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Cryptocurrency – The Digital Currency

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Introduction:

A **cryptocurrency** (or crypto currency) is a digital asset designed to work as a medium of exchange that uses strong cryptography to secure financial transactions, control the creation of additional units, and verify the transfer of assets. It is a digital currency, which is not sponsored by any govt. or bank.Cryptocurrencies use decentralized control asopposed to centralized digital currency and central banking systems.

Cryptocurrencies are systems that allow for the secure payments online which are denominated in terms of virtual "tokens," which are represented by ledger entries internal to the system. "Crypto" refers to the various encryption algorithms and cryptographic techniques that safeguard these entries, such as elliptical curve encryption, public-private key pairs, and hashing functions.The decentralized control of each cryptocurrency works through distributed ledger technology, typically a block-chain that serves as a public financial transaction database.

Definition:

A cryptocurrency is a digital or virtual currency that is secured by cryptography, which makes it nearly impossible to counterfeit or double-spend. Many cryptocurrencies are decentralized networks based on block-chain technology—a distributed ledger enforced by a disparate network of computers. A defining feature of cryptocurrencies is that they are generally not issued by any central authority, rendering them theoretically immune to government interference or manipulation.

Characteristics of a cryptocurrency:

- The system does not require a central authority; its state is maintained through distributed consensus.
- The system keeps an overview of cryptocurrency units and their ownership.
- The system defines whether new cryptocurrency units can be created. If new cryptocurrency units can be created, the system defines the circumstances of their origin and how to determine the ownership of these new units.
- Ownership of cryptocurrency units can be proved exclusively cryptographically.

- The system allows transactions to be performed in which ownership of the cryptographic units is changed. A transaction statement can only be issued by an entity proving the current ownership of these units.
- If two different instructions for changing the ownership of the same cryptographic units are simultaneously entered, the system performs at most one of them.
- A cryptocurrency is a new form of digital asset based on a network that is distributed across a large number of computers. This decentralized structure allows them to exist outside the control of governments and central authorities.
- The word "cryptocurrency" is derived from the encryption techniques which are used to secure the network.
- Block-chains, which are organizational methods for ensuring the integrity of transactional data, are an essential component of many cryptocurrencies.[1]

Types of Cryptocurrency:

The first block-chain-based cryptocurrency was Bitcoin, which still remains the most popular and most valuable. Today, there are thousands of alternate cryptocurrencies with various functions and specifications. Some of these are clones or forks of Bitcoin, while others are new currencies that were built from scratch.

Bitcoin was launched in 2009 by an individual or group known by the pseudonym "Satoshi Nakamoto."[2]as of Nov. 2019, there were over 18 million bitcoins in circulation with a total market value of around $146 billion.[3]

Some of the competing cryptocurrencies spawned by Bitcoin's success, known as "altcoins," include Litecoin, Peercoin, and Namecoin, as well as Ethereum, Cardano, and EOS. Today, the aggregate value of all the cryptocurrencies in existence is around $214 billion—Bitcoin currently represents more than 68% of the total value.[4]

Analysis of Major Cryptocurrencies:

There are approximately 2,957 cryptocurrencies being traded with a total market capitalization of $221bn (as of October 8th2019). So, we have selected the top 10 cryptocurrencies, which represents nearabout 85% of the total market value.

Table no. 1

Sr. No.	Name of Cryptocurrency	Market Value (In billion dollars)	% of market value
1.	Bitcoin ($BTC)	147.3	66.65
2.	Ethereum ($ETH)	19.4	08.79
3.	XRP ($XRP)	11.7	05.29
4.	Bitcoin Cash ($BCH)	4.1	01.85
5.	Tether ($USDT)	4.1	01.85
6.	Litecoin ($LTC)	3.6	01.63
7.	EOS ($EOS)	2.9	01.31
8.	Binance Coin ($BNB)	2.4	01.09

9.	Bitcoin SV ($BSV)	1.5	00.68
10.	Stellar ($XLM)	1.2	00.54
11.	Others	22.8	10.32
	Total	221	100.00

(As on 8th October 2019, 14:00)

From the analysis of table no. 1, it is clear that major share of market value is hold by Bitcoin ($BTC)as 147.3bn dollar i.e. 66.65% of total market value. The major reason of this is that Japan has legalized the Bitcoin. After this, its value increased by 60%. The second reason is Bitcoin is considered safe for transaction as comparison to other cryptocurrency. The third reason may be no risk of hyperinflation due to no control over Bitcoin. And the last reason may be the low cost of transaction due to no regulation.

The second big cryptocurrency is Ethereum ($ETH), which has market share of 8.79% of total market value and third is XRP ($XRP), which has 5.29% of total market value. These two cryptocurrencies do not have large market share as they came into existence very late in 2015 and after that. All other cryptocurrencies are very small and do not have market share more than 2% each.

Mining:

In cryptocurrency networks, *mining* is a validation of transactions. For this effort, successful miners obtain new cryptocurrency as a reward. The reward decreases transaction fees by creating a complementary incentive to contribute to the processing power of the network. The rate of generating hashes, which validate any transaction, has been increased by the use of specialized machines such as FPGAs and ASICs running complex hashing algorithms like SHA-256 and Scrypt.This arms race for cheaper-yet-efficient machines has existed since the day the first cryptocurrency, bitcoin, was introduced in 2009. With more people venturing into the world of virtual currency, generating hashes for this validation has become far more complex over the years, with miners having to invest large sums of money on employing multiple high performance ASICs. Thus the value of the currency obtained for finding a hash often does not justify the amount of money spent on setting up the machines, the cooling facilities to overcome the heat they produce, and the electricity required to run them.[5] As of July 2019, bitcoin's electricity consumption is estimated to about 7 gigawatts, 0.2% of the global total, or equivalent to that of Switzerland.[6]

Advantages of Cryptocurrency:

- Cryptocurrencies hold the promise of making it easier to transfer funds directly between two parties, without the need for a trusted third party like a bank or credit card company. These transfers are instead secured by the use of public keys and private keys and different forms of incentive systems, like Proof of Work or Proof of Stake.
- In modern cryptocurrency systems, a user's "wallet," or account address, has a public key, while the private key is known only to the owner and is used to sign transactions.

Fund transfers are completed with minimal processing fees, allowing users to avoid the steep fees charged by banks and financial institutions for wire transfers.

Criticism of Cryptocurrency :

- Since market prices for cryptocurrencies are based on supply and demand, the rate at which a cryptocurrency can be exchanged for another currency can fluctuate widely, since the design of many cryptocurrencies ensures a high degree of scarcity.
- Bitcoin has experienced some rapid surges and collapses in value, climbing as high as $19,000 per Bitcoin in Dec. of 2017 before dropping to around $7,000 in the following months. Cryptocurrencies are thus considered by some economists to be a short-lived fad or speculative bubble.
- There is concern that cryptocurrencies like Bitcoin are not rooted in any material goods. Some research, however, has identified that the cost of producing a Bitcoin, which requires an increasingly large amount of energy, is directly related to its market price.
- Cryptocurrency block-chains are highly secure, but other aspects of a cryptocurrency ecosystem, including exchanges and wallets, are not immune to the threat of hacking. In Bitcoin's 10-year history, several online exchanges have been the subject of hacking and theft, sometimes with millions of dollars' worth of "coins" stolen.
- Nonetheless, many observers see potential advantages in cryptocurrencies, like the possibility of preserving value against inflation and facilitating exchange while being easier to transport and divide than precious metals and existing outside the influence of central banks and governments.

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