



Accounting Treatment of Cryptocurrencies under Blockchain

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Abstract. Blockchain technology, a revolutionary innovation built on the principles of distributed ledgers and consensus algorithms, has been the driving force behind the meteoric rise of cryptocurrencies. What was once considered a niche concept has now become an integral part of the global economic fabric, captivating the attention of investors, institutions, and policymakers alike. However, their unique nature challenges traditional accounting frameworks. This paper reviews the domestic and international research on the accounting treatment of cryptocurrencies. Globally, the accounting recognition of cryptocurrencies varies. They are often classified as financial assets or intangible assets depending on their usage. Measurement models, such as the historical cost method, fair value method, and intangible asset revaluation model, all have their own advantages and disadvantages. Currently, the information disclosure regarding cryptocurrencies is fragmented, lacking a unified standard. To tackle these issues, future research should focus on leveraging the distributed ledger technology of blockchain to enhance accounting transparency and establish consistent information disclosure norms. This will improve the quality of financial reports, support informed decision-making, and promote the standardization of cryptocurrency accounting.

Keywords: Blockchain, Cryptocurrency, Accounting Treatment, Information disclosure.

1 Introduction

Blockchain technology represents a decentralized digital ledger system. It meticulously records transactions across a multitude of computers, guaranteeing transparency, immutability, and a high level of security. In recent years, this innovative technology has experienced astonishingly rapid growth. It has brought about revolutionary changes in numerous industries, spanning from finance and supply chain management to healthcare and real estate. The influence of blockchain technology is far-reaching, encompassing multiple aspects such as significantly enhancing data security, substantially improving transaction efficiency, and enabling trustless interactions. Among these various impacts, cryptocurrencies, which rely on blockchain technology, have emerged as a particularly powerful transformative force. Bitcoin, Ethereum, and other cryptocurrencies, as decentralized digital assets, have achieved remarkable popularity within the financial sector. They have presented a challenge to tradition. This paper systematically

reviews current domestic and international research on cryptocurrency accounting treatment, summarizes existing findings, and constructs a novel measurement model. By doing so, it not only organizes the fragmented research landscape but also provides valuable directions for future studies, aiming to bridge the gap between theory and practice and promote the standardization of cryptocurrency accounting.

2 Accounting Recognition

Accounting confirmation is the first step of accounting treatment, which involves the judgment of whether economic events conform to the definition of accounting elements. As a virtual asset, the legal status and economic nature of cryptocurrencies have not been fully defined, leading to many challenges for companies in accounting recognition.

While global accounting standards for cryptocurrencies are not fully unified, they usually classify them by usage: trading or investment - related ones as financial assets, and long - term held ones for tech or other purposes as intangible assets. Fair value measurement is common for financial assets, with value changes recorded in profit/loss or OCI. Intangible assets often use the historical cost method but require regular reviews. All regions emphasize long - term asset impairment testing, especially for long-held cryptocurrencies with significant market value drops. Companies must ensure compliant and transparent financial reporting by adhering to local accounting and tax rules [1].

3 Measurement Models

3.1 Historical Cost Method

The historical cost method is a bedrock of accounting practice. Under this approach, assets are initially recorded at the price paid to acquire them. Once recorded, their value remains unchanged over time, regardless of how much their market value might rise or fall. This method's appeal lies in its simplicity and clarity, which is why it has long been a staple in traditional financial statements. It's frequently used when accounting for long-term assets, such as property, plant, and equipment, as well as inventory [2].

For those holding cryptocurrencies as long - term assets, the historical cost method has clear benefits. Take MicroStrategy, a leading business intelligence company, as an example. It chose to use this method to account for its Bitcoin investments. When the firm first bought Bitcoin worth \$425 million, it recorded this initial purchase price as the book value of its Bitcoin assets. Instead of being swayed by short-term prices swing in the market. It is a practical way to present a more stable financial picture, which is especially useful for long-term investments. Interestingly, this method also fits within certain accounting rules.

But when it comes to high-frequency traders or companies that need to show the current market value of their assets right away, the flaws in the historical cost method start to show. Cryptocurrencies are known for their wild price swings, and the historical

cost just does not capture how much they're really worth in the current market. When the market experiences big changes, the value shown in the books can be miles away from what the assets could actually sell for. This can make financial statements look wrong, and it might give investors and company managers the wrong idea.

3.2 Fair Value Method

The fair value method means constantly gauging an asset's worth using the prices at which it's currently trading in the market and then recording that value in financial statements. This technique is ideal for assets that experience big price swings and are bought and sold often. In the cryptocurrency market, it's a great way to stay on top of what's happening in real - time, providing a more fluid picture of an asset's value [3].

Consider Coinbase, a major global cryptocurrency exchange. The interest earned from stake and lending services goes into the income statement. Any changes in the value of assets directly affect the current period's profit and loss. Using the fair value method gives Coinbase the ability to quickly update its financial statements whenever the market shifts. For example, if Bitcoin's price suddenly spikes or plummets, the company's balance sheet will immediately show the new asset value, making sure the book value matches the real - world market value. This approach fits Coinbase's business perfectly. It allows the company to report income and losses from transactions right away, making its accounting much more accurate.

Still, the wild ups and downs of the cryptocurrency market create real problems. Big price changes can make Coinbase's reported earnings and losses swing all over the place. Imagine if Bitcoin's price suddenly crashes—it could mean huge losses that have not even been realized yet, and that shakes up the reliability of financial numbers. And it's not just about price swings. Figuring out the fair value of assets is tough, especially when the market is not very active. In those situations, you often have to make educated guesses and rely on assumptions. Different people might come up with different values because of all that guesswork. That means financial statements from one company might not line up with another's, making it hard to compare how they're doing.

3.3 Intangible Asset Revaluation Model

The intangible asset revaluation model treats cryptocurrencies as intangible assets. With this approach, companies regularly reevaluate their worth and tweak the recorded values based on the results of those assessments. It is a detailed way to show how digital assets fit into a company's financial setup, taking into account their unique features and growth potential. Tesla is a great illustration of a firm using this model.

This model lets Tesla look at Bitcoin from all angles. The company takes into account things like how Bitcoin is decentralized, how its network grows, and how it could be used in global payments. By thinking about all these different parts, Tesla can make better decisions about how much Bitcoin is worth. Since Tesla sees Bitcoin as a long - term investment, the intangible asset revaluation model is a good fit. It does not just focus on short-term price changes. Instead, it also looks ahead to future earnings and growth. This helps Tesla plan better and make smarter financial choices that consider what might happen down the road.

But the intangible asset revaluation model is not without its flaws. Revaluing cryptocurrencies is tricky and often comes down to personal judgment. Different ways of

assessing value and different assumptions can lead to huge differences in the revaluation numbers. That makes it hard to compare financial statements from one company to another, or even from one period to the next for the same company. And here's another problem: crypto prices can change in a flash and without warning. So even if you revalue an asset today, that value could be old news tomorrow. It is tough to keep up and show the real worth of these assets at any moment.

3.4 Comparison

Right now, the absence of consistent accounting rules and clear - cut evaluation benchmarks for revaluing intangible assets tied to cryptocurrencies is a major headache. Without these standard guidelines, companies end up using all sorts of different methods and numbers to assess these assets. As a result, it is almost impossible to compare financial statements from one company to another. For investors, this is a real problem. It is incredibly difficult for them to analyze and compare how different companies are performing when the numbers do not line up.

Compared to the fair value method, the intangible asset revaluation model usually does not update asset values as often. The fair value approach changes asset values based on the latest market prices, but the revaluation model only checks and adjusts values at set intervals. Because of this, it cannot quickly show short-term changes in the market. Even if companies revalue assets regularly, it's still hard for this model to keep up with how fast and wildly crypto prices can jump around. That means financial reports might not be as timely or accurate as they should be. But if you're an investor with your eyes on the long haul, the intangible asset revaluation model has some real perks. Instead of just looking at today's market price, this model takes into account a whole bunch of other things. It considers an asset's tech features, how it could be used in the future, and its long - term growth potential. By looking at all these angles, it gives you a more complete picture of what a cryptocurrency might be worth down the line. For company managers and investors alike, that means they can make smarter, more strategic decisions. They're not just reacting to short-term price changes. Instead, they're thinking about whether the asset has what it takes to succeed and grow over the long term (See Table 1). Currently, cryptocurrencies like Bitcoin and Ethereum are actively traded on major exchanges such as Coinbase, Binance, and OKX, where prices instantaneously reflect supply and demand dynamics. Given that the fair value method directly leverages real - time market price data, it has emerged as the cornerstone for valuing these digital assets. Moreover, as cryptocurrencies are commonly categorized as digital assets or financial instruments, the fair value approach aligns well with their nature. However, a critical research focus lies in minimizing the uncertainty and volatility inherent in fair value measurements. These fluctuations are influenced by a complex interplay of subjective judgments and market forces from both buyers and sellers. Existing research indicates that the intangible asset revaluation model provides companies with valuation flexibility. To address these challenges, a hybrid model integrating the fair value method with the revaluation model offers a promising solution. This combined approach would reinforce the classification of cryptocurrencies as financial instruments while maintaining adaptability to market fluctuations. By merging the objectivity of market - based fair value measurements with the comprehensive assessment

capabilities of the revaluation model, it effectively mitigates the impact of subjective biases from market participants, enhancing the accuracy and reliability of cryptocurrency valuation.

Table 1. Comparison of the three models

Comparison dimension	Historical Cost Method	Fair Value Method	Intangible Asset Valuation Model
Purpose	Provide a stable, verifiable cost basis for long-term asset management.	Reflects the current economic value of assets or liabilities.	Determine the reasonable valuation of intangible assets, especially in the absence of an open market price.
Scope of application	Initial measurement of fixed assets, inventory, and other long-term assets	Financial assets (such as stocks, bonds) or non-financial assets (such as cryptocurrencies) in an active market.	Intangible assets lacking an active market (such as patent rights, trademark rights, goodwill, etc.).
Basis of valuation	The actual purchase cost of the asset, including taxes and directly related expenses.	Market prices or other observable market data.	Internal model, future cash flows, subjective judgment, or the opinions of professional appraisers.
Accounting treatment	Historical cost serves as the initial measurement basis for assets, with subsequent depreciation or amortization reflecting the wear and tear.	Changes in fair value are recorded in current profit or loss or equity (such as other comprehensive income).	Intangible assets are typically recorded at their initial cost of acquisition and may be subject to amortization or impairment testing in subsequent periods.
Common applications	Fixed assets (such as equipment, buildings), inventory, long-term equity investments, etc.	Stock investment, bond investment, foreign exchange contracts, and other financial instruments; cryptocurrencies and other alternative assets.	Valuation of intangible assets such as patent rights, trademark rights, goodwill, and customer relationships.

4 Cryptocurrency Information Disclosure

4.1 Current State

Right now, how companies disclose information about cryptocurrencies is all over the place. There’s no single international standard that everyone follows. Different countries and regulators have their own rules, and they often do not match up. This lack of

consistency is a huge problem for investors, lenders, and other people who have a stake in these companies. It is really hard for them to get a clear picture of a company's financial health when it deals with cryptocurrencies. And when that happens, the whole cryptocurrency market becomes less transparent. As a result, it is tough for people to make good decisions. Without proper information, the market cannot distribute resources as effectively as it should [4].

4.2 Specific Content of Information Disclosure

Companies should clearly disclose the type of cryptocurrencies they hold, such as Bitcoin, Ethereum, Litecoin, etc [5]. In addition to the specific kind of cryptocurrency, details like the exact amount of each cryptocurrency held and the dates of acquisition are really important pieces of information. This enables stakeholders to fully grasp the makeup of a company's cryptocurrency assets. For example, if a company has been steadily building up its Bitcoin holdings over an extended period, the acquisition dates can offer insights into how the company's investment approach has changed and developed. When stakeholders are aware of the quantity of cryptocurrencies held, they are better able to estimate the potential effects that fluctuations in cryptocurrency prices might have on the company's financial standing.

Companies must clearly spell out the accounting policies they use for handling cryptocurrency accounting. It should be crystal clear whether they're relying on the historical cost method, the fair value approach, or the intangible asset revaluation model. On top of that, any big assumptions or estimates made while calculating values need to be laid out in the open. When companies provide these kinds of disclosures, it helps investors, creditors, and other stakeholders understand what's really behind the cryptocurrency - related numbers in the financial statements. It gives everyone a clearer picture of how the company is accounting for these assets and what factors are influencing the reported values.

4.3 Risk Disclosure

The world of cryptocurrency regulation is constantly in flux. Shifts in laws and rules can directly affect both how much cryptocurrencies are worth and whether they're legal to use. If a company does not tell stakeholders about these regulatory risks, those stakeholders could be blindsided when new rules come into play. They might end up misunderstanding the company's financial health as a result. That's why it's so important for companies to keep stakeholders in the loop about the regulatory risks tied to their cryptocurrency investments [6].

The blockchain technology that powers cryptocurrencies also face security risks. Hackers are always looking for ways to break into blockchain networks and steal digital assets. If they succeed, a company could lose its valuable cryptocurrencies. We've seen this happen in the past when hackers targeted cryptocurrency exchanges and made off with huge amounts of digital money. Companies need to be open about the technological risks involved in their cryptocurrency operations. They should tell stakeholders about the security measures they've put in place to protect against these threats. This way, stakeholders can judge how likely it is that the company will lose assets because of security flaws. It also shows them how well-prepared the company is to handle any security breaches that might occur.

4.4 Impact on Financial Statements

When a company employs the fair value method to handle its cryptocurrencies, the fluctuations in the value of these digital assets are mirrored in the income statement. The unrealized gains or losses that stem from the price changes of cryptocurrencies are recorded in the profit and loss account. For instance, if the value of a cryptocurrency owned by the company surges significantly, an unrealized gain will be acknowledged. This will contribute to an increase in the company's reported earnings. On the flip side, when there is a drop in the cryptocurrency's price, an unrealized loss will occur, resulting in a decrease in the reported profit. These value fluctuations can have a considerable influence on the company's overall profitability. It is essential for the company to clearly disclose how these changes are accounted for in the income statement. This enables stakeholders to accurately evaluate the company's financial performance.

Companies must clearly show their cryptocurrency - related assets and liabilities on the balance sheet. How these items are classified matters a lot. It can change the company's financial ratios and shape how stakeholders view its financial stability. Let's say a company lists its cryptocurrency holdings as their current assets. That suggests it plans to turn those assets into cash soon. But if the company classifies them as non-current assets, it signals a long-term investment strategy. The way these assets are valued also makes a big difference. Whether a company uses the historical cost method, fair value approach, or something else, it directly impacts the numbers on the balance sheet. Stakeholders count on this information to understand the size of the company's asset base. They also use it to figure out if the company can handle its short - and long - term debts.

4.5 Regulatory and Company Responsibilities

Regulatory authorities globally are crucial in enhancing the quality of cryptocurrency information disclosure. They ought to take the lead in formulating a unified international standard for disclosing cryptocurrency - related information. These standards need to thoroughly cover every aspect of disclosure, such as what information should be made public, how it should be presented, and how often it should be disclosed. By establishing such a standard, the consistency and comparability of financial data among various companies and across different countries will improve. For instance, having a standardized way to present cryptocurrency - related financial details will allow investors to more easily compare the performance and financial standing of companies operating in different regions [7].

Companies involved in cryptocurrency-related activities must follow disclosure requirements closely. They should use various means to share detailed and accurate information. Annual reports are a classic and key source for stakeholders. Quarter financial statements are useful for keeping stakeholders informed about the latest happenings in the company's cryptocurrency operations. Also, when major events occur—such as large - scale buying or selling of cryptocurrencies, or changes to cryptocurrency - related accounting policies—the company should make official announcements right away. By being open and honest in their disclosures, companies can gain the trust of stakeholders. This, in turn, helps the cryptocurrency market grow in a healthy way [8-10].

5 Conclusion

Blockchain technology has driven the expansion of cryptocurrencies, which have now become a substantial element of the global economy. Yet, their distinctive characteristics present difficulties for traditional accounting frameworks. This paper has examined both domestic and international research concerning the accounting treatment of cryptocurrencies. It has looked into various aspects, including accounting recognition, measurement models, and information disclosure. It has been discovered that due to the ever-changing nature of cryptocurrency markets and the lack of uniformity in global regulations, there is a shortage of unified standards in these areas. This has resulted in a disparity between theoretical concepts and practical applications. In order to deal with these problems, this paper has stressed the significance of utilizing the distributed ledger technology of blockchain to increase accounting transparency. Additionally, it has emphasized the need to establish consistent norms for information disclosure, which can lead to better financial reporting and more informed decision-making.

Even with the efforts made in this study, certain limitations remain. The research regarding the hybrid model that combines the fair value method, and the intangible asset revaluation model is still at an early stage. More exploration is required to refine this model and assess its practicality across diverse business situations. Moreover, the suggested information disclosure norms lack empirical evidence. Additional research is necessary to confirm that these norms can effectively enhance the transparency of financial reporting. In the future, research should center on empirical studies to prove the effectiveness of new accounting models and disclosure norms. This will help standardize cryptocurrency accounting and promote its healthy development.

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