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Review Paper

Auditing Crypto Assets: A Litrature Review[1,2]

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1. Introduction

Auditing includes independent review of financial statements by qualified and expert people to provide independent opinions and increase the validity of financial statements. Nevertheless, the process of independent review of financial statements requires auditors to review the financial transactions of specialized businesses, and auditors may feel the need for the help of other professionals to perform audit operations; this means that auditors in such a situation cannot make a correct opinion on a technical matter without considering the views of other experts. It is one of the main goals of international auditing standards. Blockchain technology, which is one of the biggest developments of the 21st century, comes with many advantages and challenges. One of these challenges is to fully understand the functioning and risk assessment of blockchain-based transactions, because cryptographic assets are based on the blockchain and are held by different custodians, and this creates a reliability challenge for auditors. It should also be noted that the 4

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largest auditing companies worldwide are hesitant to provide auditing services to companies whose major assets are based on encrypted assets and cryptocurrencies. Various studies have examined the contribution of cryptocurrencies in different economies. Studies show that cryptocurrencies have many possible benefits, but one should not be ignorant of the challenges created by them. Also, the development of crypto-assets as a type of digital asset has created challenges for the accounting profession. Since accounting is known as the language of business, it is used to describe and explain business transactions to meaningfully summarize the transactions, and users can make useful decisions based on the financial information included in the financial statements. Therefore, in the present study, an attempt has been made to explain the related concepts in this field through a review of the existing literature in the field of crypto assets and cryptocurrency audit. Also, the challenges that have been created for the auditors through the emergence of these assets have been explained, and then suggestions have been made to face these challenges. Also, the types of common models for auditing cryptographic assets are presented, and the features and challenges of each model are also explained.

2. MATERIALS AND METHODS

This article, through a review of the existing literature in the field of cryptocurrencies and digital assets, explains these types of assets, the challenges they face, offers suggestions to face the challenges, their pricing, and audit models of these types of assets.

3. RESULTS AND DISCUSSION

Cryptocurrencies and crypto assets

Although cryptocurrencies and crypto assets have distinct meanings, they are often used interchangeably. Crypto assets are digital assets that are independent of any central or government authority and operate through cryptography and distributed ledger technology (blockchain), peer-to-peer networks for creation, verification, and security purposes.

Challenges related to crypto assets and cryptocurrencies

In recent years, the concept of crypto-assets has attracted considerable attention, and even though there are various cases involving the field of crypto-assets, most of the concerns include security risks, lack of regulatory frameworks, limitations in the adoption rate, complexity and volatility, and challenges related to the auditing and accounting processes of these assets. Security challenges and concerns are among the main issues associated with crypto-assets because these types of assets are stored in digital wallets, they are more vulnerable to cyber-attacks and hacking. In addition, digital currencies such as cryptocurrencies have temporary value, which causes high fluctuations in the value of cryptocurrencies, and as a result, it is not possible to reliably estimate the value of cryptocurrencies, even when their number and amount remain constant. In the audit process, the verification of transactions has an impact on the overall quality of the audit process. It is also necessary that the training and skills needed by the auditors to audit and handle the features arising from the operations of cryptocurrencies are continuously considered and upgraded.

Valuation of cryptocurrencies

The high volatility of the price of cryptocurrencies makes it difficult to determine the value and pricing of such cryptocurrencies. Below are four potential strategies for valuing digital and crypto assets.

Market approach

Determining the value of a digital currency using the market method depends on the liquidity and development of the currency. Different

Methods can be used to evaluate the price in this approach; For example, pricing can be done based on the latest currency prices without considering the liquidity of the currency or based on the fiat price that is being exchanged in the market.

Income approach

The income approach is a suitable method for valuing crypto assets. This approach is based on the use of cash flows and discount rates to determine the estimated future value. The conventional capital asset pricing model may not be practical in determining the appropriate discount rate.

Cost approach

In cases where secondary trading pricing is not available or where there is no liquidity to rely on prices, the cost method can be used as an alternative approach. This method requires the use of opportunity costs instead of value.

Theory of the quality of money

Based on the quantity theory of money, the value of tokens has a direct relationship with the supply of money in the economy and is determined in this way. These tokens act as a means of exchange and to calculate the price of utility tokens, the theory of quality of money can be used according to the formula $M \times V = P \times Y$; where M represents the money supply, V stands for the velocity of money, P represents the price level, and Y represents the quantity of products and services exchanged in its market.

Crypto asset audit models

Studies show that different models are used to audit crypto assets, the most common of which are: traditional model, blockchain-based model, automatic and real-time model, and finally, decentralized and collaborative models.

Traditional audit model (based on matching transactions)

This model includes examining financial documents related to crypto assets and comparing them with blockchain data. For this purpose, the actions of the auditors include: matching blockchain transactions with the company's financial books, checking the authenticity of ownership and the amount of assets through digital signature and private key, checking the valuation of assets according to market rates and accounting standards.

Audit model based on blockchain technology

In this method, blockchain analysis tools are used to check the authenticity of transactions and financial transparency, and include: using chain analysis to track transactions and determine related risks, implementing audited smart contracts to reduce the need for manual checks, and using proof of reserves to confirm the amount of declared assets.

Automatic and real-time audit model

The automatic and real-time audit model is implemented based on automation tools and artificial intelligence algorithms, and among its salient features are: real-time review of financial status and

transactions, identification of suspicious behavior and fraud through machine learning, and use of data oracles to compare the company's internal information with blockchain data.

Collaborative and decentralized audit model

In this model, a set of independent and approved auditors undertake the task of checking the accounts. This method includes: decentralized auditing using decentralized autonomous models, publishing public reports on the blockchain for greater transparency, and the possibility of voting to verify the accuracy of financial reports through smart contracts.

Each of these models has advantages and challenges. What should be considered is that the appropriate model for each organization is different and depends on the needs of the organization. Studies show that combining the traditional model with blockchain technology can increase security and transparency, and the use of automated and decentralized models can improve the efficiency and speed of auditing.

In summary, Due to the increasing emergence of digital and encrypted assets in recent years, these assets have been welcomed by the public in the commercial and exchange arena. But the application of any emerging technology, as we know, is like a double-edged sword; That means, along with the opportunities it creates, it always brings challenges. The most important challenges facing crypto assets is the challenge of verifying ownership (due to the anonymity of wallets), security risk (cyber-attacks of crypto assets), valuation of crypto assets (severe price fluctuations of digital currencies), and the lack of comprehensive standards in the field of digital and crypto assets.

4. CONCLUSION

The widespread use of cryptographic assets in the business world and the requirement of business units to provide audited financial statements have turned the audit of these assets into a big challenge. From the point of view of the auditors, cryptographic assets have a certain risk that originates from the lack of sufficient knowledge of how to value them and the absence of transparent standards. Therefore, auditors are faced with various challenges in the field of cryptographic assets audit, and in order to accept or not accept

business owners who use these assets in their operations, they must have a correct understanding of the nature of such assets and the challenges associated with them._While reviewing the literature related to cryptographic assets, the types of these assets, the pricing method, the types of audit models of these assets, and the challenges they face, and offers suggestions to deal with the said challenges.
The necessary suggestions to face the challenges faced by auditors in the field of cryptocurrency audit are:

1) It is necessary for the legislators to provide the necessary regulations to review and evaluate sufficient audit evidence in the field of cryptocurrency audit.
2) The developers of the standards need to present the accounting and auditing standards in the field of cryptocurrencies so that accountants and auditors can properly review and evaluate transactions related to cryptocurrency.
3) Curricula of accounting and auditing higher education should be based on the correct and operational training of accounting and auditing standards and should always be in line with new changes.

Keywords: Crypto Assets, Cryptocurrencies, Auditing

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