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The methodology of implementing the issuance and payment of car damage with the help of blockchain technology

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Abstract
Purpose: In this article, our purpose is firstly how to use blockchain technology in car insurance, which is a platform for recording and archiving information, and then to examine solutions for issuing, paying premiums and car damage in the context of this technology, which has special benefits. It has its own, which we will discuss further.
Methodology: In this article, we will introduce related technologies and required to use this technology in the insurance industry, which include hash, node, consensus algorithm, oracles, internet blockchains, smart contracts, peer-to-peer network. and airdrop. With the help of this technology, an effective step can be taken on insurance matters.
Findings: With the help of blockchain technology and the aforementioned technologies, it is possible to improve communication between insurance companies, speed up the stages of insurance affairs, which include asking for customer information, issuing insurance policies, registering claims and finally depositing the determined amount of claims to He noted the loss of accounts and a significant reduction in fraud cases.
Conclusion: With the help of the advantages and how to use this new technology in the automobile industry, it is possible to comprehensively benefit from the stage of information registration to the stage of damage, and by using this technology, it is possible to pay the insurance premium by the insurer or pay the damage. By the insurer in the form of tokens specific to each insurance company, it created value and made the shares of insurance companies more valuable.

Keywords: Insurance, blockchain, technology, prosperity of the insurance industry, be smart

Introduction

The first human achievements in the insurance industry have been achieved by sailors and maritime merchants. One of the first forms of insurance can be attributed to Chinese merchants. They had found that the probability of sinking or being hijacked by all the boats and ships traveling in the same port in one day is very low; Therefore, in order to avoid the risk of destruction, all their capital, cargo and goods were loaded in several different ships and boats.

With the advancement of technology and the updating of all devices and industries, the insurance industry also needs to update and use modern technologies in order to improve the quality of providing services to the society. We offer the world a new and complete version of car insurance.

In the rest of this section, we intend to point out the basic terms that will help us better understand the concept of using blockchain technology in the insurance industry:

Theoretical foundations of research

Blockchain

The concept of blockchain first appeared with the emergence of Bitcoin, and the king of digital currencies used this solution to store information about users' assets. Blockchains can be used privately and for specific purposes in an institution or organization, which is also called an enterprise blockchain. Of course, according to many experts, enterprise blockchains cannot achieve the main goal of this technology, i.e. decentralization. The word blockchain is a combination of two words block and chain. This technology is actually a chain of blocks. In each block, any information can be recorded; From the crimes of an individual to the details of the transactions of a monetary network like Bitcoin. Information is recorded in blocks, and the blocks are linked together in a chain, which forms the blockchain [1].

Blockchain technology is not a fundamental technology in itself, but rather a set of cryptographic and collective distribution processes that gave rise to this idea. Before blockchain, there were distributed ledgers, but blockchain has improved distributed ledger technology with its block structure. The first work on a secure cryptographic blockchain was planned in 1991 by Stuart Haber and Scott Stornetta, and in 1992 they upgraded it by incorporating a hash tree into the design, which improved its efficiency and allowed multiple documents to be sent in one go. Blocks are collected [2].

Think of the blockchain as an archive on which information is recorded. A blockchain may not be very different from what you are most familiar with. Using a blockchain, many people can contribute different records to a single type of information archive, and users can also control how information is recorded and updated, like Wikipedia.

In short, it can be said that blockchain is a community-based data distribution database of millions of shared points, in which information is recorded and modified at the same time, which can be used by using this open, free and at the same time platform. Sophisticated, it dealt with financial, scientific and informational exchanges, among the most important technologies based on the blockchain platform, we can mention encrypted digital currencies such as Bitcoin.

Hash

A combination (hash) is a text string that is generated from a special mathematical function and its use is to prevent fraud in the system. The hash of a data or input is always fixed.

Using the hash solution prevents fraud and changing the information recorded on the blockchain [3]. The slightest change in the information of a block changes its hash entirely and makes the blockchain invalid. Blockchain data is not stored on a specific computer or server. Every computer or system connected to the network receives a copy of the information. Each computer that connects to the network and receives a copy of the blockchain is called a node. When you connect to a blockchain as a node, you get a copy of its entire data. No change in information is possible unless the majority agrees [4].

Node

Simply put, any computer system that connects to the blockchain network is a node in the blockchain. Nodes enable peer-to-peer transactions on the blockchain platform. In simpler terms, nodes are computers that implement blockchain software on their system and connect to other computers like them through the Internet [5]. The more the number of these computers; The blockchain network infrastructure becomes stronger and its scalability increases. It can be said that in the absence of this member, the blockchain practically fails. This node in the network is responsible for confirming transactions and maintaining the security of the system. The full node downloads a general version of the blockchain and acts like a central server and is obliged to fully comply with the network rules [6].

Consensus Algorithm

One of the most important parts of the blockchain network structure is the consensus algorithms used in it, which determine the way network members reach an agreement about adding an information block to the information chain of blocks. In other words, consensus algorithms specify rules and protocols according to which members agree on which block to add to the chain and which member should do this, and prevent the formation of parallel and contradictory structures. [7]. In other words, when using blockchain, a critical issue arises, and that is when information is to be updated, it must happen in the system of all nodes. To solve this problem, the consensus algorithm is used, and in simple words, it means methods to reach an agreement among the members of a network [8] .

Oracles

Blockchain and smart contracts cannot access off-chain data (data that is outside the network). However, for many smart contracts, having information from the outside world is critical to executing the contract. At this stage, blockchain oracles come into action, because they create a communication bridge between external and internal data. Oracles are very vital in the blockchain ecosystem and expand the scope of smart contracts. Without the blockchain oracle, smart contracts will be of very limited use because they only have access to data within their own networks [9]

It should be noted that Oracle Blockchain is not a data source itself. Rather, it is a layer that looks up external data sources and verifies and authenticates the nodes and then sends this information back. Data transmitted by oracles comes in many forms, such as price information, a successful payment, or the temperature measured by a sensor. To retrieve data from the outside world, a smart contract must be invoked and network resources must be spent. Some oracles also have the ability to not only transfer information to smart contracts, but also return them to external sources. There are different types of oracles, the way the blockchain oracle works depends entirely on what it is designed for, which are divided into two types of software and hardware oracles [10].

Software oracles communicate with online information sources and transfer it to the blockchain. This information can be obtained from online databases, servers, websites and basically any data source on the web. The fact that software oracles are connected to the Internet not only allows them to supply information to smart contracts, but also to transmit this information in real time. This makes them one of the most common blockchain oracles. Information typically provided by software oracles can include exchange rates, cryptocurrency prices, or real-time flight information.

Some smart contracts need to communicate with the real world. Hardware oracles are designed to obtain information from the physical world and make it available to smart contracts. Such information can be sent through electronic sensors, barcode scanners and other information reading devices [11].

The internet between blockchains

The use of blockchain technology is not limited to cryptocurrencies such as Bitcoin and is used in many fields, including the Internet of Things, which represents the connection between devices and the Internet through brokered software and sensors in order to communicate, collect and The exchange of information between devices. Blockchain and IoT are both emerging and growing and have a long way to go before achieving full adoption by users and companies. Just like the Internet of Things, blockchain also needs a lot of energy and time to gain acceptance from companies. The non-use of authentication standards by most of the Internet of Things devices has made intruders able to infiltrate those devices and systems on a large scale. Therefore, authentication and standardization are necessary in all parts of the Internet of Things [12].

Blockchain can be the best solution to solve security problems. Due to the multitude of blockchain networks, their communication has a special place. For example, the insurance blockchain network 1 needs information from the insurance database 2, so the internet between blockchains that can transfer information from one network to another is very vital [13].

Smart Contract

In simple words, a smart contract is a programming code that is implemented on the blockchain to execute certain commands given by the programmer when a series of conditions are met. Smart contracts are a very revolutionary innovation that makes us unnecessary to trust others. To better understand a smart contract, we must first understand what a normal contract is. A typical contract is an agreement between two or more people that commits them to something in the future.

Computer codes are also a type of contract, for example, when you buy a file from the Internet, behind the scenes there are codes that are defined for them that if the user pays the money and the amount is sufficient, the download link of the file will be sent to Display it, otherwise display an error message.

We need intermediaries that we have to trust to execute normal contracts. These intermediaries can be centralized computer servers or banks and governments. What makes the

smart contract different from the normal contract is the use of blockchain technology, which makes us unnecessary to trust intermediaries [14].

In other words, a smart contract is code that is activated on the blockchain to review and execute the terms of a bilateral agreement without the need for intermediaries. When a smart contract is executed on a free blockchain like Ethereum, it cannot be stopped and no one can stop its execution [15]. By means of smart contracts, programs and projects can be made that will continue to work forever without any intermediaries. These programs are also called decentralized programs. Even the programmer of the smart contract cannot change the code of the smart contract registered in the blockchain [16]

The working method of smart contracts is similar to the work of vending machines that are located in the subway and public facilities. When you want to buy a soft drink using these machines, you insert money into the machine and the machine automatically processes your money and delivers the soft drink, without any middleman involved.

As we said, the smart contract is implemented on the blockchain, and the main property of the blockchain is its distributed nature. Apart from the complex technical processes, once the smart contract is registered on the blockchain, it will be shared among all the members of the blockchain, or nodes, and everyone will have a copy of it, so it is almost impossible to prevent its execution or manipulate it because all the members Blockchains run it, not one or more servers and centralized entities [17]. After being written by the programmer through a client (the official software that connects you directly to the blockchain), the smart contract code is registered as a transaction on the blockchain. Smart contracts are written by one or more programming languages. For example, the programming language of Ethereum smart contracts is Solidity [18].

In order to interact with the registered contract, this should be done with the transaction. Of course, if you only need to check the status of the contract, there is no need for a transaction. For example, a transaction is performed as an input to the contract. The nodes then execute the contract using the Ethereum virtual machine and the received input. The Ethereum virtual machine is a virtual space for executing contracts, and if the contract fee is sufficient, the transaction is confirmed [19].

In general, to create a smart contract, in addition to the items mentioned above, the following items are also needed:

- Subject of contract and access: This application must have access to the product or service under the contract to automatically control them in the supply or purchase process.
- Terms of the contract: the terms of the smart contract are precisely a sequence of operations that lead to the execution of the contract if the conditions occur. These conditions must be specified by programming. All participants must sign these terms.
- Oracle: Oracles are intermediaries that provide external information to the contract to process their contract.
- Exclusive platform: the smart contract is issued to the blockchain of a specific platform and distributed among the nodes of the platform in question. Also, to register the contract, you need an official client software that is directly connected to the blockchain.

Thousands of great ideas can be implemented with these contracts. In any process where we want to eliminate the need to trust, these contracts can be efficient. Some of the most important ones that have been implemented so far are:

- **Elections:** Voting results will be placed in the blockchain and distributed among the network nodes. All data is transparent, encrypted and anonymous. This method prevents any manipulation or fraud in the elections.
- **Management:** Smart contracts can execute routine processes accurately like robots.
- **Intellectual property:** a work, especially a file type (music, photo, film, etc.) after being published on the Internet, is in serious danger of copyright infringement, which causes a lot of damage to the owner of the work.
- **Insurance:** With smart contracts, the need for intermediaries in traditional insurance systems can be eliminated. Automatic payment of claims, receipt of insurance premiums and renewal of insurance with smart contracts is what insurance companies are working on.

Also, smart contracts can be used in systems such as banking, transportation, tracking, and the Internet of Things.

Advantages of blockchain

Using blockchain has the following advantages:

- Increasing accuracy in performance by eliminating human resources in the approval process.
- Reduction in costs by eliminating intermediaries or third parties in the approval process.
- Lack of concentration is a factor that makes it harder to manipulate information.
- Transactions are secure, private and efficient.
- Transparent technology.
- System without trust.

Peer to peer network

A peer-to-peer network is a decentralized communication model between two peers, also known as nodes, that can communicate with each other without the need for a central server. In the peer-to-peer network model, the network after formation can be used by participants to share and store files without the help of an intermediary. A peer-to-peer model is maintained by a distributed network of computers. This means that computers do not have a central server or administrator because each node maintains a copy of the files and thus acts as both a server and a client. Therefore, each node can upload files from other nodes or download files from them. These nodes use their own hard disks to store their data instead of a central server. Peer-to-peer networks are faster and more efficient because each node has shared capabilities to store, transfer, and receive files. Unlike traditional architectures where there is a central server, a peer-to-peer network has a distributed architecture that makes it highly resistant to cyber attacks. The underlying blockchain technology harnesses the power of peer-to-peer networks and provides a reliable and distributed ledger of transactions. As a distributed ledger technology, blockchain records transactions as a time-immutable digital block, which identifies the sender and receiver. No central authority manages blockchain networks and only participants can confirm transactions between each other. This technology allows individuals and institutions to trust the output without

trusting the participants. This new form of distributed data storage and management acts as a digital ledger that publicly records all transactions and activities. Therefore, the advantages of peer-to-peer network can be called security, removal of intermediaries, speed and prevention of censorship [20].

Airdrop

Getting money without any effort is always attractive. Gift or lottery is usually one of the most common ways to get paper money. It may be interesting to know that in the world of cryptocurrencies, you can get free cryptocurrencies. In the cryptocurrency world, receiving free tokens is called airdrop. In the initial supply of coins or tokens in the cryptocurrency market, the more people know about a product or service, the more people can use that product or service. In fact, in marketing, efforts are made to make the company's voice reach the ears of more potential customers. You can probably guess now why platforms distribute free cryptocurrency with airdrops. In fact, a new platform and cryptocurrency is unknown to everyone at the beginning of its life. For the growth and development of cryptocurrencies, many people need to know it. There is no better way than airdrop. Distributing free cryptocurrency to a large number of people makes the name of this cryptocurrency known to many. On the other hand, there is a strong possibility that the people who received the airdrop are talking about it on social networks. All these things make the airdrop reach its goal [21].
Another advantage and goal of airdrop should be considered to reduce the cost of advertising. In fact, in normal ways, people or organizations advertise at a heavy cost, but airdrop is very low-cost and can quickly get the name of a cryptocurrency on the tongue. After doing what was asked of you and of course sending your wallet address if it was possible to use a referral code for that airdrop, you can also use this possibility, so that after performing the necessary activities, you will have a code at your disposal. It happens that if a person enters the code when receiving an airdrop, you will also be awarded points as a representative, because you have taken a step towards the goal of the organization that intends to introduce you, so you deserve a reward.
Now it's done and you just have to wait for your coins to be sent to your wallet. Finally, an exchange will be introduced to you to cash out the received coins and tokens, and if you wish, you can use that exchange to send your coins to a wallet or another exchange.

3. An overview of the research background

Blockchain in the insurance industry

In this section, we are going to investigate a new type of insurance policy issuance process and payment of insurance claims under the title of blockchain insurance, using the definitions and technologies introduced in the previous section.
As mentioned earlier, the most important part of using blockchain technology in the insurance industry is creating an environment called blockchain, which is a platform for recording information and events required by insurance. Each insurance company can have its own platform and record its information from the issuing stage to the loss [22]. The connection of these blockchain platforms can be done through blockchain internet technology so that insurance companies and other related organizations can access all relevant information and use them to do things and speed up their work [23].
In the following, we will discuss how to use this technology in different fields of the insurance industry:

Car Insurance

Oracles can transfer information from real space to virtual space. Information such as geographic features, vehicles, driving style, risks of the insured, etc. The information is recorded in the blockchain by oracles and then confirmed by the nodes, and after that, the amount of the insurance premium will be determined by applying calculations. With the help of blockchain internet, it is possible to obtain the records required for issuing an insurance policy, such as the driving records and accidents of the insured, to the climatic information of the region, etc. in the form of a report [24].
Imaging of the insurance item can be done through helishot, the representative or the person himself, by the information that the software takes from the mobile phone, and after checking the information by oracles and confirming its authenticity by nodes, it is registered in the blockchain platform. The registered information according to the type of coverage selected and the approval of the policy conditions by the policyholder and then the payment of the insurance premium are confirmed by the nodes and then hashed by the native coins and tokens of the insurance company in the form of a smart contract on the blockchain platform. The registered smart contract (insurance policy) is non-falsifiable and can be queried by other organizations through the blockchain internet. This will speed up various matters, without the need to waste time and prevent customers from conflicting with time-consuming administrative bureaucracies, as well as avoid spending unnecessary expenses, which will increase the satisfaction of the victims [25].
In case of damage and it is announced by the insured, first of all, inquiries are made through the blockchain internet from other insurance companies and organizations in order to prevent fraud. This feature will prevent the high volume of fraud from insurance companies and as a result less losses for companies and the growth and prosperity of the insurance industry. On the other hand, the reduction of insurance fraud cases will have a significant impact on the reduction of insurance premiums and consequently the benefit of the insured [26].
After recording images and documents and transferring information by oracles on the blockchain platform and verifying its authenticity by nodes, an insurance policy is issued (according to the terms and contents of the insurance policy) and the amount of damage is calculated and programmed according to the smart contract, the amount of damage by coins and The native tokens of the insurance company will be deposited into the beneficiary's wallet.
Recorded information such as license plate number, chassis number and engine number, details of damage, sketch, amount of damage, etc. can be queried through other organizations. For example, freight and travel companies check the records of drivers and cars through the internet blockchain and grade them to use people with a lower risk record for higher importance loads or high risk drivers for passenger transportation. blacklist. Another application of blockchain internet technology in the insurance industry is the calculation of damage to unusual cars (Article 8 of the Law). In these cases, the injured person goes to his body insurance company to receive the difference in the amount of

the damage, and by using this technology, the process of paying the damage can be done easily and quickly, and there is no need for administrative bureaucracy.

Another reason for the acceptance of blockchain technology is its high speed in the process of issuing an insurance policy until the payment of damages. Payment of issuance and damages is done easily and in the shortest time, without the need for high fees (so that the transfer of cryptocurrencies from the ends of the world to other places in the shortest possible time and by spending only a few dollars) and without other obstacles. Now, the injured person can convert the coins and tokens received into cash, or keep it to pay insurance premiums or to hope for an increase in the property's value. It should be noted that the native coins and tokens of each insurance company can easily be converted into coins and tokens in the blockchain platform of other insurance companies with the help of the internet blockchain and the use of the bridge function (blockchain bridge) [27].

Research Methodology

One of the important discussions in this insurance platform is the ability of airdrop. In this way, insurance companies can start registering for free in order to distribute a low percentage of their blockchain coins or tokens, so that they can have a more effective advertisement in the society and attract the target market. On the other hand, with the improvement of the conditions and the increase of credit of each of the insurance companies, their coins and tokens also become valuable. This issue causes people to stop selling them and decide to keep coins and tokens, and this issue causes special attention to that insurance company and increases its stock price.

Another use of airdrop is giving bonus coins and tokens to people, which has an incentive aspect. This is important to introduce the project to people at the community level and virtual networks, which is published by the identifier code. Verbal and person-to-person advertising will have a great impact on the public mind and attract the attention of the target community. Giving native coins and tokens of the insurance company to people who have a good record of not receiving damages (in a way to encourage a person to be more careful about the insurance issue) and loyal customers are other features of airdrop.

The use of these coins and tokens does not end here and a person can pay his insurance premium through these coins if possible. In case of damage, the insurance company can also pay the amount of the damage in this way. These factors will increase the circulation of these coins and tokens and consequently make them valuable. It should be noted that insurance premium payment and damage payment is based on the daily price of that coin and token.

Therefore, the implementation of airdrops and tokenization (converting assets into digital assets) in addition to opening new avenues for investment, creates new liquidity in real asset markets that can have anti-inflationary properties. Also, one's property will benefit from the features of the blockchain, which has been mentioned, which will be a big step in the promotion of the insurance industry [28].

Conclusion

In this article, we intended to have a new attitude towards the future of car insurance with the help of blockchain technology. In the introduction, we tried to familiarize the public with the basic definitions of the insurance industry and the unique blockchain technology, and then taught how to use this technology in the insurance industry. As mentioned in the previous section, the use of this technology has many advantages for the broad insurance industry, which can be mentioned in the discussion of preventing frauds and consequently the prosperity of the insurance industry and reducing the cost of insurance premiums. We also knew that with the help of this technology, the shares of insurance companies will become more valuable due to their greater acceptance. The acceptance we got is the speed in insurance matters and also avoiding conflicts with time-consuming and tiring administrative bureaucracies. Speed and transparency can also be considered as one of the most important achievements of using this technology in the insurance industry. In the end, we hope that the insurance industry can reach its true position that it deserves with the help of this technology.

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