Smart Contracts And Cryptocurrency In Blockchain

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Abstract— **Blockchain technology is having a lot of attention and stimulating number of programmes across a variety of industries. Blockchain is a distributed, unchangeable ledger that makes recording transactions and managing assets in a corporate network much easier. The features of Blockchain include decentralization, immutability, transparency, and making transactions more secure. This paper provides scientific research on Blockchain. It shows a description of smart contracts and cryptocurrency under Blockchain. The findings indicated how they both show a significant value increase and usage through the years. The findings also show how Blockchain is being used in various aspects of life.**

I. INTRODUCTION

Blockchain is a distributed ledger (database) accessible to all network users. The network is constantly updated with new sets of recordings, referred to as blocks. These blocks have timestamps, and each one is linked to the one before it, forming a chain. To prevent tampering with the ledger, blockchain employs cryptography. While all users have access to the ledger, only those with unique cryptographic keys have the ability to request the addition of a new record. The blockchain technology has taken on a life of its own, infiltrating a wide range of industries such as finance, healthcare, government, manufacturing, and distribution[1].

One of the most significant functions of blockchain technology is to provide a framework for establishing smart contracts, which may be used in a variety of ways. A smart contract is a self-executing contract produced by a computer protocol and kept on the blockchain with the goal of digitally facilitating, verifying, and enforcing contract negotiations without the involvement of a third party. The value of a smart contract comes from the fact that it allows the user to incorporate a wide range of various conditions while negotiating the parameters of a contract. As a decentralised, digital system, cryptocurrency operates through the blockchain. Crypto, often known as a digital or virtual currency, is a type of digital or virtual currency that utilizes cryptography for privacy and is not managed by any government, making it impossible for governments to manipulate.

This paper focuses on blockchain studies including smart contracts, cryptocurrency, and applications on both. The rest of this survey paper is organized as follows. Section II Smart contracts applications, and advantages. Section III Cryptocurrency, applications, and advantages. Section IV shows comparison and reflection. Section V concludes the paper.

II. SMART CONTRACTS

Smart contracts, as a blockchain add-on feature, have recently gotten a lot of attention. Smart contracts are just like normal contracts, the only difference is it's digital. stores rules for negotiating terms and agreements, automatically verify fulfillment, and execute the agreed terms. They are executable programs that have their instance and the state saved in the blockchain. As a result, smart contracts and blockchain provide for a trustable, trackable, and irreversible protocol without the use of trusted third parties, who are typically a single point of failure. Others will be able to interact with a smart contract that a user creates and publishes, while the underlying blockchain provides a trustworthy execution. A smart contract on a blockchain cannot be altered, is easily observed, confirmed, and self-enforced, and can attain privity depending on the blockchain's access mode. [2]

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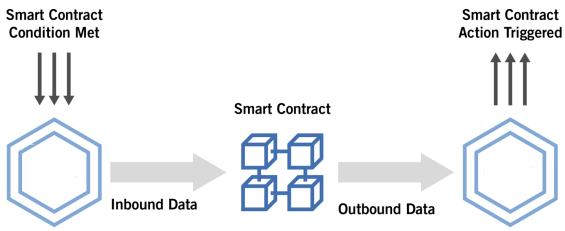

Steps in smart contracts[3]

Although smart contract technologies have recently attracted increased interest from both industry and academia, the road from cryptocurrencies to blockchain and smart contracts has a lengthy history.

A. Application of Smart Contracts

Nowadays, patients' encoded health records can be stored on the blockchain using a private key. For reasons of privacy, only selected individuals would have access to the records. [4] By providing an accessible and secure digital version to all parties involved in the chain, blockchain can eliminate such concerns. Smart contracts can be used to manage inventory and automate payments and duties.

III. Cryptocurrency

One of the essential functions of blockchain is to store cryptocurrency transaction data. Cryptocurrency is a type of digital currency as well as a Blockchain application. It effectively gives its users encrypted digital currency that isn't tied to any centralized banking institution and comes in the form of units or blocks rather than coins. The Blockchain network is a peer-to-peer network in which each network user has access to all of the transactions that have occurred on that network. [6] Blockchain, the technology that supports the cryptocurrency structure, is widely seen as critical in forming the backbone for assuring improved security and privacy in a range of other fields, along with the Internet of Things eco-system.

A. (Applications of Cryptocurrency and Blockchain)

Blockchain and cryptocurrency have a wide range of uses. Some of these uses include:

- Schools, colleges and universities now a days are also accepting payments in the form of Bitcoins
- Another use of Blockchain and Cryptocurrency is in the field of charities and donations.
- Blockchain and Cryptocurrency can also be used in the field of advertisement and digital publishing

Finally, cryptocurrencies have driven the growth and development of blockchain, as crypto relies on its network to function. Blockchain, on the other side, is not restricted to cryptocurrency applications.[5] The technology is not restricted to the financial sector; it offers a variety of technologies that have impacted and will continue to disrupt a variety of businesses in the years ahead.

IV. Analysis of Smart Contract, Cryptocurrency, and Blockchain

Cryptocurrencies and blockchains are both intangible. Blockchain is created to keep a record of bitcoin transactions, the world's first cryptocurrency. [7] Blockchain was created to keep track of bitcoin transactions, the world's first cryptocurrency.

Basis of Comparison	Blockchain	Cryptocurrency
NATURE	A technology that records transactions	Tools used in virtual exchanges
USE	Record transactions	Make payments, investments, and storage of wealth
VALUE	Have monetary value	Have no monetary value
MOBILITY	Can be transferred	Can't be transferred

Table comparing Cryptocurrency and Blockchain

Smart contracts are computer protocols that are stored in public databases and allow for the digital execution of agreements. They are a more efficient, cost-effective, and secure method of executing and handling agreements. Smart contracts have a number of flaws that must be addressed in order for them to receive widespread adoption. These include the technical complexity of making updates and the inability to handle complex transactions.

V. Conclusion

A comparative survey study is used to illustrate the possibilities and benefits of the blockchain. Blockchain has a wide range of applications in a variety of industries, ranging from data storage, encryption, and verification to the underlying technologies. As a result, the discovery of blockchain

can be considered a critical and much-needed addition to the Internet. When all of them are merged, we can automate time-consuming procedures in new and innovative ways, obtaining cryptographic verifiability while also saving money and time. It is believed that blockchain will have positive and more developed features in the coming years.

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