INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Blockchain: The Future of Insurance

Samarth Maganahalli[1], Arjun Acharya[2], Prof. Rashmi R[3], Prof. Anisha B S[4]

[1, 2]Information Science and Engineering, R. V College of Engineering, Bengaluru, India

[3, 4]Assistant Professor, Information Science and Engineering, R. V College of Engineering, Bengaluru, India

Abstract: Insurance is a big financial market with a high-risk high-gain margin. But the insurance system existing in the current scenario has a lot of dependencies both on the Insurance provider as well as the consumer. With its distributed ledger, smart contracts, and non-repudiation capabilities, blockchain is revolutionizing the way financial organizations do business, and the insurance industry is no exception. Through blockchain this system can be optimized to reduce costs and the middlemen dependency involved, by managing information in a smarter way. The main idea is to establish a peer to peer system of consensus for claiming insurance without the hassle of involving insurance surveyors or other non-involved parties.
Keywords: Blockchain, Smart contracts, Ethereum, Distributed ledger, Nodes, Transactions, Insurance Provider, Decentralized, Bitcoin, Proof of Concept

I. INTRODUCTION

Blockchain began with Satoshi Nakamoto in 2008; it is a disseminated decentralized database that continues enlisting information records affirmed by the related nodes. All information is preserved in an open record that incorporates all the enrolled transactions.

The innovation was utilized first inside Bitcoin where individuals can trade digital currency without a mediator – Bitcoin still is the principle application utilizing this innovation. Bitcoin is a peer-to-peer electronic cash exchange system, which could be used to make purchases online. The key fundamental of Bitcoin was that all electronic cash exchanges happen directly between the participating parties. Blockchain is an innovation that persistently records transactions in an immutable way permitting all things considered a steady update that guarantees recognizability. It is a disseminated decentralized database infrastructure that keeps up transparently inspectable records. It is a business dependent on a trade system of protections, exchanges, and resources between two participating nodes, voiding the requirements for intermediary/middleman. In this way, exchanges are approved legitimately.

Insurance agencies work in a profoundly serious condition in which both retail and corporate clients anticipate the best incentive for cash and a predominant online encounter. The current scenario is such that there is a high dependency on brokers and it is not uncommon for the brokers to call up people and talk them into taking up a policy .

The methodology is to make a paper contract which implies the incorporation of human blunders during the draft or while guaranteeing the protection. With everything taken into account, everything makes things complex for all the entities in the pipeline including the insurance providers, agents, and purchasers. We additionally need to think about the hazard related with the entire procedure. Blockchain innovation speaks to an event for positive change and development in the protection business.

With Ethereum's smart contracts and decentralized applications, protection can be led over blockchain accounts, presenting more mechanization and carefully designed review trails. Remarkably, the minimal effort of shrewd agreements and their exchanges implies that numerous items can be rendered increasingly serious for entrance of underinsured showcases in the creating scene. Upon that, there can be a transparent premium calculation system in place which will enable the user to get a clearer understanding of how things work and will make the customer more inclusive in the process.

II. LITERATURE SURVEY

A. The author plants the idea of a peer-to-peer electronic cash system, which eliminates the presence of middlemen. This helped us in understanding why blockchain was beginning to be considered as a good alternative for the Insurance system.

B. Here, the author talks about programmable contracts called "Smart Contracts" which mocks a real-world contract. This revealed how the claim process and settlement is automated on a blockchain.

C. We get a brief idea of how blockchain in insurance works and what are the current methodologies being used to achieve the desired results

D. Assisted us in understanding the benefits that can be observed in a blockchain driven insurance system.

E. The authors talk about how smart contracts can be designed to handle various scenarios arising during the life cycle of an insurance use case.

III.   BLOCKCHAIN IN INSURANCE

When a single source of truth is presented, a drastic reduction in friction can be observed in most of the business proceedings. This provisioning of a single source of truth can be carried out using solutions like smart contracts.

Information compromise is made simpler, precision is improved, and time spent revealing data is wiped out, taking into account straightforwardness, productivity gains and cost decreases all through a worthwhile chain. In addition, shared industry errands and computerization produce progressively consistent procedures and lower all out-process durations.

The total upgrades in speed and precision can likewise make progressively positive client encounters. For instance, shortening the cases cycle through improved proficiency could prompt higher consumer loyalty and maintenance, while quicker and better access to information could empower smoother association among insurers and their customers. Lessening wasteful aspects and expenses all through the worth chain could, at last, even lead to bring down premiums.

Blockchain can be applied throughout the insurance industry and across many lines of business, including:

InsureETH has manufactured an arrangement of blockchain that relies upon the system of smart contracts facilitated by Ethereum network. In a scenario of flight postponement or cancellation, these programmed contracts check the flight information sources and appropriately start payouts for the insurance providers by means of "prophets". This case incorporates parallel, effortlessly confirmed data that encourages the utilization of shrewd agreements on the highest point of the blockchain.

Dynamis is making a peer-to-peer based unemployment insurance system by the method of user profiling, from data collected from user's social media. The capability of smart contracts to automate policy handling as well as claim processing (data from various policyholders will be combined) can be observed here.

The IoT based insurance system is also a growing trend in the market with a customer base in the number of millions. IoT to capture real world data is predominantly being used by companies like Uber, Airbnb. The IoT based real time collection of data, can be used to monitor health of customers or performance/depreciation of car cost, which then can be utilized to adjust the pricings in smart contracts, making more efficient calculation of premiums.

A.   Blockchain in Health Insurance

Blockchain can possibly assume control over the full register of patients inside a practical blockchain. The usage of such an innovation in the health business would encourage the full history of patients being available on the blockchain itself as well as accelerate the insurance strategy, permitting patients not to need to stress over unnecessary authoritative methods while dealing with their wellbeing.

Gem Health is a framework for making medicinal services applications and establishment on the Ethereum blockchain and it gives patients authority over their information being shared. Diamond Health has cooperated with Philips so as to collect permissioned blockchain that can be utilized in medicinal services administration to render patients' information obvious to back up plans to see progressively to speed the case procedure

Medrec is a decentralized system of an administration framework for clinical records from MIT (Massachusetts Institute of Technology). The framework lists clinical records on blockchain and offers access to the concerned groups to imagine these records. Utilizing this technique makes a review trail that is anything but difficult to track down and check while keeping the patient's protection. It is still at a PoC (confirmation of-idea) stage.

B.   Blockchain in Home Insurance

Evaluation and processing of claims can be tiresome because of large amounts of manually filled out data causing some errors or absence of data altogether. However, digitally tracking assets (even though in most cases "damages" are found to be subjective) through blockchain along with smart contracts can make claim processes easier and reduces the margin of error by a massive amount.

Safeshare Global established by the Z/Yen Group (a business think tank that has won the insurance startup of the year (2016) at British Insurance Awards), in association with Vrumi (an organization situated in the UK, that permits property holders to lease rooms in their private homes to customers that need to dispatch their organizations). It is the principal organization to build up blockchain insurance with the plan to address the issues of the sharing economy. The application permits property holders to get an impermanent momentary protection endorsed by Lloyd's of London – relying upon the lease term. The blockchain gives a period stepped, permanent record progressively, bringing down the expense – contrasted with customary locally established business strategies. The application is met with progress and has figured on the rundown of best Insurtech startups at the Digital and Insurtech Awards in London (2017).

C. Blockchain in Auto Insurance

In a blockchain based framework, the vehicle manufacturer, spares manufacturer, dealer, repair shop, guarantor and driver could all act as nodes on the blockchain. As a matter of fact, even the individual parts that go into a vehicle could be recorded, ultimately building a more detailed vehicle history report than the existing system and all in a configuration that is evidently protected from data breaches.

Kasko2go, the Swiss startup has released the first blockchain-based vehicle insurance application. The company uses military grade IoT, improved telematics and a group of specialists to give safe drivers a decentralized application that recognizes cryptographic installments of money for their accident protection. Their blockchain technology can be used to build an app which offers drivers a basic, safe and moderate vehicle insurance solution that is absolutely customizable and with ultimate transparency.

D. Insurance of High Value Assets

Blockchain can be utilized to file and check the duty regarding costly resources (jewellery,etc.). It can likewise check the responsibility for resources.

Everledger is a startup that utilizes advancements, for example, blockchain, brilliant agreements and machine vision, to improve hazard control and decrease misrepresentation. The Diamond Time-Lapse Protocol is a detectability movement dependent on a blockchain-based framework for the precious stone and adornments industry. The fact of the matter is to associate all industry individuals' including creators, retailers and purchasers to know a gem's story from the source to the last customer; the business means to have the option to exhibit legitimacy, straightforwardness, and provenance

E. Peer to Peer Insurance

Peer to peer insurance or also called collaborative insurance; is a development that is based on the present social and technological context. It is based on the approach of a shared economy in which premiums are shared by people to form a large pool of capital to pay out claims.

Innovations like blockchain can encourage the ascent of Peer-to-Peer stage, to look for new effective approaches to support clients. Most Peer to Peer insurance providers go about as agents to bring down the expense of premiums by social affair policyholders web based, upgrading their power.The policyholder takes part by paying a piece of the premium into a shared pool that covers minor misfortunes while the rest of the sum is diverted. In any case, if the cases surpass the sum given, a customary insurance agency will cover the distinction. The productivity brought by Blockchain brings about lesser premiums. When the premium has been set, the individuals put the cash into an escrow account. If there should arise an occurrence of a case occasion, which is commonly endorsed by the voting system, the sum is paid to the inquirer. Any outstanding cash is re-appropriated to the individuals or gave to a foundation. The accompanying outline condenses the case procedure of Blockchain-controlled P2P protection course of action

Another scenario is when a P2P provider is backed by an Investor. If the client claim exceeds the premium being paid, then the money gets deducted from the capital of the company, otherwise the difference amount is distributed between the company and the investor as profit.

IV. CHALLENGES

Decentralization bolsters information sharing and diminishes the monopoly advantages that unsymmetrical information tends to give. Under such conditions, insurance agencies need to give more consideration to pricing, product improvement, claims services, and even risk of reputation. This indicates new difficulties for the company authorities.

Simultaneously, every part of the protection business must be progressively centered around guaranteeing the accuracy of data at the beginning phase of its business. Realizing how to react to false claims from insureds will be pivotal.

In principle it is difficult to hack blockchain however safeguarding of data will be an issue for localized blocks. Hence higher digital security protection will be required to ensure these localized blocks.

The cooperation of blockchain with different technologies could imply that current intermediary jobs are supplanted by new advances in various sectors. In the case that the insurance industry needs to guarantee the constant advancement of intermediary it should address the conceivable unsettling risks to existing blockchain based distribution business models.

The required investment (both tangible and intangible) related with blockchain technology adoption is a major thought for some organizations at this stage. Insurance agencies and reinsurance organizations work on a number of systems simultaneously and the option to incorporate blockchain based innovation isn't an easy decision to take. At the present phase of blockchain development, this could be perhaps the greatest obstruction confronting insurance providers.

V. RESULTS AND CONCLUSION

Blockchain can be applied throughout the insurance industry and across many lines of business, including:

A. Registries of high-value items and warranties
B. Know-your-customer (KYC) and anti-money laundering (AML) procedures
C. Parametric (index-based) products
D. Reinsurance practices
E. Claims handling
F. Distribution methods
G. Peer-to-peer (P2P) models

What blockchain in insurance system will solve:

1) Easy Registration of users: By Implementing KYC in blockchain, the data of customers can be easily verified and persisted, which will facilitate easy migration of data between different policy providers
2) Easy Raise of claims: Rather than going through the tedious process of form submission, verification by insurance and all the further steps, a simple online for submission system can be put in place.
3) Real-time settlement Tracking: The lifecycle of the claim can be easily tracked by monitoring the state in which the claim is in at.
4) One stop verification of claim by Insurance providers as well as Police: All data pertaining to the claim is publically available for verification by the customer as well as provider, thus overcoming the cost that might be incurred due to corruption at any of these stages.
5) Easy premium payment: Online premium settlement and premium cost verification can be done by the customer, thus making the process more transparent.
6) Transparent premium calculation: The process of calculation of premium will be registered as a transaction in the blockchain that can be verified by the customer who will be affected by it.
7) Cutting of costs: The cost that might be incurred due to any illegal activity arising due to mutual understanding between customer, insurance agent or any other participating parties might lead to high cost incurring on the insurance provider.
8) Further benefits that can be seen are:
a) Reduced middlemen
b) Near real-time synchronization of settlement
c) Low transaction costs
d) Possible avoidance of Fraud
e) Security
f) Permanent and distributed ledger
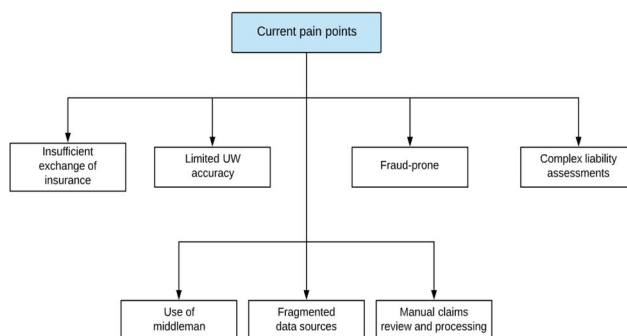g) Smart` contracts
h) Easier Onboarding.

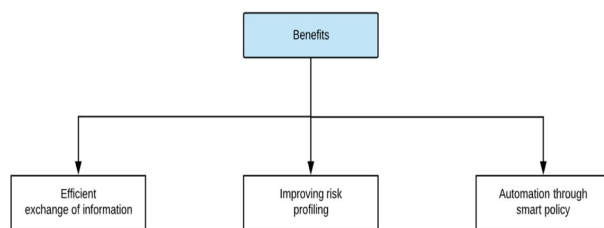Fig 6.1 Limitations of current insurance system that blockchain aims to solve

Fig. 6.2 Benefits that blockchain based solutions provide in underwriting process
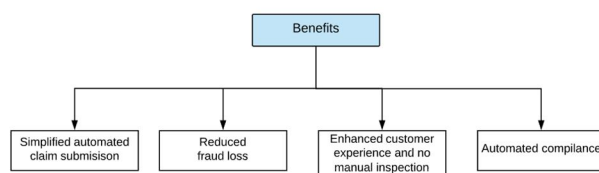

Fig. 6.3 Benefits that blockchain based solutions provide in claims processing

VI. ACKNOWLEDGEMENT

We would like to thank our guides, Prof. Anisha B S and Prof. Rashmi R for being a continuous support in helping us and guiding us in writing the paper. They have played an integral part in helping us understand the core concepts and helped us explore different ideas.

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