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Digitizing Invoice and Managing GST Payment using Blockchain Smart Contract

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ABSTRACT: In India, Goods and Service Tax (GST) is an indirect taxation system imposed on the supply of goods and services and is aimed to replace issues of direct taxes. The GST amount is paid to the Central and State Government respectively. The refunding system usually takes a duration of 30 days from filing a GST refund form. The period may alter depending upon the refund amount to be calculated. Usually, the amount is high and can create financial burden to users and business in return so in order to compute the GST we have proposed a system where multiple users are brought onto a single system. Using smart contract, we can do needful calculation of taxes and adjust the amount to be refunded to the user and Government. Use of blockchain technology enables to securely host the public transactions where multiple customers/ vendors/suppliers all are all users who don't trust each other are brought onto a single system. The We are also providing security to the invoices created at the seller side using encryption algorithm which are used for financial transactions. This paper includes the result and implementation and detail analysis of our output.

I. INTRODUCTION

The Goods and Services Tax (GST) came into effect from July 1, 2017 in India. The tax replaced the existing multiple flowing taxes levied by the central and state governments. There are two main categories of taxes: Direct Tax and Indirect Tax. Direct Tax is a kind of tax that is collected straightforwardly from corporate entities and people. This tax is such a type of tax that can't be paid by others or can't be moved to any other person. While thinking about direct tax, we incorporate income tax, wealth tax, gift tax, capital gains tax. Indirect taxes are such taxes that are indirectly levied on the people by selling goods and services. The sellers of the goods and services are supposed to collect the tax from various individuals. The collected amount needs to be then submitted to the government bodies by these them. GST system is mainly classified into two broad components; the state GST (SGST)/union territory (UGST) and a central GST (CGST). Goods and services are divided into five different tax slabs for collection of tax - 0%, 5%, 12%, 18% and 28%. However, certain products such as petroleum products, alcoholic drinks, electricity are not taxed under GST and instead are taxed separately by the individual state governments, as per the previous tax regime. The tax rates, rules and regulations are governed by the GST Council which consists of the finance ministers of central and all the states. The blockchain technology actually came from the financial sector, i.e., the concept of digital currency. Blockchain is a distributed ledger, which simply means that a ledger is spread across the network among all peers in the network, and each peer holds a copy of the complete ledger. Blockchain is a database that is shared across a network of computers. Employing a decentralized Blockchain system to overcome this issue can be a key to solve the centralized GST system issue. The designed system includes generation of Smart Contract that do the needful calculation of taxes and adjusts the amount of tax to be paid back to the user and to the government, thus speeding up the traditional process of GST refund.

II. BACKGROUND

A. Blockchain technology:

Blockchain technology operates as the distributed ledger structure, which stores all data by the time and broadcast them to entire network. It is nearly impossible to change the decentralized data, because the data is only reversed if there is more than 51% agreement from all nodes in the network.



B. Goods and Services Tax(GST):

The Goods and Services Tax, or Goods and Services Tax (GST) in some countries, is a kind of tax, which is charged in case the price of goods or services increases at each stage of the production process.

C. Smart contract:

Smart contract is version 2.0 of the Blockchain technology This is short machine program, which defines conditions of contract in the business. These short programs are executed without the third party automatically. Applying smart contracts increases the trust between parties

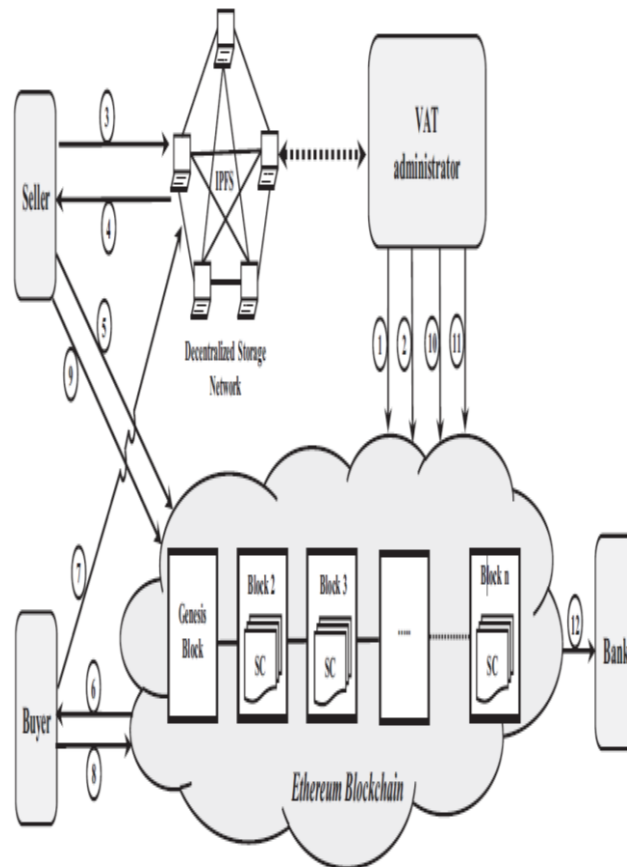
III.LITERATURE REVIEW

The authors Rishabh Ranka, Niranjana Sharma, Naman Talati, Ms. Nitika Rai in this paper a number of existing literature on GST and use of Blockchain technology is studied. The Goods and Services Tax (GST) came into existence on July 1, 2017 in India. GST is paid by the users in the transaction system where the total cost of the product and profit is added and based on the total amount, the tax is calculated. we are aiming to create a web application for computing and levying GST by using Blockchain Technology. The blockchain technology securely hosts the public transactions where multiple customers/ vendors/suppliers are all users are brought together in a single system. The Smart Contract do all the required calculations of taxes and balance the amount of tax to be paid back to the user and to the Government. According to 2020 The IT module under GSTN is not capable of handling huge transactions which occur inside the centralized GST system. A successful GST system works only because of its strong I.T. fundamentals. . It is very difficult for handling this amount of big data which has multiple field attributes and which carry out transactions and refunding on the basis of GST. Blockchain is a new type of database which holds all the historical information in digital blocks and is generated in a crypto digital ledger. By using Solidity Programming Language we can create a Smart Contract which helps to derive and design tax invoices which would reduce major issues like filing returns and claiming ITC (Input Tax Credit) etc. this would make tax calculation and refunding process easy.

The authors Milla Sepliana Setyowati, Niken Desila Utami, Arfah Habib Saragih and AdangHendrawan in this research paper evaluates how blockchain technology can be applied to a GST system, particularly for electronic invoices (e-Invoice). A qualitative approach was used in this study to analyze blockchain technology models that could be applied in a GST system. Data is considered to be protected if it is distributed to the nodes in the blockchain technology network which includes the Tax Invoice Serial Number (TISN). A TISN system which is based on blockchain technology will produce a faster and more efficient system. The application of blockchain technology in the GST system can have implications for optimizing the electronic GST system, improving the user experience of taxpayers using the GST electronic system, assisting the analysis of the national economy by making the data related to the GST clear and auditable, and enhancing the transparency of GST transactions. There may be very broad implications for implementing block chain technology in GST system, this implications would not only be for taxation sector but also for national economy.

The authors Van-Cam NGUYEN§, Hoai-Luan PHAM, Thi-HongTRAN, Huu-Thuan HUYNH§, Yasuhiko NAKASHIMA in this paper presents a system which digitizes invoice and automatically calculates GST by using Blockchain smart contract The implementation of smart contract in Remix Integrated Development Environment (IDE) is based on the Ethereum platform. The Experiential results of this new system saves the cost for authenticating transactions and also protects the data from hacker's attacks due to property of the Blockchain technology. This authenticating procedure for transactions is still complicated, and the current GOODS AND SERVICES TAX (GST) administration system works as centralized server, it consists of high-risk attacks from hackers. Therefore, only a few countries use this digital technology to calculate and manage the GST payment despite of their benefits. By combining decentralized storage network (DSN) with the smart contract (SC), a new model based on Blockchain technology is proposed to authenticate the transaction, calculate GOODS AND SERVICES TAX and approve GST payment. This system also decreases the risk of data loss attacks and improves the trust in implementing GST payment.

IV.METHODOLOGY



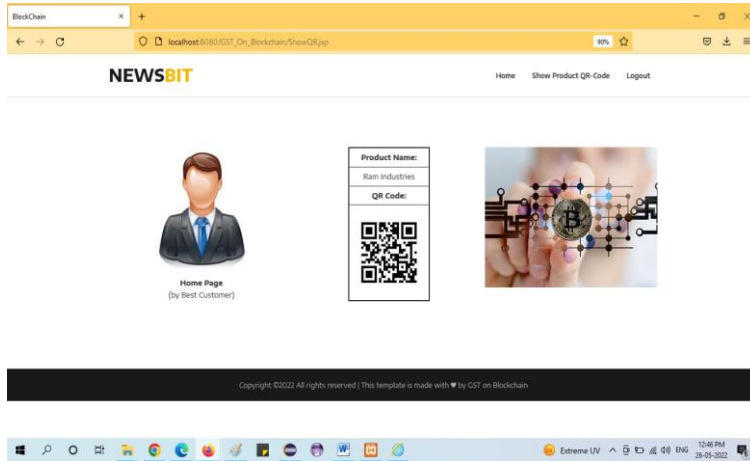
V.PROPOSED SYSTEM

Explaining the proposed system with the architecture diagram will help understand it more easily. Starting with the overview of our proposed system shown in fig.: . The system has four entities. They are the GST portal (gst.gov.in), seller, buyer and the bank. To reduce the storage space in Blockchain Network (BCN), the storing of invoices is done in a Decentralized Storage Network (DSN). Then, the DSN will return the hash code, which presents the location of data in the DSN. This hash code will be uploaded to the BCN after that.

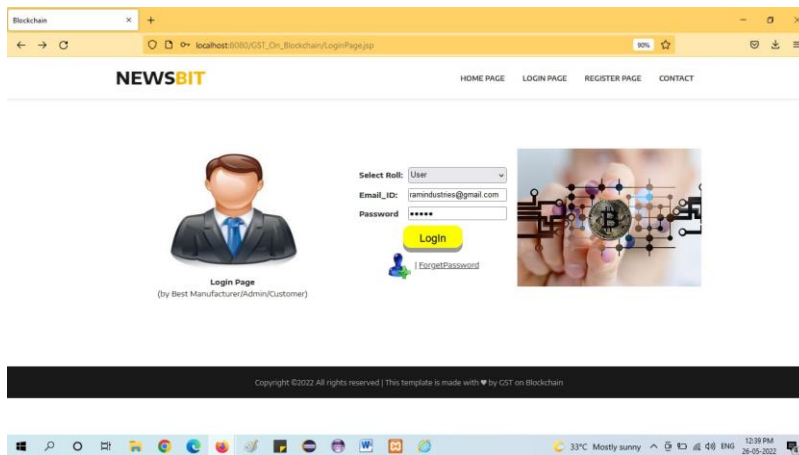


VI. RESULTS

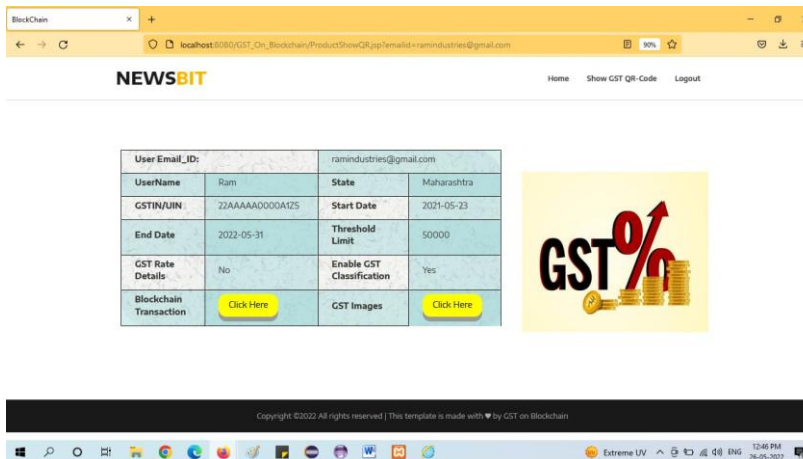
1. Home Page



2. Login page



3. User Information Page

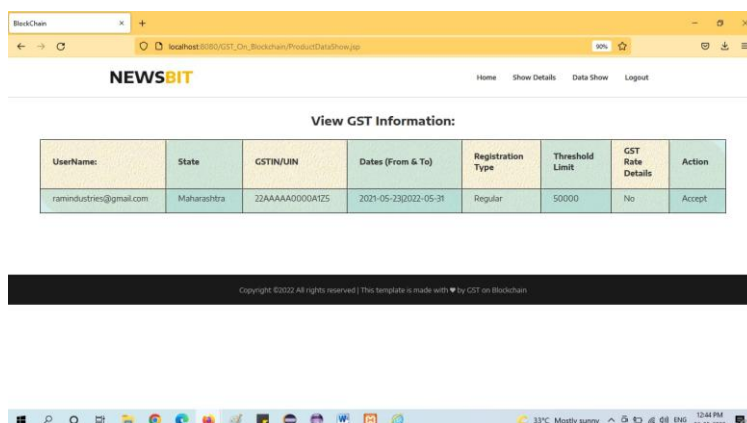




4. GST Details



5. GST Information page



VII. CONCLUSION

The IT module under GSTN is not capable of handling huge transactions that daily occur inside the centralized GST system. A successful GST system stands only because of its strong I.T. fundamentals. Many mismatch issues related to the IT side of things are a curse to the current system. It has been difficult to handle this amount of big data with multiple field characteristics and carrying out transactions and refunding on the basis of GST All stakeholders including the government are facing challenges. Blockchain is a new type of database which retains all historical information in digital blocks and is created in a crypto digital ledger. Distributed ledgers are inherently difficult to attack. A totally transparent and complete audit trail is maintained throughout the chain. It will not only help in monitoring of correctness and fast decision- making for refunds and other compliances but would also help assess transactions and their chain of source in real-time. Tax invoices contain significant information. Smart Contract helps to derive and design tax invoices would mitigate major compliance issues like filing returns and claiming ITC (Input Tax Credit) etc. The implemented system is thus, user friendly, easy and accessible to all the valid entities. It has made easy tax calculation and refunding process.

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