrency market	Information transparency to reduce the impact of fake news signals	Information transparency.
Strategy for media management of fake news, signals, and the cryptocurrency market	Necessity of managing fake news to control the cryptocurrency market	To control fluctuations in the cryptocurrency market in Iran, managing fake news and its related signals is highly important.
Strategy for media management of fake news, signals, and the cryptocurrency market	Establishing a transparent legal and regulatory framework to control cryptocurrency fluctuations	Establishing a transparent legal and regulatory framework.

Strategy for media management of fake news, signals, and the cryptocurrency market		Formulating transparent regulations: the Central Bank and related institutions should formulate transparent and precise regulations for the activities of cryptocurrency exchanges and users. These regulations should include requirements for financial transparency, regular reporting, and compliance with anti-money laundering rules.
Strategy for media management of fake news, signals, and the cryptocurrency market		Smart supervision: the use of intelligent monitoring systems that identify and block suspicious transactions can help reduce fluctuations caused by fake news. These systems should be capable of detecting abnormal activities and market manipulation.
Strategy for media management of fake news, signals, and the cryptocurrency market	Improving media literacy and public awareness to reduce the impact of fake news	Improving media literacy.
Strategy for media management of fake news, signals, and the cryptocurrency market	Improving media literacy and public awareness to reduce the impact of fake news	Improving media literacy and public awareness.
Strategy for media management of fake news, signals, and the cryptocurrency market		User education: improving media literacy and educating users about how to detect fake news and hidden signals can help reduce the negative effects of this news on the market. Such education should include how to examine news sources, identify contradictions, and use analytical tools.
Strategy for media management of fake news, signals, and the cryptocurrency market		Public awareness: governmental institutions and credible media outlets should continuously publish accurate and up-to-date information about the cryptocurrency market in order to prevent the spread of fake news.
Strategy for media management of fake news, signals, and the cryptocurrency market	Cooperation between governmental institutions and the private sector	Cooperation between governmental institutions and the private sector.
Strategy for media management of fake news, signals, and the cryptocurrency market		Formation of professional associations: establishing professional associations for exchanges and cryptocurrency actors can contribute to greater coordination between governmental institutions and the private sector. These associations can actively participate in the development of laws and regulations.
Strategy for media management of fake news, signals, and the cryptocurrency market		Constructive interaction: the Central Bank and other regulatory institutions should interact with the private sector in order to effectively resolve existing problems and challenges. This interaction may include regular meetings and consultation about new policies.
Strategy for media management of fake news, signals, and the cryptocurrency market	Advanced data analytics and machine learning	Advanced data analytics and machine learning.
Strategy for media management of fake news, signals, and the cryptocurrency market	Developing crisis management plans to deal with severe market fluctuations	Developing crisis management plans to deal with severe cryptocurrency market fluctuations is essential.

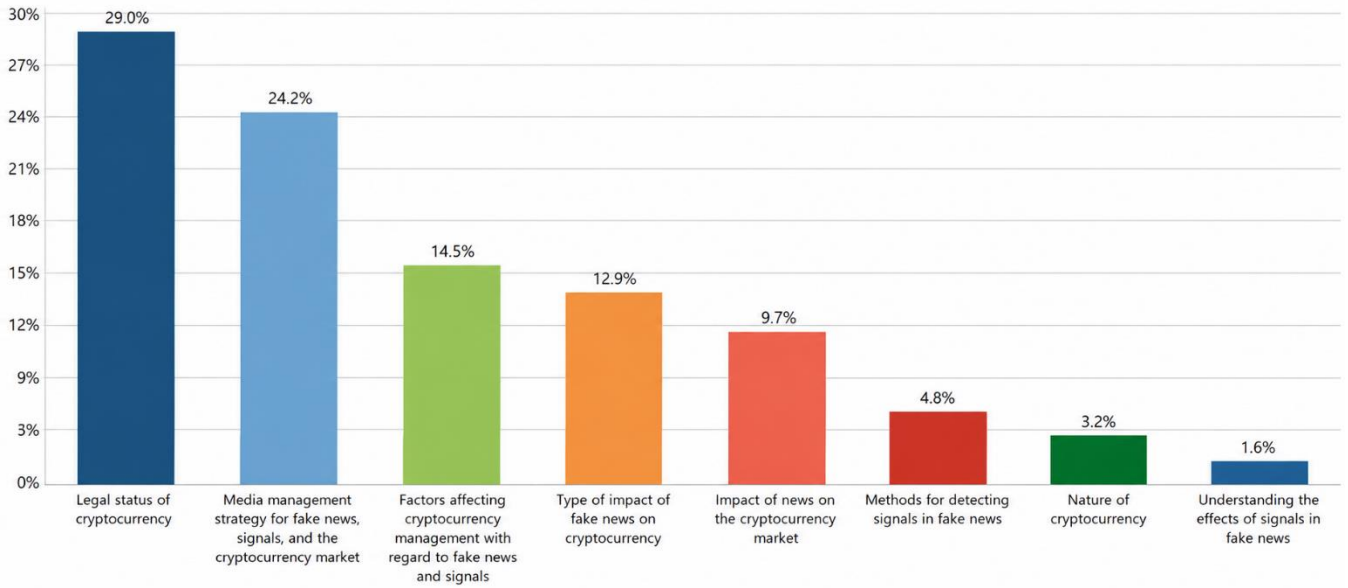


Figure 2. Conceptual Model of Media Management of Fake News and Weak Signals and Their Impact on Cryptocurrency Market Fluctuations

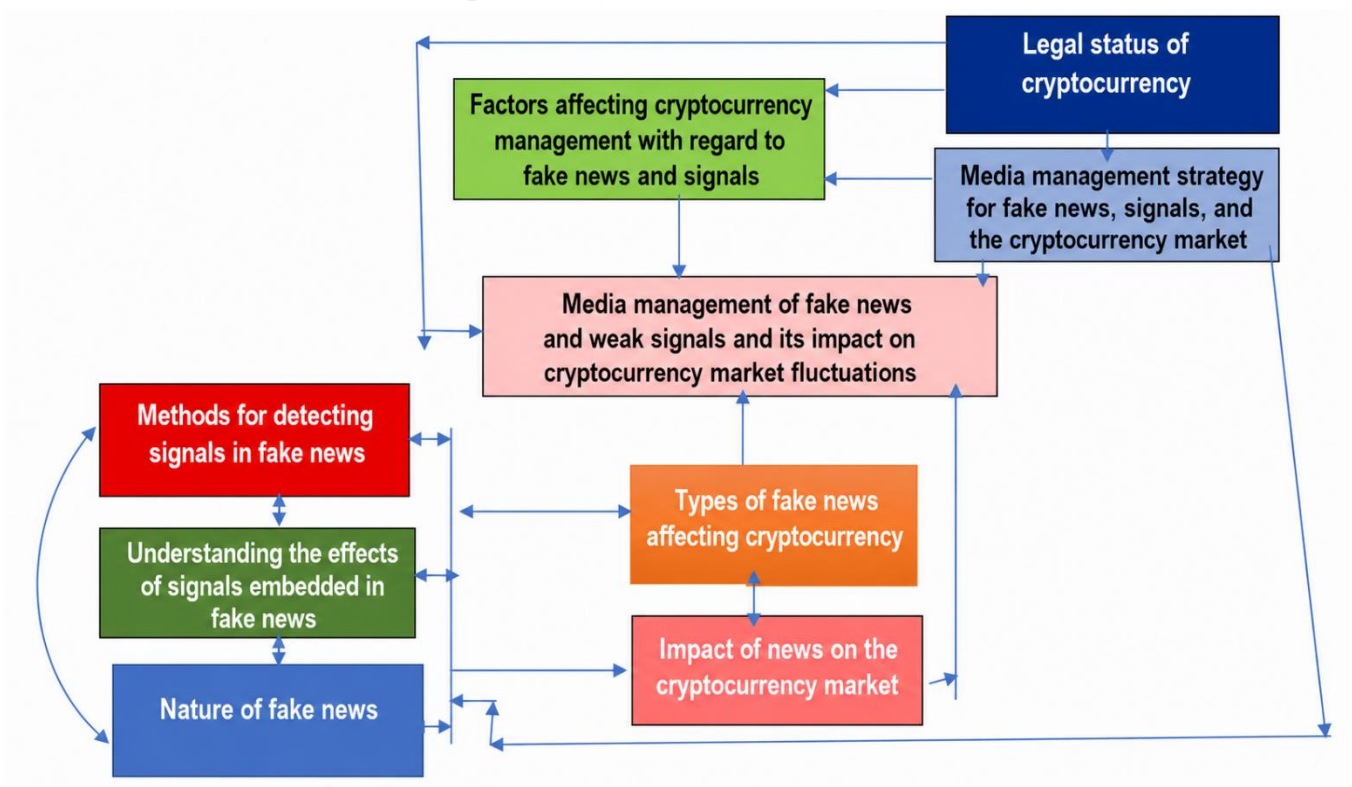


Figure 3. Final Model

4. Discussion and Conclusion

The present study aimed to design a conceptual model of the impact of signals embedded in fake news on the cryptocurrency market. The findings derived from the Delphi process showed that the phenomenon can be explained through seven final concepts: the nature of cryptocurrency, the legal status of cryptocurrency, factors affecting cryptocurrency management with regard to fake news and signals, the impact of news on the

cryptocurrency market, types of fake news affecting cryptocurrency, understanding the effects of signals in fake news, and strategies for the media management of fake news, signals, and the cryptocurrency market. Together, these concepts indicate that the cryptocurrency market is not merely influenced by financial indicators, technological developments, or price trends, but is also highly vulnerable to information flows, media narratives, regulatory ambiguity, investor sentiment, and hidden communicative signals. The results suggest that fake news can affect the cryptocurrency market both directly, through explicit false claims, and indirectly, through weak signals, coded language, repeated narratives, and emotional cues that influence investors' perceptions and decisions. This finding is consistent with studies showing that news shocks and sentiment-driven information flows can significantly affect cryptocurrency volatility and price behavior [1-3].

One of the central findings of the study was that the legal status of cryptocurrency constitutes a fundamental dimension in understanding the effect of fake news and signals on the market. The experts emphasized that cryptocurrency regulation differs across countries and that, in Iran, the legal status of cryptocurrencies has been subject to ambiguity, change, and partial institutional recognition. Mining may be recognized under specific licensing conditions, while the use of cryptocurrencies as payment instruments may remain restricted or prohibited. This regulatory complexity creates an environment in which market participants become highly sensitive to official announcements, rumors, regulatory interpretations, and news related to government or Central Bank decisions. When the legal environment is unclear, even weak or unverified signals may generate strong market reactions. This finding aligns with research suggesting that cryptocurrency markets are particularly responsive to regulatory events and policy-related news because such information affects perceptions of legitimacy, accessibility, and future risk [4, 5]. Therefore, the legal status of cryptocurrency should not be viewed as a background condition only; rather, it functions as an active interpretive framework through which investors evaluate fake news and market signals.

The findings also revealed that several factors affect cryptocurrency management in the context of fake news and signals, including government decisions, Central Bank policies, international sanctions, global cryptocurrency price fluctuations, blockchain-related developments, and the role of social networks and influencers. These factors operate simultaneously and may reinforce one another. For instance, a sudden regulatory decision may trigger market uncertainty; this uncertainty may then be amplified by social media discussions, influencer interpretations, and speculative news content. Similarly, news about global price movements in Bitcoin or Ethereum may be reinterpreted in the domestic market through the lens of sanctions, inflation, currency depreciation, or capital preservation. This result is consistent with the literature on spillovers between cryptocurrencies and broader financial markets, which indicates that crypto assets are increasingly interconnected with global financial conditions, investor sentiment, and macroeconomic uncertainty [5, 14, 15]. The finding also supports the argument that cryptocurrency markets are multi-causal systems in which price fluctuations are produced by the interaction of financial, institutional, technological, and behavioral forces.

Another major finding was that news has a direct and immediate effect on the cryptocurrency market. The experts indicated that the Iranian cryptocurrency market reacts rapidly to domestic and international news, including announcements about sanctions, changes in the value of the rial, inflation, blockchain technology, exchange security, and global market trends. This result is highly consistent with prior studies demonstrating that cryptocurrency markets are more sensitive to news sentiment than many traditional financial markets. Rognone et al. showed that news sentiment has a meaningful role in explaining cryptocurrency market movements and differs from its role in foreign exchange markets [3]. Similarly, Bhatnagar et al. argued that news shocks can demystify

significant portions of crypto market volatility, while Ajeesh et al. highlighted that news can generate measurable volatility responses beyond mere market hype [1, 2]. The present findings therefore reinforce the view that, in cryptocurrency markets, news is not simply an external source of information; it is part of the market mechanism itself, because it shapes expectations, emotions, and trading behavior.

The study further found that fake news affecting cryptocurrencies can be divided into misinformation and disinformation. Misinformation refers to unintentionally incorrect information that may result from misunderstanding, incomplete data, or inaccurate interpretation, whereas disinformation refers to deliberately distorted information disseminated with the intention of manipulating market behavior. The experts emphasized that both types can influence the market, but disinformation tends to have more destructive, longer-lasting, and explicit effects. This distinction is important because it clarifies that not all false information operates in the same way. Misinformation may create temporary confusion and short-term volatility, while disinformation may deliberately produce panic, artificial excitement, manipulation, and distrust. This interpretation is consistent with the broader literature on fake news, which emphasizes the emotional and behavioral economy of misinformation and disinformation. Bakir and McStay argued that fake news often operates through emotional activation, especially fear, anger, anxiety, and urgency [9]. In cryptocurrency markets, such emotional activation may be translated quickly into buying, selling, withdrawal from domestic platforms, or participation in informal markets.

The identification of price fluctuations, reduced trust, growth of informal markets, and intensified instability as major consequences of fake news is also supported by previous studies on investor sentiment and behavioral finance. Cryptocurrency investors often operate under uncertainty and may rely heavily on collective sentiment, online narratives, and perceived signals. Chen and Hafner showed that sentiment can contribute to bubble-like behavior in cryptocurrency markets, indicating that investor beliefs and emotional responses can push prices away from stable valuation patterns [6]. AlNemer et al. also demonstrated a time-varying relationship between investor sentiment and the cryptocurrency market, suggesting that the effect of sentiment changes across periods and market conditions [7]. In the same direction, Bogdan et al. found that investor sentiment and liquidity are linked to herd behavior in the cryptocurrency market [8]. The present findings extend this literature by showing that fake news may operate as a trigger for sentiment-based herding, particularly when investors interpret false signals as evidence of future regulatory, technological, or market changes.

A particularly important contribution of this study is the emphasis on signals embedded in fake news. The findings showed that fake news is not always transmitted through direct false claims; it may also be communicated through hidden signals, coded language, indirect references, repeated messages, unreliable sources, and contradictions. These signals may be explicit, such as messages designed to create fear and anxiety, or hidden, such as narratives that gradually weaken public trust or shape public opinion. This finding is important because it shifts attention from fake news as content to fake news as a signaling mechanism. In financial markets, investors often interpret signals as indicators of future risk or opportunity, even when those signals are weak, ambiguous, or unverified. Farzulla's discussion of sentiment regimes and adverse selection in cryptocurrency markets supports this view by showing that extreme sentiment conditions can affect the informational structure of crypto trading environments [11]. Likewise, studies on irrational behavior in cryptocurrency and emerging markets suggest that investors may overreact to cues that confirm expectations, fears, or speculative hopes [10, 12]. Therefore, weak signals embedded in fake news may influence the market precisely because they operate within a psychological environment already characterized by uncertainty and emotional reactivity.

The results also showed that social networks and influencers play an important role in shaping fake news signals and amplifying their effects. This finding is consistent with the behavioral nature of cryptocurrency markets, where many investors obtain market information from online communities, social media channels, and nontraditional sources rather than formal financial disclosures. Influencer commentary can create rapid shifts in attention, while repeated messages can strengthen the perceived credibility of unverified claims. This is aligned with the evidence that investor sentiment, behavioral bias, and social imitation can influence cryptocurrency investment decisions [8, 12]. The present study suggests that the influence of social media becomes more problematic when it is combined with regulatory uncertainty and low media literacy, because investors may lack reliable criteria for distinguishing valid information from manipulative or misleading signals.

Another important result was the recognition that the effects of fake news and signals may extend beyond individual investment decisions to broader market stability. The experts noted that repeated fake news can reduce public trust, intensify instability, and contribute to the growth of informal markets. This finding is consistent with studies that show cryptocurrency markets are increasingly connected to broader financial systems and that sentiment shocks can spill over across markets and assets [5, 14]. It is also compatible with the finding that global uncertainty and sentiment factors can intensify cryptocurrency market crashes and instability [15]. In contexts such as Iran, where sanctions, inflation, exchange-rate concerns, and regulatory restrictions already affect market behavior, fake news may intensify pre-existing vulnerabilities. Therefore, fake news should be considered not only a media problem but also a market governance and financial stability issue.

The final dimension of the model concerned strategies for managing fake news, signals, and the cryptocurrency market. The experts emphasized improving media literacy, using advanced technologies, ensuring information transparency, establishing a transparent legal and regulatory framework, applying smart supervision, strengthening cooperation between governmental institutions and the private sector, using advanced data analytics and machine learning, developing crisis management plans, and supporting domestic exchanges. These strategies are consistent with the literature indicating that sentiment analysis, computational tools, and predictive approaches can assist in detecting market patterns and interpreting information-driven price movements [6, 17]. At the same time, the findings suggest that technological tools alone are insufficient. A comprehensive approach is required because fake news operates across media systems, investor psychology, legal uncertainty, and market infrastructure. Therefore, the model designed in this study supports a multidimensional governance perspective in which regulation, communication, education, and technology must be coordinated.

The study's findings also have implications for understanding stablecoins, liquidity, and market response to fake news. Although stablecoins were not a central category in the Delphi results, the broader findings suggest that fake news can influence how investors move capital within the crypto ecosystem. In periods of panic, investors may shift toward stablecoins or withdraw from volatile assets, while positive fake signals may encourage rapid re-entry into riskier cryptocurrencies. Jones et al. conceptualized stablecoins as a form of dry powder in cryptocurrency markets, showing their role in risk management and market liquidity [16]. Therefore, the impact of fake news may be reflected not only in price volatility but also in liquidity flows, risk positioning, and the movement of capital between volatile crypto assets and more stable instruments. This provides an additional explanation for how fake news signals may produce market-wide effects.

Overall, the findings of the present study are consistent with previous research showing that cryptocurrency markets are highly sensitive to news, sentiment, investor behavior, and uncertainty. However, this study contributes to the literature by organizing these elements into a conceptual model centered on fake news signals.

While earlier studies have primarily examined news sentiment, investor sentiment, volatility, spillover, or irrational behavior separately, the present model integrates these dimensions by showing how fake news signals may operate through legal ambiguity, market management factors, media channels, investor interpretation, and regulatory response. This integrated perspective is particularly useful for contexts in which cryptocurrency regulation is evolving and where investors may be highly sensitive to news about government policy, sanctions, domestic exchanges, and global market developments. Accordingly, the model provides a conceptual foundation for future empirical research and for designing practical interventions to reduce the harmful effects of fake news on cryptocurrency market stability.

One of the main limitations of this study was its reliance on the views of a small expert panel consisting of five specialists in media and business. Although the Delphi method is suitable for developing conceptual models through expert judgment, the limited number of participants may restrict the diversity of perspectives included in the final model. In addition, the study was qualitative in nature and did not statistically test the strength, direction, or causal relationships among the identified concepts. Another limitation concerns the contextual focus of the study on the Iranian cryptocurrency market, which may limit the direct generalizability of the findings to countries with different regulatory structures, market maturity, financial infrastructures, and levels of public trust. Finally, because cryptocurrency markets and fake news mechanisms change rapidly, some signals, technologies, and regulatory challenges may evolve over time.

Future research should empirically test the conceptual model developed in this study using quantitative, mixed-methods, or computational research designs. Researchers can examine the relationship between fake news exposure, investor sentiment, trust in exchanges, perceived regulatory uncertainty, and trading behavior among cryptocurrency investors. Future studies may also use social media data, natural language processing, machine learning, and sentiment analysis to identify hidden signals, coded language, and repeated narratives in cryptocurrency-related fake news. Comparative studies across different countries would also be valuable, particularly to examine how regulatory clarity, media literacy, and institutional trust moderate the effect of fake news on cryptocurrency market fluctuations. In addition, longitudinal research can investigate whether the influence of fake news differs across normal market periods, crisis periods, sanction-related events, and major global cryptocurrency price shocks.

From a practical perspective, the findings suggest that policymakers, regulators, media institutions, cryptocurrency exchanges, and investors should treat fake news management as a core component of cryptocurrency market governance. Regulatory institutions should provide transparent, timely, and consistent information about cryptocurrency rules and policy decisions in order to reduce ambiguity and prevent rumor-based reactions. Cryptocurrency exchanges should establish monitoring systems for suspicious information flows and cooperate with credible media outlets to correct false claims rapidly. Media literacy programs should be designed for investors and the general public, with emphasis on identifying unreliable sources, emotional manipulation, coded language, repeated misleading claims, and contradictory information. In addition, domestic exchanges and regulatory bodies should develop crisis response protocols so that, when fake news spreads, accurate information can be released quickly and coordinated action can prevent panic, market manipulation, and unnecessary capital withdrawal.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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