

# A Survey of Issues in Health Insurance System and Solution through Blockchain

Manisha R Rao<sup>1</sup>, Adithya H N<sup>2</sup>, Pavan M S<sup>3</sup>, Madhusudhan K<sup>4</sup>, Madhu B R<sup>5</sup>, S Balaji<sup>6</sup>

<sup>1,2,3,4</sup>UG Student, <sup>5</sup> Department of Computer Science and Engineering,

<sup>6</sup>Centre for Incubation, Innovation, Research & Consultancy (CIIRC)

Jyothy Institute of Technology (JIT), Bangalore-560082, Karnataka, India

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**Abstract** - Information is an important requirement for every insurance company and proper management of this information is all the more important. Usage of that information to make decisions in a timely manner is a crucial process. Blockchain's added security and ability to obtain trust between entities can help in solving the interoperability problem better than many existing technologies. In this paper, we review the various existing health insurance systems using blockchain technology.

**Key Words:** Blockchain, Transaction, Insurance, Fraud, Delay.

## 1. INTRODUCTION

Insurance is guaranteed predetermined money which will be paid for urgent need of the customer by the insurance company where the customer pays a fixed amount of premium in specific intervals to the insurance company. The transaction for the same needs to be done in a hassle-free manner without much delay and also in a reliable way, but transaction these days still needs hours or days to process. Many insurers use a claim system that was originally built more than 30 years ago. Maintaining these outdated technologies increases costs for insurers and may hamper their efforts to adopt new value-based payment strategies that will change the way insurers approach network development, payments, etc. It's very important for the insurers to administer the records in a secure way. The usage of blockchain gives a certain amount of surety to resolve the issues in the system.

This distributed, decentralized technology acts as an aid to the issues dealing with storage and verification. Today's health records are typically stored within one provider system. The millions of transactions and data exchanges between an insurance firm, its customers and hospitals should become much easier to access and consider securely with blockchain, saving time and resources. Blockchain can automatically collect data from records of agreements, transactions etc, link that information together and act on it using smart contracts. When fraudulent information is submitted to life or health insurer via false claims, falsified applications, or other channels, blockchain's smart contracts can help determine if the submission is indeed valid. This method doesn't need a third party to sit and verify every transaction [3].

## 2. PROBLEM FACED IN INSURANCE SYSTEM

2.1 Delay and third-party involvements

2.2 Fraud

### 2.1. DELAY AND THIRD-PARTY INVOLVEMENT

Delay is the main disadvantage and a cause for inefficiency in the traditional insurance procedure. All the records of the policyholders are stored in various databases and are prone to delay in procuring of required health records when a claim is initiated. In some cases where insurance money is an emergency, records must be delivered as soon as possible. But due to this conventional approach, delays are inevitable.

Another disadvantage of this conventional process is a lot of human intervention is involved. Humans are prone to error and these errors, in turn, lead to the delay of the whole procedure. Once the claim is initiated, the agent collects documents from the policyholder and then submits those documents to the insurance company. The whole claim process stands on the work efficiency of the agent. The process is delayed if the agent delays his work. The cost of the procedure will also increase due to the involvement of agents and company employees.

### 2.2. FRAUDS

Fraud is one of the major problems for health insurance companies. The insurance companies face huge losses due to fraud by the policyholders. Fraud takes many forms in the health insurance sector.

**2.2.1. Application fraud:** In this type of fraud, the customer submits the incorrect information in the application form of the policy or he/she doesn't reveal any existing diseases at the time of purchasing the policy or makes them eligible for a policy for which he/she is not eligible by submitting the wrong documents.

**2.2.2. Billing for services not provided and wrong diagnosis:** Sometimes a policyholder may claim insurance for a service that was not provided to him/her by the hospital. The policyholder may also get unnecessary services from the hospital.

**2.2.3. Double bills and price manipulation:** Here the policyholder claims the insurance multiple times for the same bill and manipulates the price in the bill.

**2.2.4. Identity frauds:** Here the person who hasn't insured takes the identity of a person who is insured and claims the insurance.

**2.2.5. Deliberate Fraud:** Here the policyholder deliberately presents the company with some accident or disease which is held under the policy document to get the insurance claim.

**2.2.6. Internal Frauds:** In this type of fraud, the employee of the insurance company will join hands with the policyholder to make a successful false claim [1].

### 3. RELATED WORKS

Deloitte - white paper [2] blockchain in insurance (2016) explains the use and need of blockchain in the insurance system. The paper considered patients as a single entity and concentrates on improving the customer experience through enhanced policy.

A Blockchain framework for the insurance process by Mayank Raikwar [8] represents an insurance model for different endorsers with different access controls through smart contracts. The model considered the fact an insurance agent has multiple clients with multiple policy types all handled within the same blockchain and a group of people who would validate the claims and other processes. The outcome of this model showed that the parameters that need to be considered should be clearly considered because that may lead to network latency later on.

WISChain using blockchain and Denglul [9] is used for providing security for end-users identity and also data security. Denglul, a web identification system is used for automatic login. This system is used along with the blockchain for secured storage of the client data from commercial web services. The insurance of such data along with the Denglul server is handled through the blockchain.

According to the IRDA [6], claim related cases stated the main statistics that the delay of the process was almost from one month to a year or more. This delay could be eliminated and give relief to the clients through a quick verification process in the blockchain network.

### 4. ANALYSIS AND APPROACH

In the blockchain based system, all the related records are stored in one blockchain and when a claim is initiated, the smart contracts present in the blockchain accesses the documents required for the claim and process the claim almost instantly.

In this approach, human involvement is very less. The policyholder or the hospital uploads the record to the

blockchain and the smart contracts which play the role of the insurance company processes and settles the claim amount.

Though blockchain may not reduce every type of fraud in this sector, it does reduce some types of fraud in this sector.

A recent health checkup of the customer in the insurance company's network hospital should be made mandatory in order to purchase a policy. This report is uploaded in the blockchain to be reviewed later. When a claim is submitted by the policyholder, the medical report submitted earlier can be verified to know the authenticity of a claim. This procedure can reduce application frauds.

Every record in the blockchain is immutable and cannot be erased. Every claim made by the policyholder is stored in the blockchain, due to which the policyholder cannot make multiple claims for the same bill. Every transaction in the blockchain is recorded and such claims are simply verified and rejected.

The policyholder's medical bill is uploaded to the blockchain by the hospital. This bill shows the services used by the policyholder in the hospital. So, the policyholder cannot submit the fake bill of the services which were not provided by the hospital to the blockchain. The records won't match, and the claim will be rejected. Internal frauds are also eliminated since the third-party involvement is not there in the blockchain [4,10].

### 5. CONCLUSION

In traditional insurance claim system, there are three major issues we have observed.

The claim process is a very elaborate process involving a lot of verifying, approval, etc and is subjected to delay in procuring details, verification, etc. This may be a serious problem in some situations where the money for the insured is an emergency. In the current procedure of claim, there is an involvement of manual intervention for verifying, approval, submissions, etc. The blockchain system comes handy to solve all the delays and trust regarding issues.

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