***“Bitcoin Vs Ethereum: Comparing Apples to Oranges (The color, not the fruit!)”***

According to Investopedia, Bitcoin, the first virtual currency, offers lower transaction fees than traditional online payment mechanisms and is operated by a decentralized authority.

The Bitcoin is possible thanks to the blockchain​, the technology that powers it. The blockchain on its own is now an important and desired technology in many industries.

“The blockchain is a public ledger of all transactions in a given system that have ever been executed. It is constantly growing as completed blocks are added to it. The blocks are added to the blockchain in linear, chronological order through cryptography, ensuring they remain beyond the power of manipulators. The blockchain thus stands as a tamper-proof record of all transactions on the network, accessible to all participants. *The blockchain offers a chance to work at lower costs with greater regulatory compliance, reduced risk, and enhanced efficiency.”*

Ethereum was designed to be much more than a payment system. It is an open-ended decentralized software platform that enables SmartContracts and Distributed Applications to be built and run without any downtime, fraud, control or interference from a third party. Ethereum is not just a platform but also a programming language (Turing complete) running on a blockchain. (Ethereum Community)

Ethereum has a platform-specific cryptographic token, Ether which is used like a vehicle for moving around on the Ethereum platform. Ether is used mainly for two purposes: it is traded as a digital currency and is used inside Ethereum to run applications and even to charge for work. (Investopedia)

While both Bitcoin and Ethereum are powered by the principle of distributed ledgers and cryptography, the two differ in many technical ways:

1. Bitcoin and Ethereum differ in purpose. While Bitcoin is created as an alternative to regular money and is thus a medium of payment transaction and store of value, Ethereum is developed as a platform which facilitates peer-to-peer contracts and applications via its own currency vehicle.
2. Programming language used by Ethereum is Turning complete (which includes seven different programming languages). Bitcoin uses a stack-based language (C++).
3. Block time. Ethereum transaction is confirmed in seconds compared to minutes for Bitcoin.
4. While Bitcoin and Ether are both digital currencies, the primary purpose of Ether is not to establish itself as a payment alternative (unlike Bitcoin) but to facilitate and monetize the working of Ethereum to enable developers to build and run distributed applications
5. The current reward is 25 Bitcoin per block; this reward halves every 210,000 blocks. The next halving is expected to take place in 2020. There will be a finite amount of Bitcoins created; the maximum is 21,000,000 . In Ethereum the reward per block is 5 ether and remains constant, it does not halve. Ethereum does not have a maximum total number of ether but does cap the amount released each year.

In the future, there will be one more big difference. Bitcoin operates on a proof-of-work basis. Proof-of-work means that in order to create blocks and add them to the blockchain you must solve very complex mathematical problems. This ensures that the information was difficult and costly to make, which helps to prevent fraud and malicious activity because of the cost involved in creating the block.

The proof-of-work model has some negative effects.

1. It does not give miners an incentive to collaborate and they don’t have anything at stake which means there is no consequence for malicious activity.
2. The second problem with proof-of-work is the amount of energy required to validate transactions, it has a negative impact on the environment.

Currently Ethereum uses proof of work. However, the creator and his team are working towards switching to the new *proof of stake* model. The proof of stake model is far less energy-intensive and substantially reduces the risk of a 51% attack on the Ethereum network.

Basically, miners with nodes who wish to participate in Ethereum network validation will have to store their Ether in a wallet through the process of ‘staking’. If a node does not follow consensus rules and is malicious towards the network, he/she risks losing all of their staked Ether.

In a proof-of-stake model there will no longer be miners, but validators. Instead of rewarding miners for creating blocks validators will earn a transaction fee for each transaction and smart contract they validate. This will be much more energy efficient. It will also help to put focus on collaboration rather than competition because the faster everyone can reach consensus (which is necessary to complete a block) the more transactions they’ll be able to complete, resulting in higher profits

In summary, there are many differences that make Bitcoin and Ethereum distinct. Ethereum technology based on the same principle of blockchain that supports bitcoin, but with a purpose that does not compete with Bitcoin.

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