DIGITIZATION AND SECURITY OF LIFE INSURANCE USING BLOCKCHAIN

Glenn Muga
Information Technology
Fr. C. Rodrigues Institute of Technology,
Vashi, India
gmuga7@gmail.com

Augustin Nadar
Information Technology
Fr. C. Rodrigues Institute of Technology,
Vashi, India
samuelnadar28@gmail.com

Preethi Lydia
Information Technology
Fr. C. Rodrigues Institute of Technology,
Vashi, India
preethilydia17@gmail.com

Arun Samuel
Information Technology
Fr. C. Rodrigues Institute of Technology,
Vashi, India
arunsamuel4560@gmail.com

Dr. Trupti Lotlikar
Information Technology
Fr. C. Rodrigues Institute of Technology,
Vashi, India
trupti.lotlikar@fcrit.ac.in

Abstract—Blockchain is a distributed, changeless ledger that creates it easier to record transactions and track assets in an exceedingly business network. A blockchain network will track and trade virtually something useful, lowering risk and prices for everybody concerned. Several enterprise applications aim to use blockchain to learn from its options. The insurance business is one among them, because the current system suffers from fraud and tedium to keep documents and claims to method. Blockchain technology will bring forth vital potency gains, transparency, quicker payouts, value savings, and fraud hindrance whereas allowing period knowledge sharing between many parties in an exceedingly trusty manner. Blockchain may also alter new insurance practices to create higher merchandise and markets.

Index Terms—Blockchain; insurance; good contract; Ethereum; security.

I. INTRODUCTION

Life insurance ensures a lump-sum payout to the family members of the insured in the event of their death. whereas on-line brokers became additional fashionable, many of us still decide insurance brokers by phone to shop for new policies. Policies are typically paper contracts, which suggests claims and payments are vulnerable to errors. This is often the inherent complex- ity of insurance, involving customers, brokers, insurers and reinsurers, and therefore the main product of insurance risk. the planet is step by step switching to conversion wherever several businesses have recently begun researching blockchain technology for adoption in their business processes. In recent years, millions of industries are disbursing time and cash on learning regarding the viability of blockchain and therefore the impact of its ability within the organization. While several have anticipated innovations, particularly huge knowledge, social media, cloud computing, and AI to form and influence a consequent decade of business, Blockchain is the most tumultuous of the various industries of the planet economy like finance and banking, health care, producing, e-commerce, and food sectors. Skepticism was conjointly expressed regarding Blockchain's real potential. Blockchain technology, as an example, will offer more than simply a way of generating digital currencies. Blockchain processes will probably eliminate all third parties, like banks and governments, United Nations agency offer the trust within the transactions. The insurance business has seen associate degree unprecedented growth throughout the last decade thanks to, a minimum of partially, ad- vancements in communication and computation technologies. The new futuristic technologies have absolutely compactified our lives in several sectors, like health, transport, business, and so on. Like alternative beneficiaries of today's leading edge computation and communication technologies, the insurance business is no exception. to stay up with the rising trends, the insurance business is additionally harnessing the advantages of the prevailing futurist technologies. its price mentioned that the insurance business covers several dimensions among that life, Property and Casualty (PC), and health area unit primarily necessary. while not loss of generality, the processes concerned within the insurance business rely upon the transacting entities for initiation, maintenance, and closure of the insurance policies Blockchain school permits for larger trust among insurers and therefore the insured, by each increasing transparency and mistreatment good contracts that area unit enforceable by code. With good contracts, the claims method are often initiated mechanically once the knowledge of the death of associate degree insured is entered into a ledger- primarily based information. Since info on a blockchain ledger is severally verifiable between disparate parties, this lifts pressure off of the insured's family to prove a death through work. as an example, if a hospital enters info into a blockchain-based system that associate degree insured had died, then it may like a shot send this info to the life insurance The beneficiaries wouldn't ought to file a claim for the insurance company to begin the process.Storing info associated with associate degree insured on a blockchain network would conjointly produce a verifiable audit path that may facilitate cut back instancesof claims fraud. every insurance, that may be a contract between the insurance company and therefore the insured,referred to because the customer, determines the claims that the insurance company is wrongfully needed to pay, as well as company .The premium that the insurance company guarantees to pay sporadically (e.g., monthly)

II. LITERATURE SURVEY

Blockchain refers to the continual chain of blocks that con- tain info engineered in step with needs by adhering to strict governing rules. A blockchain is often apprehended as a ledger or a written account info of 1 or several transactions whereby those transactions are held in blocks. This trust is made with no influence of a central authority, the block area unit written on the chain once accord among members of the network. The terribly essence of blockchain is that it's encrypted to be immutable , once the block is written, it can not be changed or tampered with. More often, multiple copies of block chain area units hold on on many various pc systems within the style of distributed ledgers, that area unit free of every alternative. Many industries within the world market have taken a technologically advanced step by adopting and implementing blockchain for the aim of transparency and traceability. Blockchain technology provides a redistributed and open platform that permits the creation of a clear, secure, and strong knowledge base; and it's known as a blockchain as a result of it are often understood as a sequence of blocks interlinked with mathematically determined data victimization advanced algorithms, conjointly referred to as cryptography. 3.0 is created for various applications that don't embrace money, money, money markets, trade, or alternative economic activ- ities. Health, science, digital identity, government, education and totally different aspects of culture area unit samples of such applications. sensible contracts area unit a neighborhood of blockchain technology that streamlines many processes, that at a given amount of your time area unit running across totally different systems and databases. they're enforced on the basis of blockchain technology as a platform to form authentication and similar tasks automatically, which can, just in case of manual authentication, exhibit a high risk of error or abuse. Implementation of such a technology willoriginate a forceful amendment within the insurance business as offers and policies are often translated to pc codes at can. Science algorithms and similar subtle digital processes are unaccustomed to defend info like participant identity and private details, secure transactions and ensure the credibility of transactions white potato and Cooper (2016) have indicated four main characteristics of a wise contract. These contain the following: Digital Form—it is regarding code, data, and program running Embedded—contractual clauses or useful results area unit embedded within the software package as a coding system Technologically Controlled Performance—payment unleashed alternative acts area unit allowed by the technology. Once initiated, the results with that a wise contract is encoded to execute, can not be stopped unless Associate in Nursing outcome depends on Associate in Nursing unmet condition. Therefore, a blockchain based mostly sensible contract may be a contract between 2 or additional parties that's firmly held on and dead digitally employing a secure code (Christopher, 2016). These sensible contracts create the whole method machine-driven and therefore the contracts to be self-executing in nature. Thus, for a client and therefore the nondepository financial institution, it becomes easier and important to use it. The blockchain implementations work on reducing inefficiencies, high dealing fees and in depth claim-processing time, victimization distributed ledger technology. the information and payments area unit recorded firmly, thereby minimizing risk and creatinginsur- ance additional accessible. "Self-purchase insurance," "automatic claim settlement," "fraud detection," and "fund flow record monitoring" are presently the most applications of blockchain within the insurance business. Traditionally, claims were primarily administered through KYC (know your customer),

whereas KYC was de-intermediated by machine-driven claims. KYC is one in every of the key processes of identification oft employed by business entities round the world and has been in use by moneyinstitutions since a pair of,000. Once needed, customers will provide in- surance corporations access to their identity knowledge. The client will stop duplicate authentication procedures once the KYC profile is checked and recover the checked identity knowledge once alternative businesses want it. KYC supported blockchain technology has several advantages, like disintermediation, clear transactions and no centralized management. Many organizations have used the options of blockchain de-mediation to alter the method info is processed. as an example, Stratumn—an nondepository financial institution based mostly in Paris, France; shares corroborated client info through blockchain, that successively saves value and time for every demand facet of knowledge, to validate if the client meets the insurance purchase requirements; thus, customers should purchase insurance severally. Let's take an additional case. hymenopteranInsurance launched the "blockchain + claim" project in Gregorian calendar month 2018, during which electronic notes might be used as claim notes (Kim and Kang 2017). Detection of fraud primarily utilizes sensible contract technology supported blockchain technology. sensible contracts are unit special protocols designed for the machine-driven validation and compliance of contracts. Specifically, sensible contracts enable US, while not the requirement for third parties, to perform traceable, permanent, and secure transactions. A wise contract includes all the transaction details and can execute the ensuing procedure as long as the specifications area unit is consummated. The excellence between sensible contracts and standard paper contracts is that comput- ers generate sensible contracts. As an example, "Taikang Online" had an Associate in Nursing"Anti-Moth" project that used blockchain technology-based mostly on Insurance fraud detection. The company's intelligent getting system will deduce if the consumer is designing on insurance and satisfies the insurance criteria that not solely preserves privacy however will at the same time stop insurance fraud (Wang and Kogan, 2018). The existence of distributed ledgers permits records of capital flows to be monitored over time. A distributed ledger is characterized mutually that's managed during a redistributed type, across multiple locations and doesn't need a 3rd party to take care of the validity of the information it holds (such as a bank or clearinghouse)

III. PROPOSED SYSTEM

The proposed system may be a Blockchain-based system that supports fast claim process. claim processing are often terribly tedious, time strict,inefficient, and vulnerable to human errors particularly wherever validation is finished through work processes. Also, there's an absence of transparency within the submission of claims and therefore the process is related to adverse effects of delays and blunders resulting in unsatisfactory client services. Insurance claims may be a circulated method involving many entities –insurer, insured, regulators, and third party entities, largely characterized by inefficiencies and malicious intentions.

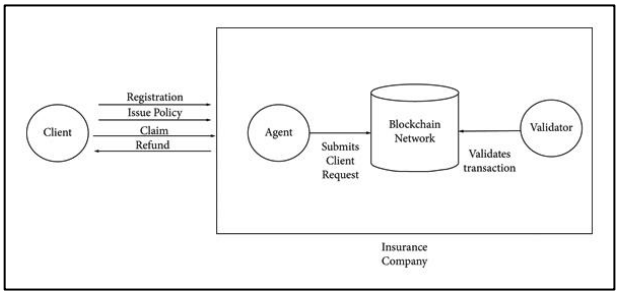

Fig. 1. Block Diagam for the website.

The goal is to form an Associate in Nursing insurance system victimization blockchain technology. The best plan is to deploy the full execution and storage of the contract. Its conditions and logic for execution are structured as sensible contracts and written victimization of the Solidity programming language. The readying of those contracts are on a blockchain-enabled distributed platform, in our case, Ethereum. The primary segment here presents a basic system model for the framework. The subsequent elements give the characters concerned, mechanism of the framework for insurance, network platform, accordrule, blockchain blocks, sensible contracts, and framework parts and al- gorithm. Section three presents the results and analysis of the framework. Finally, in Section four, the full framework is ended.
The major contribution of this planned system is the implementation of blockchain technology within the field of every kind of insurance processes.
The consumer needs to register with a singular id at the side of alternative necessary attributes as values. These IDs are units to be held on during a decibel. Previously, all policies and rules would be written within the style of sensible contracts. {they area unit|they're} designed to be triggered once all the necessities or logics are met for the transactions. Once a deal is created, the record logs and execution results are held on during a ledger within the blockchain network. In between the transactions, there's a collection of endorsers and validators WHO verify the dealing and validate and store the dealing block within the blockchain ledger

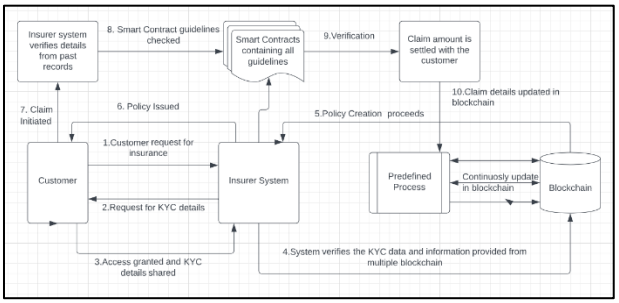

Fig. 2. Architecture diagram for website

A. Methodology

The methods and materials used to achieve the objective are discussed in this section. The goal is to create an insurance ecosystem using blockchain technology. The main idea is to deploy the entire implementation and save the contract. Its conditions and implementation logic will be structured as smart contracts and written using the Solidity programming language. The deployment of these contracts will be on a distributed platform with blockchain support, in our case Ethereum. The first subsection here presents the basic system model for the framework.[4] The client must register with a unique ID along with other necessary attributes as values. These IDs are to be stored in the DB. Previously, all policies and regulations were written in the form of smart contracts. They are designed to fire when all requirements or logic are met for the transactions. After the transaction is executed, the record logs and execution results will be stored in the ledger in the blockchain network. Between transactions, there is a group of approvers and validators who verify the transaction and verify and store the transaction block in the blockchain ledger.[4]

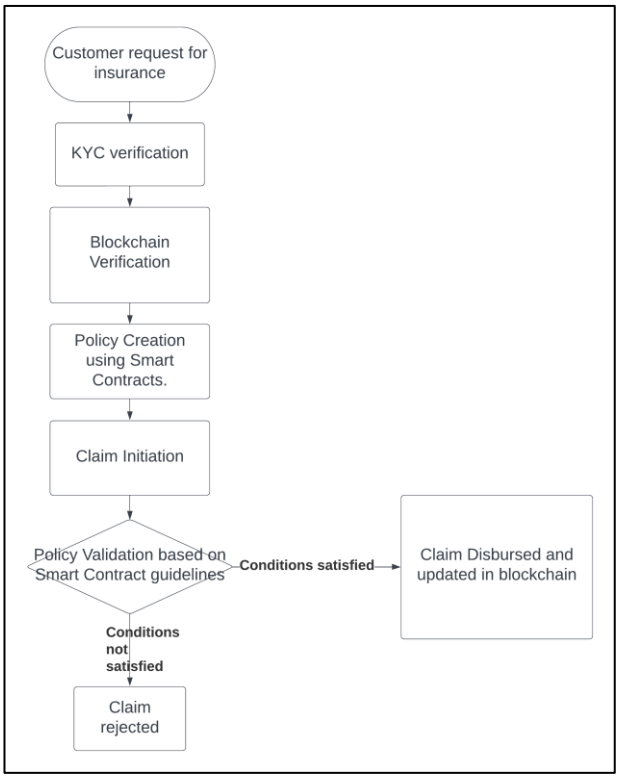

Fig. 3. Architecture diagram for website

It consists of the main project, the Insurer System, which is connected to the Blockchain network and consists of the necessary modules. The customer request is sent to the insurer's system for insurance requests. The insurer's system will then request the customer's KYC details. The customer will then provide details of the insurer's KYC system. The system verifies data and KYC information provided from multiple blockchains, which are then processed to issue policies to customers. Smart contracts are used to create policies. After this process, the policy is issued to the customer. Now, once a claim is initiated, the insurer's system will verify the details from past records. The complaint is checked based on the Smart contract guidelines. The guidelines are verified and then the claim is settled with the customer. Claim details are updated on the blockchain network.[8]

IV. EXPERIMENTAL RESULTS

Fig. 4. Homepage

In Fig 5.1 we see the Homepage of the system , it is a website through which the users can interact with this system . It has 2 main Logins, the User or the Policyholder will choose the Policy Option and will be redirected to the Policy Page while the Admin who will be having the Credentials of controlling the website can Login to database by choosing the Admin Option , he will be redirected to the Admin Page.

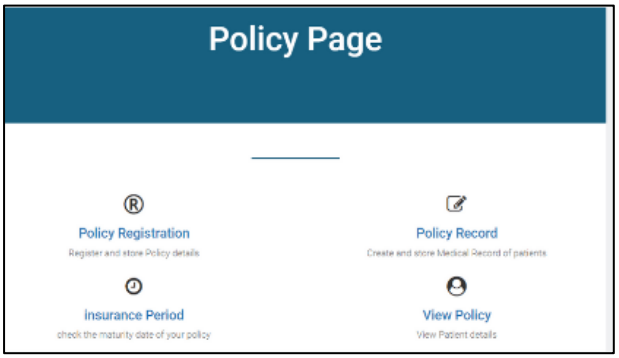

Fig. 5. Policy of the website

Fig. 5. shows Policy portal we see the policy page in which it has different options like policy registration, policy record, insurance period and view policy. Policy Registration: Users can apply for new policies or renew or update existing ones using this option.Policy Record: It is used to keep track of each life insurance policy the user owns.Insurance Period: It includes the time frame during which a life insurance policy is effective. View Policy: This includes general and policy information for the policy holders

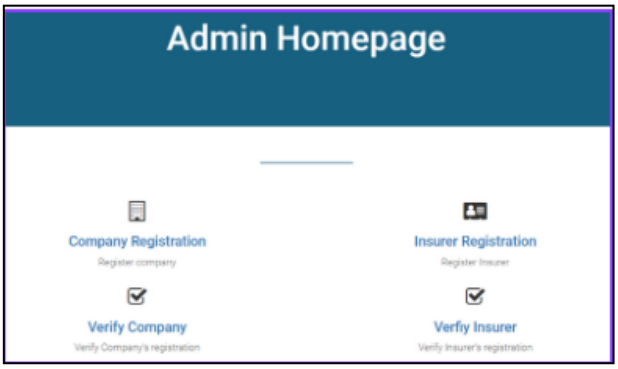

Fig. 6. Admin Homepage

In Fig 5.3 , here we can see the Admin page which includes options like:

Company Registration: Insurance companies are registered to make the process of Verification easy and to ensure it is not any Fraudulent company. Insurer Registration is where the insurer's registration is done on the Admin side .Verify Company: to ensure the Company meets all the guidelines and has not been involved in any kind of frauds. Verify Insurer - to ensure the insurer details are similar both on the User side and the Admin side and no variations are detected, the insurer is a legitimate one.

V. CONCLUSION

As the insurance industry is still in its infancy, the adoption of blockchain solutions for the insurance industry is difficult. Although writing a smart contract presents some technical difficulties, further research will solve these problems and strengthen the insurance industry. The insurance industry's smart contract will automate claims processing, making it safer, faster and cheaper. The insurance industry will benefit from fraud detection, risk level prediction, auto-advisor and a host of other services when AI and blockchain combine. The insurance industry's smart contract will enable safer, faster and cheaper automated claims processing. Implementing a blockchain based system to store all policies and facilitate the policy claim process. The financial sector seems to be showing more interest at the moment, as evidenced by the high initial cost of blockchain. Most of the use cases were tested using small scale transactions. The vast majority of insurance deals span continents, currencies and time zones. Consensus-based validation and continuous data replication require more hardware and power.

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