BLOCKCHAIN FOR DUMMIES: EVERYTHING YOU NEED TO KNOW

Introduction

I'm sure you've heard of cryptocurrencies. You know, those highly volatile currencies that promise near-instant riches but can also wipe out your life savings in seconds? Yeah, that.

You've probably heard of NFTs, too— artworks selling for thousands and millions of dollars.

You may have also heard of DeFis. — so-called "virtual tokens" that have turned several people into overnight millionaires.

If you're like me, you've probably asked that question. What's this craze?

I spent 30 hours researching this topic and in this article, I will explain everything I have learned.

What the blockchain isn't?

Before diving into crucial details about the blockchain, let's tackle some misconceptions you might have about the blockchain. You must purge yourself of these false information before you digest new ones.

So what are some of these misconceptions?

1. Blockchain and cryptocurrencies are the same.

Truth: Blockchain and cryptocurrencies are like codes and applications. Codes are used to create and operate applications, but they are not the same and codes can be used to create websites and other programs.

In the same vein, cryptocurrencies are created and operated on the blockchain using blockchain technology. And it is undeniable that cryptocurrencies have drawn attention to the blockchain in the last few years.

However, cryptocurrencies are only one of the infinite applications of the blockchain and its technology. Blockchain can also serve other purposes in industries like finance, media and entertainment, medicine, etc.

2. There is only one blockchain

Truth: When blockchain technology was discovered, it was used to create the Bitcoin blockchain. However, as the blockchain ecosystem grew bigger and advanced further, more blockchains have been created for different purposes. So while there are several blockchains, they all operate using one blockchain technology.

3. Blockchain cannot be hacked.

Truth: Blockchain technology uses a special hashing algorithm that makes information stored on the blockchain secure and immutable (impossible to edit or delete). However, since blockchains are created by humans, the security level of each blockchain differs. So, hackers can take advantage of these security flaws to exploit a blockchain.

So, What Is Blockchain Really?

Think of the blockchain as a ledger, a record-keeping book. This book digitally records transactions and other related data in real time using a secure, immutable technology to prevent a single point of failure.

Let's take that statement apart.

This book digitally records...
The blockchain is like Microsoft Excel, Spreadsheet, or any other record-keeping system. However, unlike Excel, the blockchain is decentralized - meaning it is not owned or controlled by an entity. Records are automatically updated as they occur.

...[records financial?] transactions and other related data...
Record keeping goes beyond just payment transactions. The blockchain can also be used for borrowing, investing, ownership verification, etc.

To put it in simple terms, the blockchain is a simulation of traditional activities. Any record that can be recorded traditionally can be recorded on the blockchain. For example, the way your bank account statement shows all the funds that have entered and left your account, the blockchain can also show you all the transitions that have occurred in your wallet.

...in real time...
The blockchain simultaneously uploads data as they happen. Think about a system that records all bank transactions that happen in all the countries of the world. How magnificent would that be? The blockchain is that, and more.

...using a secure and immutable technology...
On the blockchain, transactions are stored together into something called “a block” which is similar to how files are stored in a folder in the traditional world. Each block ends with a unique index number. The index number of each block contains the index of the previous block. This creates a connection between blocks and that connection is called “a chain”. This innovative technology makes it almost impossible for anyone to hack or forge the data on the blockchain.

...to prevent a single point of failure.
We have established that the blockchain is decentralized and cannot be controlled, edited, or tampered with by anyone. So you might wonder how it works.

There are computers known as **nodes** that help to update and validate transactions. These computers are located in different parts of the world and are owned by independent entities. If one of these computers gets compromised, the blockchain will still function effectively.

Properties of the Blockchain

The blockchain is a simulation of the traditional world. Most activities that happen on the blockchain are similar to the ones you already know. However, there are a few properties of the blockchain that distinguish it from the traditional world. Some of them include;

- **Immutability and Security:** Blockchain records are permanent and impossible to alter. Unlike traditional records that can edited, data

stored on the blockchain cannot modified or deleted. The blockchain also has an extra layer of security where each block is encrypted with a unique number and the next block is encrypted with a unique number coined from the previous block.

- **Decentralization:** Traditional organizations have headquarters where they control and oversee the operations of their sublets. On the blockchain, there is no headquarter or central processing unit that heads all operations. Transactions are recorded and validated using nodes which helps to prevent human error, reduce breaches, and spur trust.

- **Scalability:** The blockchain connects people from different parts of the world without the need for centralized control. This means that it can process more transactions in a faster time than traditional organizations. For example, wire transfers in the US can take anywhere from a few minutes to three days. However, transfers on the Solana blockchain take between 5-20 seconds to be completed.

These three features are the most important properties of a blockchain. However, there are other features like anonymity, consensus, etc.

How does a Blockchain work?

Different blockchains have specific processes that they follow. However, all blockchains obey the same principle which we have highlighted below;

1. **Input:** The blockchain is nothing without data. So the first process in the working principle of any blockchain is to collect data. This data includes transactions and other related activities like minting, staking, etc.

2. **Encryption:** Blockchains collect these data in batches and these batches are called blocks. An extra layer of security is added to each block using an encryption algorithm. This algorithm creates a new encryption code for every block such that each block has part of the code from the preceding block which helps to create a secure and immutable chain.

3. **Validation Consensus:** Pay close attention, this is important. Recall that the blockchain is controlled by a series of nodes from around the world and transactions are uploaded simultaneously to all of these nodes. For any block to be recorded and validated, these nodes have to reach a consensus and agree that the block is valid. Different blockchains have different consensus mechanisms that they use to validate transactions.

4. **Confirmation:** After the blockchain nodes validate a block, the last step is to confirm it and make it available for everyone to see. This confirmation process could take seconds, minutes, or even weeks in certain scenarios but that depends on various conditions.

Limitations of the Blockchain

As good as the blockchain is, it is not a bed of roses. It has several drawbacks that limit its usage. Here are some of them;

1. **High Energy Consumption:** Blockchain nodes require a high amount of computing power to process and validate transactions. The farms where they are located burn fossil fuels to generate which increases carbon emissions.

   To put this into perspective, a certain report confirmed that Bitcoin mining uses as much energy as the whole of Argentina and the amount of power needed to process one Bitcoin transaction is equivalent to the daily power consumption of 50 US households.

2. **High Cost of Operation:** Blockchain algorithms cannot be run by any ordinary computers. You need special supercomputers to run these algorithms. These computers are expensive and mining farms use several of these computers. So it costs an arm and a leg to set up and operate a mining farm.

3. **Environmental Effects:** Mining farms burn fossil fuels to run blockchain nodes. This process contributes to carbon emissions, depletes the ozone layer, and makes the world unsafe. The supercomputers that run the nodes also get outdated very quickly. But when they are changed, the old ones cannot be reused because they were built specifically for

blockchain purposes. Also, they cannot be properly disposed because they are not made from biodegradable material. So they end up causing land pollution. .

Real-Life Applications of Blockchain Technology

The blockchain is not a bedtime story or a fairy tale. It has been and is currently being used in different sectors. Some of the applications include;

1. **Money Transfer:** The blockchain connects people from different parts of the world and as such, it can be used for faster and more efficient cross-border payment. At the beginning of the Russia-Ukraine war, Ukraine received over $130 million in crypto donations from well-wishers around the world. These donations would have taken longer if everyone had to do international bank transfers. Blockchain smart contracts can also be used to automate payments for salaries, wages, and anything else.
2. **Healthcare:** In the healthcare sector, the blockchain can be used to store patients' information. This means that, instead of your doctor or hospital, your medical history will always be in your possession. So you can access this data wherever you are, making it easier to get faster treatment. Doctors will need your permission to edit or update your medical record and you can share your medical record with several doctors to get the best medical care.
3. **Logistics:** Blockchain technology can provide more visibility in supply chains such that all stakeholders can simultaneously track the progress of a shipment. From the sender to the distributor to the receiver, everyone gets real-time updates on the movement of a shipment. Also, with the infiltration of fake products in the retail market today, blockchain technology can be used to verify the authenticity of products by tracking their origin.

The blockchain has been applied in almost all mainstream industries (e.g. entertainmenteg entertainment, government, military, etc.) Its applications are limitless with more applications still tostill te to be discovered.

Evolve or Die: What Does the Future Hold for Blockchain Technology?

The security and decentralization it offers make it versatile for various industries. People also trust that using the blockchain will make processes faster, transparent, and more efficient.

In 2017, a New York company announced that it was shifting its focus to blockchain technology and changing its name from “Long Island Iced Tea Corp” to “Long Blockchain Corp”. After releasing this news, the stock price rose as high as 200% on the next trading day. This occurrence proves the high optimism that people have in blockchain technology.

However, like every other disruptive technology, the blockchain has its possible downsides. For example, the trust and security advantage of the blockchain can remove the need for professionals or companies that currently offer these services. This will lead to a loss of jobs in various industries.

Additionally, operating the blockchain requires technical knowledge and the interface is not user-friendly. Blockchain adoption could prove difficult because of this barrier. And without mass adoption, the technology will fall off like leaves in autumn.

The future of the blockchain is uncertain. Hopes are high. Individuals, companies, and even countries are harnessing the superpower of this technology. However, its several drawbacks could hinder mass adoption in the future.

Conclusion: What Can I Do with the Blockchain?

You have seen how the blockchain has been and can be adopted in several industries. The blockchain is a tool that simulates traditional activities with perks like automation and security.

However, a tool is only as powerful as its user. You can harness the blockchain to cause a radical change in your career or industry. All you have to do is find that problem and explore ways that the blockchain can be used to create a solution.