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Review Article

Blockchain in Insurance Industry

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Abstract *- Based on Blockchain technology's unique nature, it solves many problems in the public and private sectors. One of those sectors is Insurance Industry. In this article, I will give a brief introduction to Blockchain and how it works. Types of Blockchain networks and benefits of Blockchain. Primary use cases of Blockchain for the Insurance Industry and Blockchain benefits to the Insurance Industry.*

Keywords *- Blockchain, Blockchain in Insurance, Blockchain Use cases in Insurance*

I. BLOCKCHAIN - INTRODUCTION

Although the outset and beginnings of 'blockchain' are linked to the appearance of cryptocurrencies such as bitcoin,' the truth is that this technology has spread to different economic sectors.

Contrary to what some people think, blockchain technology is not just a database but also a set of technologies that allow the transfer of a value or asset from one place to another without third parties' intervention.

In this sense, 'blockchain' technology proposes a new model in which authenticity is not verified by a third party but by the network of nodes (computers connected to the network) that participate in the Blockchain. Hence, no transfer of value (be it money or another asset that has any value) through an intermediary, but by consensus, allowing the information to be stored at all times transparently.

II. HOW BLOCKCHAIN WORKS

As its name implies, 'blockchain' is a chain of blocks, which contain encoded information of a transaction on the network. And, being intertwined (hence the word string), they allow the transfer of data (or value) with a secure encoding through the use of cryptography. To illustrate this idea, it would be convenient to imagine a ledger where all the inflows and outflows of money are recorded.

What is truly new is that the transfer does not require a third party to certify the information. Instead, it is distributed in multiple independent and equal nodes that examine and validate it without the need for them to know each other. Once entered, the information cannot be eliminated; only new information can be added. The blocks are stayed and connected to each other through cryptographic encryption. Modifying data from a block previous to the chain is impossible since you would alter the previous blocks' information.

A blockchain records data through a peer-to-peer network. Each participant can view the data, confirm and verify or reject it using consensus algorithms. The approved data is entered into the ledger as a collection of "blocks" and stored in a chronological "chain" that cannot be modified.

III. TYPES OF BLOCKCHAIN NETWORKS

There are four best ways to establish a blockchain network:

A. Consortium Blockchains

In consortium blockchains, the consensus process is controlled by a preselected group, a group of companies, for example. The right to read the Blockchain and send transactions to it can be public or restricted to participants. Consortium blockchains are considered "authorized blockchains" and are best suited for business use.

B. Semi-private blockchains

Semi-private blockchains are operated by a single company that grants access to any user who satisfies the pre-established criteria. Although not truly decentralized, this type of authoritative Blockchain is attractive for government applications and business-to-business use cases.

C. Private blockchains

Private blockchains are controlled by one company that determines who can read them, present transactions on them, and participate in the consensus process. Because they are accurate and 100% centralized, private blockchains are useful as test environments but not for effective production.

D. Public blockchains

Anyone can view and read a public blockchain, send transactions to it, or participate in the consensus process. They are considered "without permission." All transactions are public, and users can remain anonymous. Bitcoin and Ethereum are prominent examples of public blockchains of the four types, The Consortium Blockchain model is currently the most accepted model for business.

IV. THE BENEFITS OF BLOCKCHAIN

A. Fewer intermediaries

Blockchain is a real and true peer-to-peer network that will reduce the need for some types of external intermediaries such as banks, lawyers, and agents.

B. Faster processes

Blockchain can streamline process execution in multi-party scenarios and enable faster transactions that are not limited by office hours.

C. Security

The distribution and encryption nature of Blockchain means that it will be difficult to hack. This is promising for business and IoT security.

D. Transparency

The information of the blockchains can be viewed by all participants and cannot be modified. This will reduce risk and fraud and build trust.

E. Automation

Blockchain is programmable, which will make it possible to automatically trigger actions, events, and payments once the conditions are met.

F. More confidence

With the Blockchain, as a member of a closed network, you can be sure that you will receive accurate and timely data and that your confidential blockchain data records are only accessible to network members to whom you have expressly granted access.

G. More efficiency

With a decentralized general ledger (distributed ledger) that the members of a network share, there is no need for time-consuming data comparisons. And to speed up transactions, a set of rules - a so-called smart contract - can be saved in the Blockchain and executed automatically.

H. Intelligent contracts ("Smart Contracts")

A set of rules (smart contracts) is saved in the Blockchain and executed automatically to speed up transactions. A smart contract can define terms for corporate bond transfers, terms for travel insurance to be paid for, and much more.

I. ROI

Distributed ledgers will deliver rapid ROI by helping businesses create more streamlined, efficient, and profitable processes.

V. BLOCKCHAIN FOR INSURANCE

In the pursuit of good and excellence, our digital world is changing at a rapid pace. There is no doubt that technology affects our daily life and other aspects to improve them significantly. On the other hand, businesses also know how important it is to embrace technology and evolve.

Blockchain holds promise for many various industries, and Insurance is one of those sectors that can benefit from using Blockchain. Insurance has always been an enormous task for anyone going through trouble, and we hope that blockchain insurance can have a significant impact and change the whole landscape. Various blockchain insurance startups are working towards a good and better insurance experience for the end-user and the companies that handle Insurance for individuals. Few of the blockchain insurance beginners and startups are focusing on an entirely novel approach, while others are trying to augment already existing insurance processes and improve them throughout the process.

The frequency and prevalence of Insurance in our life is nothing new. It has been working for thousands of years. Right now, we are living in an era of the insurance industry that relies heavily on brokers. It is common for brokers to call people and convince them to adopt a policy. The approach is to make a contract on paper that means the inclusion of human error during the draft or when claiming the Insurance.

In general, all of this complicates things for all parties involved, including insurers, brokers/agents, and consumers. We must also take into account the risk associated with the entire process.

Blockchain is the technology that can renovate and transform the industry. To get a good and better understanding, we must first understand how Blockchain can impact or change the insurance industry.

VI. BLOCKCHAIN USE CASES FOR INSURANCE

Some of the use cases of Blockchain in the insurance domain:

A. Fraud Prevention and Detection

Insurance fraud is a big problem that organizations and end-users alike want to solve. The approach to solving fraud has always been less than required. However, the use of anti-fraud technology is quite common among insurers. Even with all the precautions and the use of anti-fraud technology, insurers still have to suffer a great deal of fraud.The traditional methods do not prevent fraud considering the great complexity offered by the insurance industry. A visibility problem occurs most of the time when information is sent between peers, including insurers, reinsurers, and claimants. The paperwork also allows criminals or scammers to modify data and thus commit fraud.

Blockchain can solve the problem of fraud thanks to the transparency it offers. Better coordination between insurers means that fraud can be adequately combated. The distributed ledger guarantees that the transactions carried out on the Blockchain are permanent. This means that data cannot be modified after it has been written, which provides the basis for data security. Claims can now reside in the distributed ledger, making it easier for insurers to verify information when the time comes.

To improve fraud detection, major insurers collect data publicly and then predict fraudulent activity. With the data, patterns are revealed that, in turn, help improve recognition.

Blockchain allows to stop fraud and provide greater coordination between insurers, who can benefit indefinitely.

Below are some of the scams Blockchain can prevent:

- Stopping or reducing counterfeiting is the number one benefit with the help of digital certificates.
- Double spending or reservation can be eliminated when clients cannot claim the accident twice.
- Elimination of unregistered sellers and reduction of premiums.

B. Claims Prevention and Management

Another big problem the insurance industry suffers from is claims management and prevention. It takes insurers time to gather all the required information while an insurance claim is being verified or resolved. This can lead to problems considering the seriousness of the claim.

Another challenge is discovering the correct fullness of claims. It is common for few claimants to falsify documents that can lead to claims that never occurred or happened.

When joined and combined with modern technologies, Blockchain can enable insurers to create a transparent and capable customer-centric claims model. The model must rely heavily on trust, which means that it must be largely transparent. The claims prevention aspect of Insurance can be a great benefit from information on the event location, analysis, and external risks associated with the event.

The distributed nature of Blockchain always allows for an implementation method that places the insurer and the claimant on the same network. Insurers or other third parties can easily capture information on forms, police reports, evidence in no time. Other critical aspects of technology that can assist and help in the process can be mobile phones or sensors connected to other devices connected to the entity or around the area where the event occurs. These will streamline the entire process and ensure proper claim submissions. In return, you will improve customer satisfaction and strengthen the coordination between all parties involved in the claim process.

So how might an insurer know when an event occurs? The sensor's permission to provide information can alert required parties when an unplanned event occurs.

In summary, in combination with Blockchain and other technologies such as satellites, sensor data, mobile technology, and others, insurers can help solve trust in the system. Blockchain acts as the backbone, offering transparency from the start.

Furthermore, Blockchain can also be used to facilitate payments if certain criteria are met, which improves the time required to process a claim

C. Property and Casualty (P&C) Insurance

P&C Insurance is one of the most important insurance segments, as it is used largely by individuals, startups, or even companies. Property and casualty insurance accounts for 49% of all US premiums and is considered significant worldwide.

However, it is also plagued with issues and problems such as data evaluation for claims processing, manual data entry, coordination between the parties, etc. Manual data entry also leads to errors resulting in losses for either party depending on the error type. The effect and lack of a proper framework for claims processing are detrimental to the end-user.

For example, if a house is damaged due to negligence, the insured should fill out the claims documents and then request the insurance provider's claims. Once this is done, the insurance company will proceed with the claims and verify them.

However, it can be delayed or stopped depending on how the insurance company handles the claim. This issue and problem occur due to a mismatch between the way insurers handle their clients' claims.

Blockchain can help solve current property and casualty insurance problems. The focus is to manage physical assets digitally. Blockchain can be used to write good contracts in code, as we already know. This means that business rules can be equipped, implemented, and executed automatically. In short, claims can be processed automatically using smart contracts. Also, all changes can be tracked for authenticity, making them auditable.

The key here is smart contracts, as they offer the required functionality of changing paper contracts to programmable code. Smart contracts, in turn, can be executed automatically by taking all the information and then executing it accordingly.

Liabilities can also be accurately calculated using smart contracts that can then be paid to all participants.

Auto insurance can benefit from overall technology growth, as sensors in the vehicle can be dispatched automatically if a crash occurs.

The smart contract will automatically take the necessary and next steps, such as medical services or towing. Next, you will try to measure the vehicle's damage with the help of sensors mounted on the vehicle and by manual inspection. Smart contracts will be logged when new reports arrive. After obtaining all the required information, the smart contract will resolve the claim. All of this can be done with minimal or no human intervention.

D. Registration and administrative procedures

Manual records and paperwork in the insurance industry are part of the day-to-day today, as required by the scheme of traditional companies.

Blockchain can make the transmission of clinical data between hospital institutions secure, less expensive, and faster, and even the medical record of patients.

Blockchain technology can eliminate the manual processes that marine Insurance requires, like automation of agreements and contractual transactions.

Likewise, speaking directly of health insurance where claims files (accidents, illnesses) require incorporating

medical reports, and invoices, paperwork that can become tons depending on the number of clients, the modus could be changed.

To collect the documents and to upload the information to the contract, and make it available to all parties through multiple communication channels. The blockchain process would trade all these hours of work to minutes by creating immutable files.

E. Premium payment and subscription

To understand this use case, it is necessary to understand what a premium means in the context of Insurance. The premium is the insured's cost to pay for their insurance policy.

From there, real-time payments supported by Blockchain can change the insurance business scheme since it would eliminate the need to manage documentation shipments by mail or courier. On the other hand, the subscriptions, agreements, and registrations can be automated with decentralized storage quickly and easily.

F. Customer support

Simplifying the customer experience with Insurance would completely change the image that insurance companies have generated for years.

According to the global insurance services company BajajAllianz General, it is possible by developing services based on Blockchain. This company is developing three blockchain-based applications that will provide customers with a more pleasant experience.

The first, Travel Ezee, is an application that allows the traveler to make claims for flight delays and solve their problem. For this, it verifies the user's identity by scanning their passport and travel permit and then proceeds to offer alternatives to their flight with details of the cost.

The second service is a 24-hour customer support chatbot that records conversations on the Blockchain. And finally, Motor On The Spot (MOTS) is an application designed to provide assistance and transactions in real-time required by car insurance users. The idea is that when having a breakdown or accident with the car, they go to MOTS application to request the service of their Insurance.

G. Costs reduction

Another use case of Blockchain in Insurance is cost reduction, a common benefit when talking about the distributed ledger. As we mentioned before, paperwork is an important part of the equation, and by automating processes, you eliminate an expense in not only stationery but also the need for personnel to process such a quantity of documents.

PwC tested this use case in London with a six-week pilot. This test consisted of putting into operation a prototype based on Blockchain focused on optimizing interactions between multiple parties in the market, especially those involved in claims.

In the same way, effectiveness translates into cost reduction because the faster an activity is carried out, the faster the next task begins. That is, the cost/effectiveness ratio becomes more profitable than before.

VII. BLOCKCHAIN INSURANCE CONSORTIUM, B3i

Like banking, companies in the insurance sector formed their own consortium called B3i to study blockchain applications in Insurance. Named the Blockchain Insurance Industry Initiative, the consortium was created in October 2016 and comprised European insurance giants, including Liberty Mutual, Allianz, Zurich, Munich Re, and Swiss Re.

So far, the conglomerate's initiatives have focused on improving the services already offered in the industry to increase money flow and simplify processes such as documentation and auditing.

The alternatives presented by the technology supporting cryptocurrencies and smart contracts can mean a sea change for Insurance, as it already does for many other industries. So far, investigations and tests continue to take place around the world.

VIII. BLOCKCHAIN BENEFITS FOR THE INSURANCE INDUSTRY

Generating more and better customer experiences is one of the main objectives of different industries around the world. The growing incorporation of various information technologies has made it possible to generate strategies focused on providing personalized attention, reducing the number of intermediaries, and speeding up mandatory procedures. Blockchain is one of the technological tools that has begun to gain greater relevance within different economic industries; one of them is the insurance sector.

Because of Blockchain technology high level of security, transparency, and execution efficiency has been made visible to improve the customer experience by hiring or using a service, which is why it has been implemented in various financial sectors and technical customer service.

Insurers have begun to mobilize the capital necessary to correct the Blockchain's correct implementation in their business processes. It is estimated that by 2025, this type of technology will invoice around 1.4 Billion dollars within the insurance industry, which will represent an annual growth rate of 84.9%.

Blockchain is a technology based on data blockchains, similar to what a distributed and secure database represents; thanks to its encryption system and interconnected nodes, it allows to validate, ensure and guarantee the reliability of the stored information. This type of technology guarantees the high efficiency of the operation processes and the stability and availability of big data.

The benefits of its correct implementation are diverse:

1. It is currently estimated that the insurance industry has suffered losses of more than 72,000 million euros due to fraud and scams. Blockchain has a system that allows guaranteeing the identity of each of those involved in the insurance processes; also, the documentation and information are impossible to modify or alter; therefore, the risks are reduced to a minimum.

2. The use and management of written contracts increase the times of action and attention by insurance agents; however, blockchains create shared records, reducing the paperwork and processes between intermediaries, which would reduce management insurance and compensation.

3. Clients are often unwilling to share personal and confidential information for fear of what might happen to their data, which is why blockchains allow clients to have the ability to choose when and with whom to share their data.

IX. THE DIGITAL TRANSFORMATION OF THE INSURANCE BUSINESS

As we have seen, we firmly believe that transformation is possible, and it is necessary, especially in a world where new trends and technologies are going to emerge that make changes ever faster. Business models have to adapt to the new environment, new customer demands, and the possibilities that companies have today and those they will have in the near future.

The opportunities are many; each company's decision is simple to pose (but not simple to answer): either get on the wave or let it pass and see what the rest do. We firmly believe that the second answer is not the best to ensure a company's sustainability. Be careful, you do not necessarily have to risk everything, but technological advance unequivocally implies that gradually or more quickly, companies adopt changes and take advantage of new technologies if they intend to expand or at least survive.

That is why we believe that today there are countless possibilities for insurance companies that reaffirm their commitment to innovation, effectively implement it, and promote an innovative ecosystem with new partners and under new paradigms that must necessarily be adopted and incorporated, to be at the forefront of the business.

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