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Ranking the Challenges of Cryptocurrency Development in Iran

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Mohammad Ghaffary Fard[1*]
Ahlul Bayt international university
Corresponding Author
E-mail: ghaffary2@yahoo.com

Seyed Ali Akbar Sadat[2]
Ahlul Bayt international university
E-mail: sadat1999.1378@gmail.com

Mohsen Jafarian[3]
Faculty of Business and Management, UCSI University, Kuala Lumpur
E-mail: mohsenjafarian@gmail.com

Abstract

The emergence of cryptocurrencies in recent years presents a novel phenomenon in digital economics, offering both opportunities and challenges for nations. The main aim of this study was to examine the challenges of cryptocurrency development, with a specific focus on the contents of the Popular Government's Transformation Document. This research is applied in purpose and descriptive in nature, utilizing a field-based questionnaire for data collection. In the initial phase, challenges were identified through conducting library research, specifically leveraging the Transformation Document. Subsequently, these challenges were evaluated by experts using the Analytic Hierarchy Process (AHP), and ultimately ranked with the aid of Expert Choice software. The findings, validated by a strong inconsistency rate of 0.06, revealed that the weakness in macro-management of cryptocurrencies holds the first rank among the main challenges, with a coefficient of 0.429. Conversely, the increasing share of hidden mining in the country's cryptocurrency production market ranks last, with a coefficient of 0.114. Given these results, policymakers must prioritize the immediate establishment of a unified and powerful command structure, coupled with a clear clarification of responsibilities. Simultaneously, core strategies must integrate the protection of small capital and safeguarding public trust in the financial system to effectively mitigate social risks and ensure financial stability.

Keywords

Cryptocurrency, Ranking, Popular government's transformation document, Analytical hierarchy process.

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1. Introduction

Money is considered as one of the fundamental pillars of human life, with a history spanning thousands of years, utilized in various forms throughout different eras. With the advancement of new technologies and the expansion of the digital realm, a new type of asset called "cryptocurrency" or "digital currency" has emerged, which is increasingly growing. Cryptocurrencies are a form of digital asset that operates based on Blockchain technology. This technology is a decentralized and distributed platform that, ensures the security of transactions and controls the generation of new monetary units by leveraging advanced cryptographic algorithms (Varmaziari et al., 2024). Among the most important features of cryptocurrencies are their unforgeability, independence from geographical borders, transparency, high speed, and low transaction costs (Saeidi et al., 2024).

The first known cryptocurrency is Bitcoin, introduced in 2008 by an anonymous individual or group using the pseudonym "Satoshi Nakamoto." As the first digital currency, Bitcoin paved the way for the development of thousands of other cryptocurrencies, which are known as "Altcoins." The term Altcoin is derived from the combination of "Alternative" and "Coin," meaning an alternative coin or cryptocurrency (Hashem Nejad et al., 2024).

Cryptocurrencies, with their unique nature and characteristics, are distinguished from other forms of digital money and traditional fiat currencies, and possess specific strengths and weaknesses. Now, more than a decade after the emergence of the first digital currency, we witnessed that the number of these cryptocurrencies has exceeded ten thousand, indicating their increasing popularity and value in international markets. Consequently, familiarity with the concept of cryptocurrencies seems widespread today. Therefore, it is essential for governments, to optimally leverage the benefits of this nascent phenomenon by formulating and implementing comprehensive policies and Laws while precisely identifying its shortcomings to prevent potential damages to the national economy (Zare, 2022) .

Despite conducting extensive research on cryptocurrency challenges—such as legal ambiguities, security risks (e.g., money laundering, price volatility), high energy consumption, and opportunities like sanction circumvention—Iran's policymaking system lacks a prioritized analytical framework aligned with its unique governance and economic conditions, including sanctions and the need for economic stability. The People's Government Transformation Document, the guiding framework of Iran's 13th administration, prioritizes justice, employment, economic stability, and anti-corruption.

In fulfillment of the promise made at the beginning of the formation of the 13th government and in line with the realization of the goals set forth in the Constitution, the Vision Document of the Islamic Republic of Iran in the Horizon 1404, the general policies of the system and meeting the needs of the people, resolving the fundamental issues, the "People's Government Transformation Document" became the government's program and policy. It became the basis for the action of the executive branch,ministers, and executive agencies. The People's Government Transformation Document was developed in accordance with the current situation, achieving the desired situation. It was developed in line with the general policies of the system in the form of priority basic issues with the cooperation of ministers, vice presidents, and officials of executive

agencies. Moreover, the collective efforts of experts from the field and universities, think tanks, and research institutes were essential in guidinge and creatinge coherence in the directions of the programs of the various executive departments of the government. The responsibility for implementing the provisions of the Transformation Document in relevant cases lies with the ministers and the highest level officials in the relevant agency . They are obliged to be accountable (Iran, 2022) .

This study aimed at identifyinge the cryptocurrency challenges which most threaten these goals. The existing studies described these challenges but lack quantitative rankings based on the Document's criteria. This study used the Analytical Hierarchy Process (AHP) and Expert Choice software to rank and weight these challenges, aiming to guide the effective policy prioritization.

Therefore, the present article examined the challenges hindering the development of cryptocurrencies based on the Popular Government's Transformation Document. In this study, the Analytical Hierarchy Process (AHP) method has been used for the decomposition, analysis, and comparison of challenges. Finally, these challenges have been ranked and weighted by utilizing Expert Choice software. The central question of this research study is as follows:

Q. Which of the challenges in cryptocurrency development are of greater importance and are identified as the most significant challenges, from the perspective of experts and specialists in this field?

2. Theoretical Foundations

With the expansion of new technologies in the field of economy and financial services, the concept of cryptocurrencies, as one of the new pillars of the digital economy, has found a special place in economic studies and policymaking. The current research study aimed to prioritize and rank the challenges of cryptocurrency development based on the "Popular Government Transformation Document". This document identifies four main challenges for cryptocurrency development, each of which has been defined and examined in the theoretical foundations of this study.

2.1 Cryptocurrency

Cryptocurrencies, often known as digital currencies, are a collection of digital assets that utilize cryptography to secure their financial transactions. These currencies have created a new online payment system that offers innovative features and capabilities. Unlike traditional financial systems, these systems are not connected to a centralized financial intermediary or institution, providing peer-to-peer online payment capabilities(Li & Huang, 2019). These distributed systems do not require the central, supervisory, and physical control present in conventional financial systems (Corbet et al., 2019). A digital currency or cryptocurrency is a type of money that facilitates exchanges between users using cryptographic algorithms. This cryptography ensures the security of digital money and prevents its fraud and counterfeiting (like physical banknotes such as dollar). Many digital currencies are based on a decentralized network built on Blockchain technology (a

distributed ledger managed by a virtual network). Unlike fiat currencies, which are printed by the government, digital currencies do not have private ownership. This feature makes them immune to manipulation and intervention by entities and organizations. Digital currencies are essentially encrypted currencies designed with encrypted protocols, aiming to reduce fraud and prevent currency counterfeiting and scams. The most important feature of digital currency is its decentralized nature, meaning no specific entity or organization supervises and controls it (Zulhuda, 2017). In 2008 an individual under the pseudonym Satoshi Nakamoto introduced a distributed digital financial asset called Bitcoin for the first time to the world. In October 2009, the initial price of each Bitcoin was set at $0.000764 (Ammous, 2018). Bitcoin, as the first cryptocurrency, is currently recognized as the leading and most successful decentralized digital money(Babazadeh et al., 2021).

2.2 Popular Government Transformation Document

The Popular Government Transformation Document is a codified plan of the 13th government of the Islamic Republic of Iran for achieving the desired state in the country. This document has been compiled in line with the objectives of the Constitution, the 2025 Vision Document, and the general policies of the system, leveraging the statements of the Supreme Leader of the Islamic Revolution. The main goals of this document include justice-orientation and anti-corruption, knowledge and scientific resurgence, public participation with youth leadership, and family-centricity. The main axes of this document are structured into nine chapters including: production and employment, investment and financial system, public finance system, infrastructure, social affairs and health, education, culture and art, administrative and legal system, foreign policy, and security. This document serves as the basis for the executive branches, ministers, and executive agencies,.The responsibility for implementing its provisions lies with the highest authority in each agency (Iran, 2022) .

2.3 Challenges of Cryptocurrency Development in the Popular Government Transformation Document

2.3.1 Weakness in Macro-Management of Cryptocurrencies

The absence of clear and comprehensive regulations for cryptocurrencies at the macro level is considered as one of their main management problems. This has led to different countries adopting varying approaches, from complete prohibition to limited acceptance. Interestingly, the global perspective on this digital phenomenon is diverse; some countries consider cryptocurrencies as a serious threat and have declared their use illegal, while other countries deem them beneficial and have imposed tax laws on them. Most developed countries have moved towards drafting laws in this area with a constructive (rather than prohibitive) approach. Another important challenge arising from cryptocurrencies is their multifaceted nature, which causes ambiguity in understanding their essence. The multifaceted nature of cryptocurrencies leads to their connection with most economic and non-economic organizations in the country. This thematic dependency, in the absence of a centralized body, creates a serious obstacle to the management and regulation of cryptocurrencies (Rostami et al., 2024).

2.3.2 High Investment Risk for the Public in the Cryptocurrency Market

The importance of economic security in the 21st century has taken on a broader and more complex meaning. In the previous two centuries, military and political security held the most importance, but in the current century, economic security has taken precedence. Today, special importance is given to the economic security index in evaluating the development level of countries (Ahmadpour, 2024).

Bitcoin is considered a financial and electronic innovation that has expanded and gained popularity in the past five years. Despite its boom, Bitcoin still faces challenges such as extremely high volatility in its value, non-recognition by the Central Bank, absence of codified laws regarding Bitcoin and legal silence, security issues, threats to the real economy, and impacts on the economy and traditional money supply, which pose serious concerns for investors in this field (Bagban, 2019).

2.3.3 Increasing the Share of Hidden Mining in the Total Cryptocurrency Production Market in the Country

Cryptocurrency mining in Iran has become a political issue linked to the stability of the country's electricity grid. Also, the biggest risk in this area has been illegal mining and legal action against it. So far, most discoveries in Bitcoin mining have involved miners operating without a license. From the beginning of the crackdown on illegal miners between 2019 and 2021, a total of 221,163 illegal cryptocurrency mining devices were identified and seized, with a power consumption equivalent to 621 megawatts. However, not all these devices were simultaneously active in the electricity grid. The country's most explicit action in cryptocurrency mining policy was the imposition of a mining ban in the summer of 2021. However, this policy is practically considered as a failure because the absolute monthly terahash of Iran in the Bitcoin network only decreased from 6.94 million terahashes on May 1, 2021, to 3.75 million terahashes on August 1, 2021. In other words, half of the cryptocurrency miners were secretly engaged in mining despite the government's order. The power consumption of these miners was, at worst, less than 800 megawatt-hours, while the country's electricity grid deficit was over 10,000 megawatt-hours. At worst, less than 10% of the country's electricity deficit can be attributed to cryptocurrency mining (Rajabi & Saberi, 2022).

2.3.4 Lost Opportunities in Utilizing the Strategic Capacities of Cryptocurrencies in Domestic and International Payments and Exchanges

In recent years, international sanctions have led to restrictions on financial and banking exchanges in the international financial system. This has resulted in the non-repatriation of revenues into the country and budget provision, which is one of the country's most important priorities in international trade. Using cryptocurrencies can serve as a suitable platform to bypass financial and banking sanctions. In a research study conducted by Babazadeh et al., (2021), six groups of key indicators were identified and prioritized, which include developing laws and regulations related to cryptocurrencies, creating the necessary software and hardware platforms, designing and offering national cryptocurrencies, promoting and expanding the use of cryptocurrencies, and

supporting the cryptocurrency mining processes. These can serve as an efficient guide for the Iranian government and international economic actors affected by sanctions, in order to counter financial and banking restrictions (Babazadeh et al., 2021).

3. Background of the Research

3.1 Governance and Regulatory Frameworks

The absence of consistent and comprehensive legal and regulatory frameworks represents a significant barrier to cryptocurrency adoption globally and domestically. Internationally, inconsistent tax policies across jurisdictions create confusion and hinder compliance (Adhikari et al., 2025). Similarly, the rapid pace of technological innovations in cryptocurrencies outpaces regulatory responses, enabling illicit activities such as money laundering and terrorist financing due to inconsistent global anti-money laundering (AML) regulations(He et al., 2024; Oye et al., 2025). Domestically, legal ambiguities complicate efforts to address crimes like fraud and forgery in cryptocurrency transactions (Sadeghi et al., 2024); (Shamsi et al., 2024). From a jurisprudential perspective, some scholars argue that cryptocurrency transactions involve *gharar* (deception and uncertainty) (HabibianNaqibi et al., 2020), while others asserted their permissibility within religious frameworks (Taj Langerudi & Dehdar, 2024). Both international and domestic studies emphasized the urgent need for having robust regulatory frameworks. Domestically, a shift from prohibitive policies to regulated management is recommended to align with national policy objectives(Aref et al., 2024) ;(babak et al., 2024); (Ghaemi Asl et al., 2024).

The integration of Internet of Things (IoT) systems within food supply networks encounters substantial obstacles that limit its capacity to enhance operational transparency, productivity, and ecological balance. This research delineated and examined these impediments through conducting an in-depth investigation of Kaleh Company, a prominent food producer in Iran, applying the DEMATEL analytical framework. The results indicated that effective IoT deployment necessitates integrated approaches that concurrently tackle diverse areas, such as establishing universal protocols, creating economic incentives, and enhancing employee competencies (Fathi et al., 2025).

The present study investigated the obstacles impacting the implementation of Artificial Intelligence within the desalination supply chain. This sector is recognized as a fundamental solution for addressing global water scarcity. Based on a systematic literature review and consultations with experts, sixteen primary barriers were identified and subsequently analyzed using the MICMAC method. The findings from this analysis revealed four factors that function as critical barriers and primary bottlenecks to the successful deployment of AI. These factors include insufficient funding and capital, absence of standardization and system interoperability, a deficit of specialized skills and qualified personnel, and concerns regarding data security and privacy (Sadeghi et al., 2025)

2.3 Energy, Mining, and Infrastructure Challenges

The energy-intensive nature of cryptocurrency mining, particularly through proof-of-work (PoW) consensus protocols, poses significant environmental and infrastructural

challenges. Globally, the high energy consumption of PoW raises environmental concerns (Stoll et al., 2019). Proposed solutions, such as proof-of-stake (PoS), aim to reduce energy use, though scalability and adoption debates persist (Zimba et al., 2025). Domestically, scalability and technical complexity are identified as major barriers to Blockchain infrastructure development (Mohammadi Fateh & Salarnejad, 2022). Innovative solutions, such as integrating cryptocurrency mining with power plants to attract private investment in the electricity sector, have been proposed to address domestic energy challenges (Larijani & Taheri, 2022). Both global and domestic research underscored the need for technological advancements and infrastructure investments to ensure sustainable cryptocurrency development.

3.3 Financial Risks and Economic Stability

Cryptocurrencies introduce significant financial risks that undermine the investor's confidence and economic stability. Internationally, high-profile fraud cases, such as the FTX[1] scandal, highlight the tangible threat of fraud to investors (Kerr et al., 2023), with negative experiences further eroding trust (Lourie et al., 2023). Additionally, the substitution of cryptocurrencies for bank deposits could destabilize banking systems and heighten the risks of financial crisis (Chen & Phelan, 2025);(Zheng, 2025). Domestically, the anonymity and decentralization of cryptocurrencies exacerbate economic crimes, including laundering the money and expanding the shadow economy (Kashian & Parnian, 2021);(Rostami et al., 2024). Despite these risks, opportunities exist, particularly domestically, where cryptocurrencies could serve as a strategic tool to circumvent banking and financial sanctions (Babazadeh et al., 2021);(Zare, 2022). Both global and domestic studies advocate for balanced regulatory measures to mitigate the risks while capitalizing on economic opportunities.

The Research Gap and the Study's Contribution

While the reviewed studies provided a comprehensive analysis of cryptocurrency challenges and opportunities, a critical gap persists: none explicitly aligned their findings with the "People's Government Transformation Document", a pivotal national policy framework guiding objectives such as justice, employment, economic stability, and anti-corruption. This study addresses this gap by systematically evaluating and prioritizing cryptocurrency challenges using the Expert Choice software. By integrating global and domestic perspectives thematically, this research offers precise and, evidence-based recommendations to foster cryptocurrency development within a robust governance framework, ensuring alignment with national policy goals.

4. Methodology

4.1 Design

The present research aimed to identify and prioritize the main challenges of cryptocurrencies, by identifying and ranking the challenges of cryptocurrency

1. Futures Exchange

development in Iran. The study is applied in purpose and descriptive-empirical in nature. It used a survey-based method with a questionnaire. In the initial phase of the study, the decision-making hierarchy was established using library studies and explicit content analysis. In this academic research, the Popular Government Transformation Document Sanade Tahavvol Dolat Mardomi has been centrally chosen as the core analytical framework, being a macro-strategic document grounded in three essential pillars of achieving developmental justice through equitable distribution of economic opportunities, structural empowerment of low-income strata within the Resistance Economy Eghtesad Moghavemati framework, and the systematic application of modern technologies for enhancing transparency and developing the financial system. This framework's selection is fundamentally driven by three reasons. First, the document's explicit emphasis in Section 4-2 on the mandatory organization of new financial institutions under the Resistance Economy; second, the stipulation in Section 5-1 to establish criteria for prioritizing obstacles to technology development based on justice-oriented and popular development indicators; and third, its provision of an indigenous framework aligned with Iran's upstream development documents, which facilitates converting abstract challenges in cryptocurrency development into practical and actionable policy solutions, thereby ensuring both the research's theoretical coherence and the enforceability and practical application of its findings within the national policy-making system (Iran, 2022). The "Transformation Document of the People's Government", focusing on its specialized sections related to cryptocurrencies, has clearly outlined the key challenges and their sub-challenges, shifting the governance approach from a passive state to an active, opportunity-oriented one with risk management. This analysis ultimately led to the identification of four main criteria and nine sub-criteria, which directly reflect the objectives and threats stated in the document. The primary data collection tool was a pairwise comparison questionnaire, systematically designed based on the four main criteria and nine sub-criteria extracted from the Transformation Document. This questionnaire contained twelve sets of pairwise comparisons where, in each section, one challenge was compared against another. The preference of one challenge over another was measured using a relative numerical scale relative to the ultimate goal.

4.2 Sampling and Expert Validation

In the data collection stage, to ensure the scientific and specialized competence of the sample, a purposive non-random sampling method was employed, allowing only specialists with profound theoretical knowledge and sufficient practical experience in the research domain to enter the analysis process. This Expert Panel comprised 13 outstanding specialists, all of whom possessed a minimum of five years of professional experience in related fields. Academically, the group included 3 individuals holding a Ph.D. degree (in Economics and Management disciplines) and 10 individuals with a Master's degree (in Information Technology Management, Financial Engineering, and Business Management). The specialized composition of the panel was meticulously balanced, consisting of 3 senior experts from the Central Bank of the Islamic Republic of Iran (as the principal regulatory authority), 7 managers and executive activists from the

digital currency industry and cryptocurrency exchanges, and 3 university faculty members (focused on macro-economic analysis). This specialized structure not only furnishes the highest level of knowledge and credibility for the qualitative judgments within the Analytic Hierarchy Process (AHP) model, but also guarantees the direct alignment of the results with Iran's executive realities and regulatory environment, thereby significantly boosting the enforceability of the research findings.

4.3 AHP Procedure

The data obtained from the expert survey were analyzed using the Analytical Hierarchy Process method. This method, considered one of the advanced approaches in decision science, converts the qualitative and subjective judgments of experts into quantifiable and measurable values and is used to determine relative weights and prioritize complex hierarchical structures. All calculations and analyses were performed using the specialized Expert Choice software. This research framework, relying on the robustness of the overarching document and the methodological precision of the Analytical Hierarchy Process, yields valid and actionable outputs for the country's policy-making system. By providing targeted quantitative weighting of the challenges, it addresses the existing gap in the research literature of this field. The challenges facing cryptocurrency development, which include four main criteria and nine sub-criteria, are presented in the table below.

Table 1.
The Main Challenges and Factors

Row	Main challenges	Symbol	Row	Factors	Symbol
1	Weakness in macro-level management of cryptocurrencies	A	1	Inefficient governance structure in actively confronting cryptocurrencies; distributed ledger technology offices	a1
			2	Weakness in monitoring, controlling, supervising,, and self- regulating the market for producing, storing, and exchanging cryptocurrencies	a2
2	High risk to people's investment in the cryptocurrency market	B	1	Motivation and excitement of people to escape inflation and purchase non-Rial assets with high liquidity	b1
			2	Inadequate regulation in the area of asset management policies and custody of cryptocurrencies	b2
			3	Weakness of policies supporting domestic production and export within the cryptocurrency ecosystem	b3
3	Rising share of hidden/mined extraction in the total cryptocurrency production market in the country	C	1	Loss of an intelligent monitoring and control structure for electricity consumption patterns	c1
			2	Inappropriate pricing of energy carriers and discrimination in dealing with the cryptocurrency mining industry compared to other industries	c2
4	Loss of opportunities in leveraging the strategic capacities of cryptocurrencies in domestic and international payment and exchange domains	D	1	Liberation and ambiguity/uncertainty of cryptocurrency exchange and payment infrastructures domestically	d1
			2	Excessive imports and capital outflow, and non-activation of exports	d2

(Source: The Researcher's Findings)

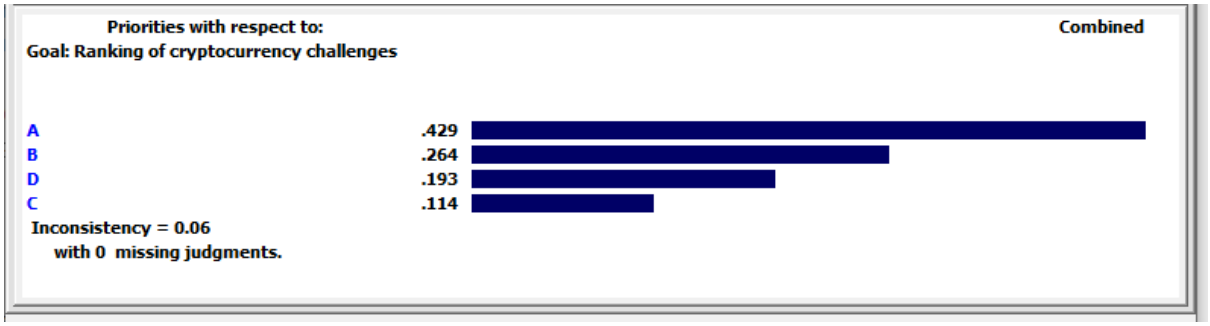
5. Data Analysis and Findings

The study included four primary criteria and nine subsidiary criteria. To weight these criteria, the Analytic Hierarchy Process (AHP) was employed. For this purpose, a questionnaire consisting of main and sub-criteria was distributed among 13 experts. The experts used a 1-9 Likert scale to determine the relative importance of the criteria. Finally, using the Expert Choice software, the weights of the main and sub-criteria were calculated and obtained.

5.1 The Main Challenges in Cryptocurrency Development

The results of AHP conducted using the Expert Choice software, based on input from 13 domain experts, provided a strategic ranking of challenges in the cryptocurrency sector. In addition to determining the weight and priority of each challenge, the methodological reliability of the analysis was confirmed by an inconsistency rate of 0.06—below the standard threshold of 0.1. This statistical indicator demonstrated that the pairwise comparisons made by the experts were logically consistent, allowing full confidence in the study's results. According to the findings, weakness in macro-level cryptocurrency management, with a weight of 0.429, ranked first. This clearly indicates that the primary threat in this domain lies not in the financial or infrastructural nature of cryptocurrencies, but in governance gaps and inefficient decision-making structures. This structural inefficiency directly contradicts the proactive and opportunity-driven management approach emphasized in the Transformation Document and is identified as the root cause of other challenges. In second place, with a weight of 0.264, was the high risk of public investment. This reflects the priority of safeguarding economic stability and public rights. From the experts' perspective, the unregulated influx of small-scale public capital into high-risk markets poses a serious socioeconomic threat that challenges public trust in the financial system. The third challenge, with a weight of 0.193, was the loss of strategic opportunities in utilizing international payment and exchange capacities. In the context of Iran's sanctions, this is regarded as a strategic opportunity cost, highlighting the failure to leverage cryptocurrencies to counteract sanctions and achieve the resistance economy goals outlined in the Transformation Document. Finally, the high energy consumption resulting from unauthorized mining, with a weight of 0.114, ranked fourth. Although this is a significant infrastructural issue, its technical nature and higher controllability through policy tools place it lower in resource allocation priority.

Figure 1.
Output of the Expert Choice Software for the Main Challenges



(Source: The Researcher's Findings)

Table 2.
Ranking of the Main Challenges in Cryptocurrency Development

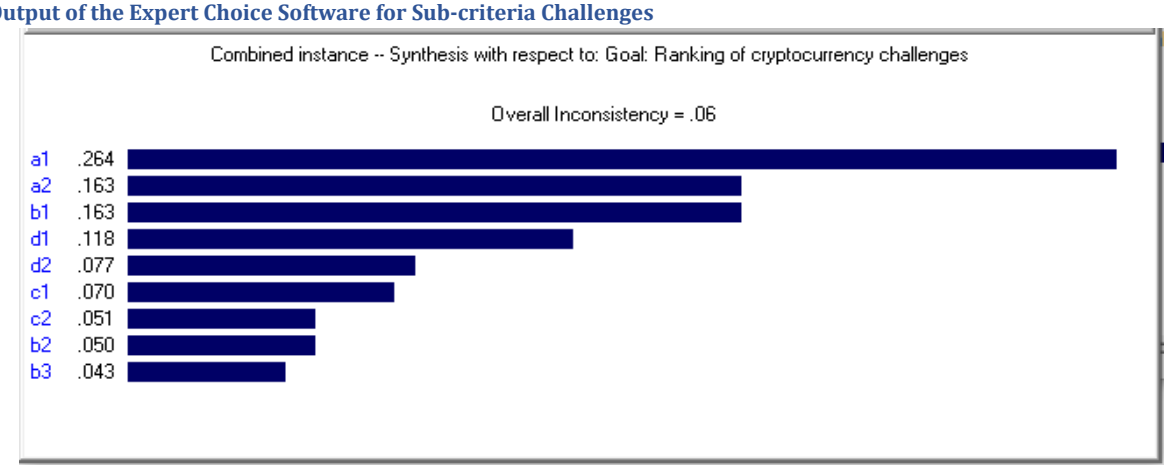
Row	Main challenges	Symbol	Coefficient
1	Weakness in macro-level management of cryptocurrencies	A	0.429
2	High risk to people's investment in the cryptocurrency market	B	0.264
3	Loss of opportunities in leveraging the strategic capacities of cryptocurrencies in the domestic and international payment and exchange domains	D	0.193
4	Rising share of hidden/mined extraction in the total cryptocurrency production markets in the country	C	0.114

(Source: The Researcher's Findings)

5.1 The Sub-criteria for Cryptocurrency Development Challenges

Analysis of the sub-criteria weights, conducted using AHP and Expert Choice software, provided an operational and precise prioritization of challenges in the cryptocurrency domain. This analysis is methodologically robust in two key aspects: first, its inconsistency rate of 0.06 falls below the standard threshold of 0.1; second, the primary criterion for prioritization has been the degree of alignment with the overarching objectives of the Transformation Document of the People's Government. In this ranking, "Inefficient governance structure in actively engaging with cryptocurrencies" held the top position with a weight of 0.264. This result clearly indicated that the core issue is the absence of a cohesive and proactive command structure, which both impedes effective governance and limits the utilization of existing opportunities. Following this, "Deficiencies in market monitoring, control, and supervision" and "Public's emotional motivation to escape inflation and invest in high-risk assets" both shared a weight of 0.163. The concentration of weights in the higher ranks of this analysis demonstrated that the government's immediate priorities should focus on two main areas of reforming the governance structure and managing socio-economic risks. In contrast, technical challenges such as "Lack of an intelligent electricity consumption monitoring framework" (ranked sixth with a weight of 0.070) and "Inappropriate energy pricing" (ranked seventh with a weight of 0.051) occupied lower positions. This weight distribution clearly indicated that, from the experts' perspective, governance and socio-economic issues carry significantly greater importance and urgency compared to purely infrastructural challenges.

Figure 2.
Output of the Expert Choice Software for Sub-criteria Challenges



(Source: The Researcher's Findings)

Table 3.

Ranking of the Sub-criteria/Challenges in Cryptocurrency Development

Row	Sub-indicators	Symbol	Coefficient
1	Inefficient governance structure in actively confronting cryptocurrencies; distributed ledger technology offices	a1	0.264
2	Weakness in monitoring, controlling, supervising,, and self- regulating the market for producing, storing, and exchanging cryptocurrencies	a2	0.163
3	Motivation and excitement of people to escape inflation and purchase non-Rial assets with high liquidity	b1	0.163
4	Liberation and ambiguity/uncertainty of cryptocurrency exchange and payment infrastructures domestically	d1	0.118
5	Excessive imports and capital outflow, and non-activation of exports	d2	0.077
6	Loss of an intelligent monitoring and control structure for electricity consumption patterns	c1	0.07
7	Inappropriate pricing of energy carriers and discrimination in dealing with the cryptocurrency mining industry compared to other industries	c2	0.051
8	Inadequate regulation in the area of asset management policies and custody of cryptocurrencies	b2	0.05
9	Weakness of policies supporting domestic production and export within the cryptocurrency ecosystem	b3	0.043

(Source: The Researcher's Findings)

Table 4.

Final Weights of the Challenges Cryptocurrency Development

Ranking of Cryptocurrency Development Challenges Based on the Government of the People Transformation Document						
Row	**Main challenges**	**Coefficient**	**Row**	**Factors**	**Coefficient**	**rank**
1	Weakness in macro-level management of cryptocurrencies	0.429	1	Inefficient governance structure in actively confronting cryptocurrencies; distributed ledger technology offices	0.264	First
			2	Weakness in monitoring, controlling, supervising,, and self-regulating the market for producing, storing, and exchanging cryptocurrencies	0.163	Second
2	High risk to people's investment in the cryptocurrency market	0.264	1	Motivation and excitement of people to escape inflation and purchase non-Rial assets with high liquidity	0.163	Third
			2	Inadequate regulation in the area of asset management policies and custody of cryptocurrencies	0.05	eighth
			3	Weakness of policies supporting domestic production and export within the cryptocurrency ecosystem	0.043	ninth
3	Rising share of hidden/mined extraction in the total cryptocurrency production market in the country	0.114	1	Loss of an intelligent monitoring and control structure for electricity consumption patterns	0.07	sixth
			2	Inappropriate pricing of energy carriers and discrimination in dealing with the cryptocurrency mining industry compared to other industries	0.051	seventh
4	Loss of opportunities in leveraging the strategic capacities of cryptocurrencies in the domestic and international payment and exchange domains	0.193	1	Liberation and ambiguity/uncertainty of cryptocurrency exchange and payment infrastructures domestically	0.118	Fourth
			2	Excessive imports and capital outflow, and non-activation of exports	0.077	fifth

(Source: The Researcher's Findings)

Sub-criteria Challenges	
MIN	**MAX**
0.043	0.264

Main Challenges	
MIN	**MAX**
0.114	0.429

(Source: The Researcher's Findings)

The final results AHP provided a decisive and well-founded roadmap for prioritizing policymaking in the cryptocurrency domain. The most critical challenge identified was the weakness in macro-level cryptocurrency management, with a significant weight of 0.429. This outcome indicated that the most fundamental threat in this field lies not in financial or technical issues, but in governance gaps and a passive decision-making structure. This inefficiency directly contradicted the proactive and opportunity-driven approach outlined in the Transformation Document of the People's Government. In contrast, the increase in hidden mining share, with a weight of 0.114, was identified as the least significant main challenge. Its technical nature and higher controllability have placed it at the bottom of the priority ranking. This prioritization is confirmed at the sub-factor level as well: the inefficient governance structure, with a weight of 0.264, is recognized as the most important sub-factor, emphasizing that without addressing this structural deficiency, any efforts to resolve other issues would prove futile. Conversely, weak policies supporting domestic production and exports, with a negligible weight of 0.043, was determined to be the least significant sub-factor. In summary, the final results clearly demonstrated that policymakers' urgent priority should focus on reforming the governance structure and managing socio-economic risks (stemming from public capital flight from inflation). This dual focus will enable both overcoming structural threats and effectively achieving the overarching objectives and international opportunities outlined in the Transformation Document of the People's Government

6. Discussion and Conclusion

The final results of AHP, validated by a strong and credible inconsistency rate of 0.06, provided a decisive roadmap and vital strategic insight for prioritizing policymaking in the cryptocurrency domain. While a broad consensus in the research literature globally (e.g., Adhikari et al., 2025) and domestically (Sadeghi et al., 2024) emphasized the existence of legal gaps, fraud risks, and technical challenges, the findings of the present study shifted the problem's center of gravity, revealing it at the institutional level. The decisive weight of 0.429 for weakness in macro-level cryptocurrency management and 0.264 for the sub-factor of inefficient governance structure indicated that the most fundamental obstacle is not technical in nature, but lies in the absence of a cohesive, active, and empowered command structure for exercising sovereignty. This outcome represented the core innovation of the research: the root of all operational risks (such as weak market monitoring with a weight of 0.163) is ultimately the direct consequence of the failure to implement the proactive and opportunity-driven approach to risk management outlined in theGovernment Transformation Document, highlighting a serious gap between the high-level goals of policymakers and their executive capabilities. Furthermore, the analysis of the final weights demonstrated that the policymaking priority must be focused on internal socio-economic risks; While global concerns (e.g.,Stoll et al., 2019) concentrated on environmental issues stemming from energy consumption, our results emphasized that the public's emotional motivation to escape inflation (with a final weight of 0.163) is of significantly higher policy urgency

than the technical and infrastructural challenges related to energy (such as the lack of a smart electricity consumption monitoring framework with a final weight of 0.070). This finding confirmed that the threat against economic stability and public trust (key objectives of the Transformation Document) is far more critical for policymakers than infrastructural concerns, making the management of inflationary expectations a key issue in the cryptocurrency domain. In final conclusion, this research asserted that cryptocurrency development is a strategic opportunity to elevate Iran's position in the digital economy and counter sanctions (see Babazadeh et al., 2021 ; Zare, 2022) however, the effective attainment of the overarching goals and international opportunities enshrined in the Transformation Document is conditional upon the swift implementation of institutional reforms at the macro level. Consequently, the policymakers' immediate priority must focus on remedying the structural governance deficit and managing socio-economic risks. This is because of the fact that any effort to implement minor or technical policies without addressing the structural crisis ranked first will only lead to the wastage of resources, the repetition of inefficiencies, and the definitive loss of strategic opportunities. Therefore, this article, furnished a decisive tool for guiding resources towards the correct priorities by providing aweighted and credible hierarchy based on the highest executive document of thecountry.

Comparison with International Priorities: In sanctioned economies like Russia, cryptocurrency policies prioritize institutional control to evade sanctions and bolster monetary sovereignty, focusing on macro-level governance over technical issues like energy efficiency in mining (Hudima et al., 2022). Similarly, emerging markets show that cryptocurrency adoption correlates positively with regulatory quality but negatively with corruption, highlighting the need for robust institutional reforms to address fiscal risks before technical integration (Copestake et al., 2023). The IMF notes that in such contexts, “robust domestic institutions are critical to mitigate crypto-induced fiscal risks”, as weak governance exacerbates economic instability under external pressures (Hacibedel & Perez-Saiz, 2023).In contrast, advanced economies like the EU and US leverage established institutions to prioritize financial stability and consumer protection over governance restructuring (Zetzsche et al., 2021). The EU’s Markets in Crypto-Assets Regulation (MiCA), effective in 2024, mandate licensing and transparency for crypto-asset providers to ensure market integrity and investor safeguards (Huang et al., 2024). In the US, 2025 policies focus on SEC/CFTC oversight for anti-money laundering compliance, addressing operational risks like fraud within a stable institutional framework (Ordekian et al., 2025). These contrasts show that political-economic contexts shape cryptocurrency policy, with sanctioned economies addressing institutional voids and advanced jurisdictions focusing on regulatory perimeters for operational threats(Copestake et al., 2023) ; (Zetzsche et al., 2021).

Research Limitations

1. **Small Sample Size (N=13):** Although this sample size is relatively common and accepted in specialized multi-criteria decision-making studies, the limited sample size

means that the findings reflect only the views of a small group of experts and lack generalizability to a larger population (Adewumi et al., 2023).

2. **Subjective Bias:** The AHP method is a theory of measurement based on the subjective judgments and pairwise comparisons of experts. Although AHP includes mechanisms for measuring judgment inconsistency, the reliance on a scale of absolute judgments leads to a degree of subjectivism that can be influenced by the personal experiences of the experts (Saaty, 2008).
3. **Evolving Nature of Cryptocurrencies:** The results represented a cross-sectional snapshot of priorities at a specific point in time. Given the highly volatile nature of the cryptocurrency market and its susceptibility to speculative bubbles (Cheah & Fry, 2015), these priorities and relative weights can quickly shift in the near future with changes in technology or regulation both in Iran and globally.

Policy Recommendationstabli

Table 5.
Policy Recommendations

Row	Challenge	Policy Action	Expected Outcomes
1	Weakness in Macro-Level Management of Cryptocurrencies	Immediately establish or designate a single high-level entity with full executive authority for policymaking, regulation, and supervision over the entire cryptocurrency domain, adopting an opportunity-driven and proactive strategy.	Enhanced coordination and efficiency in macro-level cryptocurrency management.
		Clarify and separate responsibilities among entities such as the Central Bank, economic and security ministries, and IT organizations, replacing the inefficient decision-making structure with a cohesive chain of command.	Increased speed and accuracy in decision-making and policy implementation.
2	High Risk of Public Investment in the Cryptocurrency Market	Urgently develop a regulatory framework to minimize risks for small public investments and prevent loss of trust in the financial system.	Protection of small capital and increased public trust in the financial system.
		Organize domestic cryptocurrency exchange platforms with high transparency standards and launch a comprehensive public awareness campaign about the high-risk nature of these assets.	Greater public awareness and reduced reckless investments in high-risk markets.
3	Loss of Opportunities in Leveraging Strategic Capacities of Cryptocurrencies in Payment and Domestic/International Exchange	Swiftly shift policymaking to facilitate the legitimate use of cryptocurrencies in foreign trade and activate their potential to counter sanctions, in close collaboration with major exporters and importers.	Strengthened foreign trade and reduced impact of sanctions.
		Focus policymaking and regulation on the use of cryptocurrencies at the B2B level, rather than individual transactions, to ensure repatriation of foreign exchange earnings from exports.	Increased repatriation of foreign exchange earnings and bolstered national economy.
4	Rising Share of Hidden Mining in the Total Cryptocurrency Production Market	Immediately implement policies to legalize and regulate mining during times and in locations with high electricity production capacity, while disconnecting power to unauthorized mining farms.	Reduced illegal mining and optimized energy consumption.
		Allocate resources to this area without hindering the immediate and full implementation of reforms in higher-priority sectors (e.g., governance and public risk management).	Strengthened oversight and resource allocation to higher-priority sectors.

(Source: The Researcher's Findings)

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