



A Survey on Blockchain Based Personalized Data in Ecommerce System

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ABSTRACT-

Blockchain technology is gaining a lot of attention in a variety of online applications. The various needs in the ecosystem of online items can be met by these applications. This project makes a distinction about the difficulties of the conventional method of product cloud and blockchain's triumph over conventional e-data sharing using several blockchain-based platforms, as well as the use of cryptocurrency payments instead of conventional web payments. It serves as an example of a business process that uses a decentralised marketplace for secured transactions.

I. Introduction

Our daily lives no longer function without the internet, and demand for online services is skyrocketing. The worldwide ecommerce platform has been significantly impacted by the digital world. Online business platforms offer ease and flexibility from many stores for a wide variety of networks. It is also simple to complete the registration and transaction procedure using the online platform. Because of this, cyberattacks are spreading globally at an unforeseen rate. As a result, the largest danger to the future of e-commerce platforms is network architectural security. The success of an organization's development cycle depends on its data and the trust of its customers. Data is crucial for organisations in order to manage and govern the company, as well as to help with decision-making. Based on this, data should only be accessible to management teams and stakeholders to sustain customer loyalty while ensuring data privacy and compliance of the companies and customers. Consequently, it is crucial to use trustworthy methods and technologies to secure this asset from uninvited entry. Blockchain technology has been chosen as the tool and technology for

The E-commerce business platform company, it will be used as their repository.

Blockchain technology can be integrated into the databases of the e-commerce platform company based on the aforementioned qualities. Values like money and contracts can be stored with it (Alex and Don, 2020). Additionally, the use of blockchain technology in e-commerce platforms may enhance global operations and supply chain management, as well as increase data management transparency and lower transaction costs (Sharma, 2020; Saakian, 2020). Most significantly, it may give users of ecommerce platforms a secure atmosphere and foster their faith in the companies. Increased database security is made possible by the Blockchain network's distinctive structure, which also provides strong protection from cyber attacks. The chained data structure of blockchain is utilised for data verification and storage, while the mechanism of distributed nodes applied to the blockchain is required for the process of data updating and generation. It is nearly hard for the hackers to take down every node on the system. Therefore, to develop outstanding data security for the firm, this research suggests a blockchain-based database system for ecommerce.

II. LITERATURE SURVEY

[1] The expansion of the Internet created new opportunities for people to access services and for businesses to operate. The majority of individuals today consider an internet connection and the pertinent services it offers to be necessary. Ecommerce is one of those products or sectors. E-commerce entails the transfer of a lot of sensitive data, including financial and private client information. It draws cybercriminals who are eager to hack the system and take the data as a result. As e-commerce expands, so does the frequency of cyberattacks, raising questions about the security of the e-commerce platform's databases. Because the data comprises the private information of customers, employees, and transaction records, organisations must assure its security. The data breach will undermine customers' trust in the platform and seriously hurt the company's earnings. An innovative blockchain database management system is suggested as a solution to this issue, as well as to improve data security and safeguard important data. The suggested system resolves the issue by including blockchain nodes into the database and retaining the dispersed peer-to-peer connection's data security.

[2] Small and medium-sized businesses (SMEs) are crucial for boosting the national economy and creating job opportunities. E-commerce platforms might make it easier for these businesses to transact with one another. However, because e-commerce platform transactions are largely virtual, asynchronous, and unpredictable, SMEs frequently encounter ethical dilemmas and opportunistic actions. Blockchain is a distributed ledger with the qualities of authenticity, security, transparency, and unforgeability. It is made up of an encryption method, a consensus mechanism, and smart contracts. Thus, by fusing e-commerce platforms and blockchain technology, the issues SMEs experience can be overcome. In this paper, we first present a conceptual framework for SMEs' e-commerce platforms powered by blockchain. Second, we create a complete business architecture based on this

conceptual foundation. Finally, we suggest three main uses for the platform to show how it helps SMEs solve their finance and trading issues. This report offers important recommendations for these businesses' operation and management of blockchain-supported e-commerce platforms.

[3] Privacy issues in e-commerce are garnering more and more attention as online purchasing becomes more and more prevalent. Existing e-commerce arrangements are caught in a catch-22 between privacy protection and ownership verification. In order to solve this problem, we create a business protocol that protects privacy by utilising private smart contracts during the negotiating stage. The protocol enables parties to transact without disclosing personal information like names, addresses, and phone numbers. Additionally, we use the zero-knowledge proof to ensure ownership. In order to determine whether the suggested model can be implemented, we also do thorough tests to assess how Ethereum Quorum and SERO, two current blockchain development platforms, perform.

[4] Choosing a trustworthy source appears to be the first step in online shopping. However, there may be disagreements in the way that consumers and retailers view the quality of a product. Simple product images or exaggerated statements made by retailers regarding their products may be the root of the conflict over purchasing subpar goods. Even when clients prefer renowned e-commerce sites like Amazon.com and Alibaba.com, this dispute problem cannot be totally eliminated. In the end, the reason is that e-commerce businesses do not employ quality ratings to assess products. Online buyers may purchase authentic products at a reasonable price via this e-commerce alliance if there is a partnership between e-commerce businesses and reputable organisations that produces a legitimate product grading system (PGS). In this work, we suggest a PGS (BPGS) built on a blockchain to handle massive data for this business model. Due to the decentralised nature of the blockchain, we can expedite the verification of product grading. Additionally, for the planned BPGS, 51% of attacks must concurrently compromise 51% of the alliance's merchants and e-commerce firms in order to be successful. As a result, our BPGS-based e-commerce environment is both dependable and secure.

[5] e-commerce, finance, and energy blockchain technology research and application. The blockchain system consists of apps, blockchain application programming interfaces, and blockchain technology components. Supply chain financing, e-commerce transactions, product tracing, user credits, financial services, trust systems, new energy, etc. are all covered by blockchain-based applications. For e-commerce, financial services, and new energy industry, it creates a creative and secure trading system, payment system, and trust system based on blockchain technology.

[6] Recommender systems have been extensively employed in a variety of application fields, including social networking, e-commerce, healthcare, and energy conservation. To create precise and accurate recommender systems for these applications, a vast quantity of user data, including demographics, preferences, social interactions, etc., must be analysed and mined. These datasets frequently contain sensitive data, yet the majority of recommender systems are more concerned with the models' accuracy than with security and user privacy concerns. Although several risk reduction strategies have been used to try to solve these issues, none of them have been totally successful in assuring cryptographic security and protecting the users' private information. Due to the prominent security and privacy aspects of the blockchain technology as well as its resilience, adaptability, fault tolerance, and trust qualities, it is suggested as a potential technique to increase security and privacy preservation in recommender systems in order to close this gap. The obstacles, unresolved problems, and solutions for blockchain-based recommender systems are all covered in this study. As a result, a thoughtful taxonomy is provided to characterise the security and privacy concerns, outline current frameworks, and analyse their applications and benefits when using blockchain before pointing out areas for further research.

[7] One of the intriguing issues with e-commerce companies is data privacy (i.e. Amazon.com, Facebook, YouTube, Alibaba Group, eBay, Jingdong). Users must give these e-commerce sites their sensitive information for either personal or professional reasons. These companies frequently compute various artificial intelligence (AI) studies (such as suggestion generation) using these very sensitive data without getting the users' permission. Data analysis at the business platforms is necessary for recommendation generation. A recommender system creates an automated AI personalization of a list of products depending on user interest. However, such systems lack safe user data use. Utilizing data securely is ensured by blockchain technology. As a result, blockchain technology can be used to address the problem of permissionless data usage. This study suggests Private-Rec, a framework for a recommendation system that protects privacy by fusing blockchain and AI. Blockchain in Private-Rec provides the user with a secure environment where data may be used with the necessary permission thanks to the distributed attribute. On this platform, consumers are rewarded by the suggested business (in the form of points or discounts) for sharing their data, which is then used to generate recommendations. Empirical research has been done on the Private-Rec platform.

[8] In the age of big data, where the problem of information overload is rife, recommendation systems are frequently employed to anticipate customers' preferences and supply them with customised products. Unfortunately, there is a significant demand for large data that is closely tied to user privacy in order to make more precise predictions. In this situation, gathering and transmitting such data requires expensive communication methods, and processing and analysing such data has a high likelihood of compromising user privacy. In this research, we provide a blockchain-based recommendation method that protects privacy and effectively handles these issues. We provide a truly distributed strategy that minimises the danger of privacy disclosure brought on by centralised data storage by utilising the inherent benefits of blockchain. To further increase communication efficiency, we combine blockchain and the Inter-Planetary File System. In order to lighten the computational cost and offer a solid privacy guarantee, we additionally incorporate local sensitive hashing and local differential privacy into the proposed mechanism. The experimental findings suggest that, when compared to the baseline, the proposed mechanism performs better in terms of privacy preservation while maintaining optimal recommendation accuracy.

[9] Systems that offer financial items online can address the issue of users' individualised preferences, but accurate recommendations necessitate a significant quantity of user privacy data collection. These days, the problem of privacy information leakage is quite significant, and the problem of information resale, spam messages, and harassing phone calls online is getting worse. This study evaluates the benefits of blockchain technology in safeguarding user privacy and designs a new operating mechanism for a financial product recommendation system based on blockchain technology on

the basis of analysing the privacy protection strategy of recommendation systems. In order to control their own information during the submission, sharing, and receipt of recommendation results, financial users can do so with the help of blockchain encryption mechanisms, smart contracts, and other technologies. This guarantees user privacy and the impartiality of the recommendation results.

[10] Choosing a trustworthy source appears to be the first step in online shopping. However, there may be disagreements in the way that consumers and retailers view the quality of a product. Simple product images or exaggerated statements made by retailers regarding their products may be the root of the conflict over purchasing subpar goods. Even when clients prefer renowned e-commerce sites like Amazon.com and Alibaba.com, this dispute problem cannot be totally eliminated. In the end, the reason is that e-commerce businesses do not employ quality ratings to assess products. Online buyers may purchase authentic products at a reasonable price via this e-commerce alliance if there is a partnership between e-commerce businesses and reputable organisations that produces a legitimate product grading system (PGS). In this work, we suggest a PGS (BPGS) built on a blockchain to handle massive data for this business model. Due to the decentralised nature of the blockchain, we can expedite the verification of product grading. Additionally, for the planned BPGS, 51% of attacks must concurrently compromise 51% of the alliance's merchants and e-commerce firms in order to be successful. As a result, our BPGS-based e-commerce environment is both dependable and secure.

[11] Electronic commerce (Ecommerce) apps are luring a growing number of customers and merchants to do their daily business online, including bill payment, online banking, ticket purchases, and other purchases of goods and services. E-commerce websites, as well as their users, are very concerned about the security of online transactions. Privacy, authenticity, integrity, and non-repudiation are the fundamental conditions for any online transaction. This study proposes a transaction processing system (TPS) for online transactions using modified elliptic curve cryptography, zero-knowledge proof, and blockchain technology. A denial of service attack detection model for the online shopping system is also suggested, which guards against DoS attacks during online shopping.

[12] Market information for agricultural products sold online demonstrates complexity and latency. Because of the information asymmetry, it is frequently challenging for producers to access and precisely understand real-time market information in a timely manner. An e-commerce agricultural product decision support system that is based on blockchain technology and focused on blockchain databases is built from the viewpoint of agricultural product producers. It combines the application layer of new blockchain technology with the basic platform and service platform of e-commerce information platform. The system is made up of three sub-systems: the e-commerce agricultural product information service platform, the inventory information feedback platform, and the information feedback platform. It completes the gathering, sorting, and output of these three types of information with the help of the blockchain system in order to aid agricultural producers in making the best decisions possible and achieving the goal of boosting agricultural product sales and raising farmers' income.

[13] A new business model called IoT-based e-commerce depends on IoT devices' autonomous transaction management. The IoT-based E-commerce management system demands independence, portability, and validity. We use blockchain to design the autonomous transaction management system for IoT E-commerce since it is a cutting-edge technology capable of regulating the decentralised network. However, present blockchain technologies, most notably cryptocurrencies, have the fatal flaws of being unsupervisable and having a significant processing overhead, making them inapplicable to IoT-based Ecommerce. In this work, we present NormaChain, a normalised autonomous transaction settlement system for Internet of Things-based e-commerce, based on blockchain technology. We can greatly improve transaction efficiency and system scalability by creating a unique three-layer sharding blockchain network. Additionally, we can identify illicit and criminal transactions and achieve crime traceability by developing a cutting-edge decentralised public key searchable encryption system (Decentralized PEKS scheme). The original PEKS method's reliance on a reliable central authority is cryptographically eliminated by our new DPEKS scheme, which also expands it to a fully decentralised governance that distributes control equally among all parties. More crucially, we demonstrate that Normal Chain protects a genuine user's privacy from being compromised by banks, supervisors, or malevolent adversaries by demonstrating its security against selected ciphertext attacks (CCA) and against the theft of the private key. Finally, we provide the complete concept and implementation of the Normal Chain system. Experiments show that the average transaction-per-second (TPS) on IoT devices is around 113, and the supervision accuracy is 100% when proper target illegal keywords are provided.

[14] This study presents an investment and financing approach for rural smart e-commerce based on blockchain and data mining. In addition to being a pressing demand in the financial industry, using intelligence analysis to prevent financial risks is also a fundamental requirement for the advancement of information science. Blockchain is a distributed ledger that is secured by cryptography and is a chained structure that sequentially joins data chunks in chronological order. Simulated comparisons between the proposed model and current models are made.

[15] With the introduction of new technology, e-Commerce has become extremely important in the agricultural sector. The purpose of this survey is to examine the work done on agricultural e-Commerce utilising various technologies and the advantages of direct marketing between 2017 and 2021. The study looks at (a) how blockchain technology might be applied to agriculture, (b) how multiple technologies are being used to build an e-commerce platform, and (c) the potential of direct marketing.

[16] Many academics and researchers are currently exploring the potential applications of blockchain technology in the agriculture industry. Blockchain is a ground-breaking technology that might be ideal for the agricultural sector. It transfers the encrypted transactions across numerous computer networks and stores them in a database similar to a digital ledger. Therefore, Direct Marketing could be accomplished by developing an online marketplace for purchasing and selling goods with the use of Blockchain technology. The improvement of agricultural products' services is essential for meeting the demand for these items on a greater scale in the market. The supply chain would develop intelligence and be meticulously monitored.

III. CONCLUSION

For the purposes of this article, it can be summed up as follows: Integrating blockchain technology into the database system of e-commerce company platforms is crucial for safeguarding data from difficulties including data breaches. This approach outperforms using a traditional database system, which is vulnerable to hacker attacks, or relying only on blockchain technology, which is inefficient for use in day-to-day corporate operations. With its features, the suggested system can support the business operations of online retailers with an effective and reliable repository. A deeper investigation into blockchain technology, however, should address the research's shortcomings, such as its high cost. Moreover, the system requires highly skilled technical teams to support the system which is also one of the challenges for the organizations that should be solved through future in-depth investigation.

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