

Mining

* What is Mining and Mining Difficulty.

=> Mining in blockchain refers to the process of validating and adding new transaction to the blockchain ledger.

It involves solving complex cryptographic puzzle using computational power.

Miners compete to solve this puzzle and the first miner who solves it gets the right to add the next block of transaction to the blockchain.

As a reward, the miners receive a certain amount of cryptocurrency such as Bitcoin.

=> Mining Difficulty:

1 Difficulty Target: The difficulty in mining is adjusted new block which is found approximately every 10 minutes.

- 2 **Difficulty Adjustment:** The network automatically adjust the difficulty for every set number of block.
- 3 **Hash Power Requirement:** Higher difficulty level indicates that more computational power.
- 4 **Mining Time:** The difficulty is designed to ensure that blocks are mined at consistent time interval.
- 5 **Security Mechanism:** It prevents any single or group of miners gaining too much control over blockchain.
- 6 **Network Consensus:** Network remains decentralized and secure.
- 7 **Profitability Impact:** As the difficulty increase, the cost of mining also increase.

* Mining Pool with its method.

=> A Mining Pool is collective of miners who combine their resource to increase their chance of solving the cryptographic puzzle.

When the pool successfully mine a block, the rewards are distributed among the participants based on their computational hash power.

Mining Pool increase the earning of rewards by combining their has power.

=> There are Four Method of Mining Pool.

1 Pay-Per-Share (PPS):

-> Pay-Per-Share is a payout method used by mining pool where miners are paid a Fixed amount for each share they submit.

Miners receive a Fixed payment for each share they submit.

Payouts are independent of whether the pool successfully miners a block.

PPS is straightforward to calculate making it easy for miners to estimate their earnings.

Miners are get payment even the block is no found.

2 Full-Pay-Per-Share:

-> Full-Pay-Per-Share is an enhanced version of PPS Method.

In FPPS, Miners are paid not only for their share but also receive a portion of the transaction fees.

Miners receive both the Fixed share payment and share of the transaction fees.

Transaction fees are accumulated and distributed proportionally among miners.

The addition of transaction fee make payout calculation more complex compare to Standard PPS.

3 Pay-Per-Share-Plus (PPSt):

-> PPSt is a hybrid payout method that combine the PPS and PPLNS.

Miners receive Fixed payments for their share and also get additional rewards based on the actual block rewards and transaction fees.

Miners get both guaranteed Fixed payments and additional rewards based on block's success.

Compared to PPS and PPSt can provides higher additional income.

PPSt is more complex to manage and understand as it involves multiple components in the payout calculation.

The model offers a balance between predictable incomes and the potential for higher rewards.

4 Pay-Per-Last-N-Shares (PPLNS):

-> PPLNS is a payout method where miners are rewarded based on the number of shares they contributed to the last 'N' shares of pool before a block is found.

Payouts are linked to the pool's success in finding blocks.

Rewards are only distributed when block is found.

PPLNS is designed to discourage miners from switching between pools frequently.

The Payout calculation is more complex.