

Using Blockchain Technology and smart contracts In Insurance Industry To Pinpoint the Fraud Detection

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Abstract:Blockchain is a relatively new form of technology that acts as an incorruptible digital ledger and keeps a virtual record of all data and transactions. It records everything that happens like a transaction, exactly as it occurs. These data enters into immutable, encrypted blocks, and distributed those blocks across the network of distributed computed nodes. In this paper, we are focused on how to utilizing blockchain technology in insurance industry to build these distributed ledger to identify fraud detection and risk prevention. And also how the blockchain is broadly believed to be secure, the integration of blockchain into insurers' databases may help to sustain to the sector's need for data integrity and management.

Keywords—Application, Adoption, Blockchain, Bitcoin, Centralized, Claims, Decentralization, Data, Digital, Exchange, Fraud, Intelligence, Insurance, Management, Processing, Standard, Technology.

1. INTRODUCTION:

From centuries years ago insurance has been around for us. Present Insurance companies facing lot of challenges in its growth and fraudulent clime activities and also third party transactions dealing huge amount of transactions. All these challenges can solve by using blockcain technology[11].

Insurance is nothing but security from accidental loss. And it is a form of exposure, primarily used to protect against the risk of a accidental or uncertain loss[12].

An object which contribute insurance or security is recognized as an insurer, insurance company. In this

The insured person who receives an agreement called policy. And the amount charged by the insurance company as accidental loss is call as premium[14].

If the insured person faces any loss which is covered in the insurance agreement, the person submits related documents to the insurance company for claims, then the insurance company will take appropriate action.[3]

The Insurance sector has emerged as one of the prominent financial service during recent times. The Indian insurance industry gained access to international markets and customers by providing a wide range of insurance products and services. But still now despite the upgrade of online entrepreneur most of the customers call insurance brokers to purchase policies. Policies themselves are regularly processed on paper contracts, which leads to payments are error face down and often require customer supervision[15]. This composite is the

process who buys insurance is also called as an insured or as a policyholder.

The traditional insurance process involves polyholder or insured person assuming a guarantee and known relatively recognizable loss in the mode of payment to the insurance company in correspondence for the incurrence company's promise to recompense the insured in the action of a covered loss[13]. This loss may be financial loss or may not be a financial loss, but it need to be reducible to financial an insurable interest and the amount decided by the insurance company

complexity of insurance policies. This may also leads to broker fraud. Each step in the insurance process represents a potential failure in the system. In this system information can also be lost and the agreement time is lengthy process.

Using a blockchain in insurance industry having more beneficial than the traditional system. Blockchain technology is a cryptographically secured and it keeps records in the form of shared track. It stores data into immutable, encrypted blocks, and distributed. By doing this it will reduce the scope for fraud and no loss of customers data. In this technology we propose core insurance process can be replaced by smart contracts. This will change significant change for insurance.[2].By transfer the insurance policies into an immutable ledger will help to avoid common sources of frauds in the insurance industry policies. And also shared ledger executed through the smart contract can leads to increase the insurance efficiency.

2. BACKGROUND WORK:

Blockchain is a technology, which is cryptographically decentralized, distributed ledger. This distributed ledger can record transactions within in a network between the parties efficiently and in a valid (verifiable) and permanent way [5]. It records transaction sequential chain of blocks. The initiate block of the blockchain is also known as genesis block, which doesn't have parent block. Each block having a block header. The header block contains a timestamp and the hash of the previous block along with merkle root. [4] This block having only one parent block. Each block of the blockchain contains the header block and body blocks. Each header block includes version of the block, hash of merkle tree, timestamp, nBits, Nonce and parent block hash. Version of block indicates set of block rules for validation which are to follow. Merkle tree root hash is all the transaction hash value in the block. Timestamp is current time as seconds. nBits are threshold value of a block hash in valid aspect. Nonce is a 4-byte field, in which generally initiate block with 0 and increments for each and every hash value calculation [16]. The parent block hash indicates a 256-bit value of hash which points to previous block. The body block consists of all the transactions and the transaction counter.

Every transaction within blockchains, hashing algorithms (Ex SHA) is used to find state of the blockchain. The blockchain contains data and hash pointer and that's pointer points to the previous block, which creates a chain of connected blocks [17]. Through this hash pointer each block is connected. The hash value depends on not only on the transaction but also hash value of previous transaction. Even a small change in a transaction creates a new hash. This hashing mechanism maintains data is more secure and immutable [18]. Transaction data. Thus the result of all hashes of the transaction in the block are themselves hashed, then the result is merkle root. This root is nothing but the hash values of all the hashes of the transactions within the block. Whenever the maximum block size transactions are added to the block then consensus algorithm will be applied [19].

Consensus is nothing but a fault-tolerant algorithm, which is used in the blockchain technology to achieve the required consistency on single state of network among distributed process. Generally blockchains are categorized into three types. They are public, private and consortium blockchains. In public blockchains all the transactions are visible to the public and anyone could take part in the network and submit transaction. That is in this public blockchain

anyone, anywhere can contribute computing powers to the network and broadcast the network data. Public blockchain transactions are scattered publicly [6]. Some well-known examples for this are Bitcoin, Ethereum. Whereas in private blockchain having those transactions that come from a particular organization will be allowed to join the network. Only checked participants can have the powers to broadcast the network. Example for this is Hyperledger. The consortium blockchain is constructed by multiple organizations and is partially decentralized and also this will allow only small portions of transactions to do the consensus.

In blockchain, the consensus process is introduced because of untrustworthy nodes in the Byzantine General problem. In this some generals prefer attack and someone one prefers retreat. Thus they have to reach an agreement for this problem is a consensus process. In blockchain network doesn't have a central node that protects ledgers in distributed nodes all are the same. For this some protocols are required to protect ledgers. Some of those protocols are PoW (Proof of Work), PoS (Proof of Stake), PBFT (Practical Byzantium fault tolerance), DPOS (Delegated proof of stake). [7]

The transformative function of blockchain has come through the unique composite of discriminate features. Some of them are described below.

1. Decentralization, which mentions the mechanism (processes) of data storage, verification, transmission in blockchain are based upon distributed type structure.
2. Traceability, which means all the transactions in the blockchain blocks are arranged in sequential order. And also each and every block is connected to its neighboring blocks by its hash function value.
3. Immutability, which refers all the transactions in the Blockchain are immutable. In the blockchain technology there are two factors that the blockchain is immutable. The one is hash of each transaction stored in the block along with one hash key connecting from the previous block and also another one for indicating to the next one. And the blockchain is shared public ledger reserved on thousands of nodes. [8]
4. Smart contracts, which refers in the blockchain is that they are self-executing agreements between the insurance buyer and seller directly drafted into lines of code. These lines of code and the contract exist though a distributed blockchain network [9]. Smart contract is also called as computerized transaction protocol and this will execute in terms of contract. Smart contracts are capable of executing automatically itself based on preconditions on blockchain.

3. RELATED WORK:

Present insurance industry faces lot of problems ,the insurance traditional process claims can take many day to be paid .This claims are still under manual process and require high amount of human action. This leads to a lot of managerial cost ,which results in high premium costs for customers and also there is a possibility of frauds. For this reason we proposed a solution for this is blockchain based insurance. Blockchain based system will help rapidly to develop the insurance industry. Blockchain based insurance claims the processing and payments are automated the policies by writing them in to a smart contracts.

Present Insurance Industry Challenges:

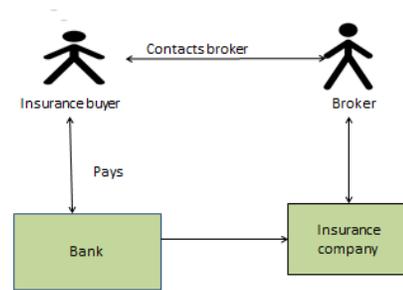
The insurance is an important subsector of the finance industry. The constitutional growth of the insurance industry has curtail, profitability is challenging to achieve. There are lot of distinct challenges in this area which will be resolved for growth.

- 1.Growth is the main challenge in the insurance industry. A persistent growth in the insurance industry is may not be possible and it depends upon the services delivered by the insurance companies. The original growth in the insurance is nothing but to get a new client.
- 2.New Technology contribution in insurance industry is totally risk. More policy contracts optimal use of these new technologies. Hence ,the adaption of new technologies are important.
- 3.Insurance industry having distinct tasks of work Management is also an important challenge in the insurance industry.
- 4.Back_office structure is the crucial challenge in the insurance industry. Documentation and policy contracts management are need to manage in global manner.Hence,every can understand.

Traditional Insurance Process:

An insurance policy is nothing but the contract between the insurer and the insured persons. It will follow some steps to take any policy, which are explained below.

- 1.In this process first the insured person determine which sort of incidents to cover against(cacrashes, a relative passing away,etc..).
- 2.Then determine how much premium you could like that particular event.
3. Assembling those information an insurance company will wants for its approved process.
- 4.Conact different insurers, either by directly or through a broker.



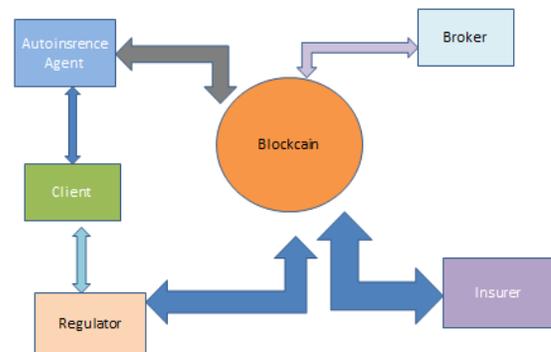
Traditional Insurance Process

- 5.Compare the offers given by a insurer and select one of the best assembling of terms as well as premium costs. Then submit your application to the insurance company. Insurance companies will automate the insurance policy claims by converting them into a smart contract.

Blockchain Insurance Process:

Blockchain based insurance systems help to solve the insurance industry challenges. The process of policy taking through the insurance process is described in below steps.

- 1.The insured person enter into the blockchain application to get the complete details of policy.
- 2.Insurance claims process and payments are done where a client buys a insurance policy and the guidelines under the policy can obtain premium.
- 3.They will include all the policy claims such as the premium cost in the particular areas ,rules, different rule based claims process ,particularly followed by a end-to-end insurers.
- 4.These process claim processing needs send sever documents by the insured persons and other parties.



Blockchain insurance process

- 5.The claim processes are included the clarification of the guidelines that are apply to that particular event and insured situation.

6. This process leads a client to apply rules then make a decision and which are applied before the premium is paid out.

7. This will enable the customer which policy to be paid and which policy should not be paid.

8. Today there are a number of insurance companies offering claim investigation services, hence the insurance companies create a decentralized market place. Through the risk and cost will be lowered and breaks of existing consistent structure. So the decentralized system has become predominant.

9. In this first process creates a doubt of mutual assurance between the parties, hence the policy holders and their system to be willing to work together within the system in a clear way to avoid the fraud. [10]

10. Blockchain based insurance system will prevent this fraud because all the transactions are transparent and clear way. And also having self-executing of code logic system called smart contracts.

11. All transactions within the blockchain are decentralized. So impossible to alter or delete. And the consensus mechanism enabling contract between different insurers creates a permanent audit trail.

Can The Blockchain Pinpoint The Fraud Detection:

Blockchain based system is very useful to reduce the fraud related to the policy claim. Blockchain will reduce duplication, double booking, contract and document alterations. However use of blockchain does not alleviate the risk combine with majority of the parties. And also in blockchain system having the smart contracts will eliminate the duplication because of their auto-executing feature.

4. CONCLUSION:

In this paper, we are adopting a blockchain in insurance industry will claim an efficient and secure policies. In this blockchain based system also enable fraud identity management system. So it means that criminals should no longer crack for the cash. Moreover blockchain system allow the whole system to streamline its processing and also offers for users better experience for customers who claim the process.

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