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IMPROVING INTERNAL CONTROL OVER FIXED ASSETS WITH BLOCKCHAIN

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Abstract

A well-developed system of internal control, with policies and procedures that ensure the authenticity and integrity of assets, is crucial for the prevention of fraud. Fixed assets, which often constitute a large percentage of a company's assets, can be very vulnerable to fraudulent authorization, recording, and theft. A well-designed fixed asset management system should have internal controls in place that increase the reliability of fixed asset accounting and protect against fraudulent financial reporting and theft.

Blockchain technology, with its built-in system of transparency, validation and immutability, can be utilized as an effective tool in improving internal control systems within a fixed asset context. This article explains the fundamental principles of blockchain and describes how blockchain can be used to protect fixed assets against erroneous or fraudulent acquisition, recording, and disposal. The article also points out some of the challenges and limitations of implementing a blockchain system.

Keywords

Fixed Assets, Internal Control, Blockchain, Forensic Accounting, Fraud, Smart Contracts

Introduction

Fixed assets, such as land, buildings, vehicles, computers, furniture, and equipment, are frequently one of the largest assets on a company's balance sheet. A sound fixed asset management system should have strong internal controls that promote reliable fixed asset accounting and protect against fraudulent financial reporting and theft. The advent of blockchain technology provides a way to effectively monitor the acquisition, disposal, and accounting for fixed assets.

Much has been discussed about the opportunities and implications of blockchain technology. Blockchain has been called the "fifth evolution" of computing and offers a new way to record, process, and store financial transactions and other information. It can significantly change the accounting profession and completely redefine its internal controls.

The purpose of this article is to provide an overview of the important internal controls over fixed assets and how entities can use blockchain to improve those controls. The article reviews some of the main characteristics of blockchain technology and discusses its potential to improve internal control over fixed assets. Finally, the authors further discuss the challenges and limitations of blockchain.

Fundamental Principles of Blockchain

A blockchain is a distributed digital ledger system for recording transactions in multiple places simultaneously, with no central administration. This ledger system was initially used to secure and verify cryptocurrencies like Bitcoin to store individual ownership records in a computerized database. In its original form, the blockchain is an immutable, digital ledger that no one owns, but to which everyone can contribute.

The blocks in the blockchain are linked together by a process called "hashing." Hashing is a process that takes information and creates a short code called a hash. Each of the blocks holds a hash of the block before it, which links the blocks together. The hash becomes a digital fingerprint of the data and locks the blocks within the blockchain. It is impossible to transform a hash back into its original form, which ensures the immutability and security of the blockchain.

Once a transaction is codified into a block and added to a network, the block is then presented to all the users for validation and confirmation. When enough members approve the transaction, the block is cryptographically signed, time-stamped, and sequentially added to the ledger. In this process, a consensus is reached by the parties before the transaction is added to the blockchain. Blockchains have gained enormous popularity in today's data- driven world since there is no central authority for a blockchain, and all transactions are peer validated.

Permissioned Blockchains and Smart-Contracts

The original blockchains were permissionless (public) because there was no requirement to join. Bitcoin is an example of permissionless blockchain. As blockchains transitioned into the business world, this system did not work well when controlling which participants could join the network was critical. Businesses often needed a system where access could be limited to only approved participants. The advent of permissioned (private) blockchains solved this problem. In a permissioned blockchain, one must obtain special permission from the network administrator or the owner to join the network.

The addition of smart-contract technology to blockchain systems further enhanced their utility. Smart-contract technology is software that has been embedded onto a blockchain platform and programmed to execute an action based on certain predefined conditions. Parties to a contract agree to certain conditions by defining the triggering of events. For example, assume a company purchases an item from a vendor online. Payment is held in a secure account and released only after shipment is verified. In this example, both the buyer and seller are protected. This smart-contract concept can be used in any exchange or agreement.

Smart-contract technology can enhance cost efficiency, reduce operational error, and increase the speed of business processes. The advantage of blockchain-based contracts is that they reduce the amount of human involvement required to create, execute and enforce a contract. This process lowers cost and raises the assurance of execution and enforcement. Blockchain smart-contract technology can be useful in improving the internal controls of fixed assets.

Applying Blockchain to the Acquisition of Fixed Assets

Companies face a number of challenges in managing their fixed assets. One potential problem is the acquisition of a fixed asset without proper authorization. Before a fixed asset is acquired, there should be a formal approval process to protect against unauthorized acquisition. There is often a requirement that competitive bids from potential suppliers be obtained before purchase. Documenting these competitive bids and appropriate approvals on the blockchain can ensure that these controls are not circumvented. Using the digital identities of all of those involved in the acquisition of a fixed asset makes it possible to create a smart-contract for the fixed asset so that only the parties with the correct digital keys have access to that asset. The fixed asset is thus protected at the acquisition stage of its life cycle because the smart-contract requires that predefined conditions be met before any party can interact with that fixed asset.

Through “time-stamping,” the system can automatically record the time of each entry. This allows the network to create a chronological order of events related to that specific asset. Since the system has location details of all the registered users, it can record the location of an asset every time a user makes a new entry. In addition, these actors can only interact with the network by cryptographically authenticating themselves using their private authentication key. In a blockchain system, all stakeholders interacting with that fixed asset would have direct access to the asset’s profile. Every approved stakeholder can thus see a comprehensive picture of interactions with the fixed asset.

Applying Blockchain to Fixed Assets after Acquisition

Once a fixed asset is acquired, it must be properly recorded and set up on a depreciation schedule. At a minimum, the information recorded would be the cost, the depreciation method, the salvage value, and the expected life. In a sound internal control system, all depreciation adjusting entries should be approved by an appropriate party such as the controller. Blockchain's transparency feature serves as a control over proper approval and recording of the fixed asset and the execution of depreciation policies.

During a fixed asset's life, decisions will need to be made regarding whether to expense or capitalize certain costs. The accurate recording of such costs is important for proper accounting. If this information is entered on the blockchain, proper authorization and classification of those costs will be available for appropriate stakeholders to verify.

Fixed assets are often transferred to different departments or units within the entity. In a blockchain system, information about the transfer of the asset would be written to the blockchain to show the new location and the person or persons assuming responsibility for the asset. An important advantage of blockchain is that possession of the asset can be traced all the way back to the original possessor. The transaction history cannot be edited,

tampered with, or modified in any way due to the secure nature of the blockchain. A permanent record of the asset location is created as well as all activities that affect the fixed asset.

Applying Blockchain to the Disposal of Fixed Assets

Threats also exist when an entity disposes of a fixed asset. For example, a fixed asset could potentially be disposed of prematurely or an asset could be stolen and then written off as if it were abandoned. Another possible problem is incorrectly calculating the amount of gain or loss upon disposal. Controls for proper authorization for removal and correct disposition entries should be in place to ensure that fixed assets are disposed of and accounted for according to prescribed policies. When this information is entered on the blockchain, the transparency feature and consensus mechanism would protect against errors and fraud.

When a fixed asset is sold or transferred to another party, both parties could be required to sign a digital contract to authenticate the exchange. Once all parties have signed the contract, the details of the transaction could be added to the blockchain. The network will process this data and update that asset's profile status. This allows the network to maintain a current record of ownership for each asset. Since certain authorized parties in the organization will be on the blockchain, controls would exist to ensure that all fixed asset disposals or abandonments are approved and reported to the relevant departments on a timely basis.

Challenges ad Limitations of Blockchain

Blockchain promises to bring about fundamental change to the internal control structure of companies. As with implementing any new technology, the potential disruptive effect on an entity can be challenging. There will perhaps be some in the organization that will be reluctant to embrace the new technology. Resistance to change is common when substantial disruption to traditional policies and procedures occurs. Any system has the potential to fail without the support of the people who will use it. As a result, organizations must be sensitive to the feelings and concerns of the individuals involved so the new system will be accepted.

The cost of implementing any new technology can also be a challenge. Benefit and cost estimates can be difficult to quantify with relatively new technology. However, a well-implemented blockchain system that significantly improves a company's internal controls will be a worthwhile investment. Benefits can include cost savings, productivity increases, enhanced data processing, reduced fraud potential, and greater management control.

Another challenge of instituting a blockchain system will be the need for managers and employees to keep pace with the tools required to implement emerging technology. Managers will need to recognize that the technological landscape is changing and evolving rapidly. In addition, the use of blockchain and other new technologies will require different skills for some employees. This transition may require managers to embrace the idea of added training and education to keep pace with the reality that many business functions can now be automated with blockchain.

Even though blockchain technology is secure through advanced cryptography, there are still potential risks that must be considered. Companies will have to accept that certain inherent limitations will be present in any internal control system. For example, in permissioned blockchains, stolen IDs and passwords could still result in unauthorized access. Therefore, it will be critical for entities to use precautions to ensure system integrity. Traditional threats such as bribery, collusion, side-agreements, and other forms of corruption will continue to be possible.

Conclusion

Internal control over fixed assets is one of the many areas where blockchain can be used to help an entity accomplish its objectives. The use of permissioned blockchains provides new opportunities for organizational stakeholders to collaborate in areas like fixed asset management. Blockchain thus provides a way to use technology to reliably track fixed assets from acquisition to disposition with virtual certainty. Since blockchain technology can provide such a powerful improvement in transparency, accountability, data security, and reliability, the new technology will undoubtedly continue to be adopted by an increasing number of companies.

Works Citation

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