CashBack Hub

by

Group 3

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Table of Contents

Abstract:

This research paper presents a comprehensive design and implementation of a cash-back token system for an e-commerce platform, with renowned platforms like Amazon and Flipkart onboarded as partners. The primary objective of this system is to incentivize users to make purchases through the platform by offering them cashback in the form of tokens. By establishing partnerships with major e-commerce platforms, the cash-back token system generates revenue through commission-based arrangements, ensuring a sustainable earning model.

The cash-back token system is built on the Hyperledger Fabric (HLF) blockchain, which provides enhanced security, transparency, and interoperability. Leveraging blockchain technology ensures the integrity of token transactions and fosters trust among users and partner platforms. The implementation of this system addresses the challenges associated with traditional cash-back models, offering improved transparency, real-time cashback distribution, and heightened security.

The paper outlines the tokenomics of the cash-back system, detailing the creation, distribution, and redemption processes of tokens. With the inclusion of renowned platforms like Amazon and Flipkart, users gain access to a vast array of products and services, while enjoying the added benefit of cashback in the form of tokens. The integration process with partner platforms is discussed, emphasising the steps required for seamless collaboration and participation in the cash-back program.

The user experience aspect is a significant focus of this research. The paper highlights the intuitive nature of the cash-back token system for users. The platform provides a user-friendly interface, enabling users to browse products from partner platforms such as Amazon and Flipkart, make purchases, and receive cashback in the form of tokens. This frictionless experience enhances customer satisfaction, driving engagement and repeat usage of the platform.

Moreover, the potential benefits of the cash-back token system are explored in detail. Users benefit from receiving cashback on their purchases, incentivizing them to choose partner platforms through the system. Partner platforms like Amazon and Flipkart gain access to an expanded customer base, resulting in increased sales and brand visibility.

The platform hosting the cash-back system generates revenue through commission-based partnerships, ensuring its sustainability and long-term viability.

In conclusion, this research paper presents a robust and innovative cash-back token system for an e-commerce platform, with renowned platforms like Amazon and Flipkart as partners. Leveraging blockchain technology ensures security, transparency, and interoperability. By outlining the tokenomics, integration process, user experience, and potential benefits, this paper provides a comprehensive understanding of the system's design and implementation. The cash-back token system offers a mutually beneficial solution for users, partner platforms, and the hosting platform, revolutionising the traditional cash-back model in the e-commerce industry.

1. **Introduction**

In the competitive landscape of e-commerce, businesses constantly seek innovative ways to attract and retain customers. One popular approach is to offer rewards or incentives that provide additional value to shoppers. One such model gaining traction is the implementation of a Cash-Back Token system within an e-commerce platform.

The Cash-Back Token model goes beyond traditional loyalty programs by providing customers with tangible benefits that can be redeemed for future purchases or exchanged for other rewards. By integrating this system into their e-commerce platforms, businesses can create a mutually beneficial ecosystem where customers are incentivized to make purchases, and in return, receive cashback.

This introduction aims to explore the concept of a Cash-Back Token for an e-commerce platform and its potential benefits for both businesses and customers. The impact on customer engagement and the potential for increased sales and brand loyalty. Additionally, we will examine the considerations and implementation strategies required for a successful Cash-Back Token system.

With the proliferation of e-commerce and the evolving expectations of modern consumers, implementing a Cash-Back Token system can be a powerful tool to differentiate a business from its competitors. By providing customers with a tangible incentive to shop within the platform, this model fosters a sense of value, appreciation, and engagement that encourages repeat purchases and customer advocacy.

However, despite the potential advantages, the current landscape of Cash-Back Token and loyalty programs is fragmented across the spectrum. This fragmentation poses significant challenges for both vendors and customers, hindering the effectiveness and efficiency of such programs.

Fragmentation in Cash-Back Token and loyalty programs arises from several factors, including:

Lack of Standardization: Cash-Back Token and loyalty programs often vary significantly in their structure, rules, and redemption processes. Different platforms may have their own unique systems, making it challenging for customers to understand and compare

the benefits offered. This lack of standardisation results in confusion and hampers the seamless experience for customers.

Limited Interoperability: Many Cash-Back Token and loyalty programs are confined to specific platforms or retailers, limiting their applicability across a broader network. Customers may accumulate rewards within a specific ecosystem but face challenges when trying to redeem them elsewhere. This lack of interoperability restricts the flexibility and value customers can derive from their accumulated rewards.

Complexity for Vendors: Vendors face challenges in managing multiple Cash-Back Token and loyalty programs, each with its own set of rules and requirements. This complexity increases operational overhead and can lead to inconsistencies in program implementation. Additionally, vendors may struggle to track and analyse customer data across multiple programs, limiting their ability to personalise offerings and effectively target their customer base.

Customer Friction: Fragmented Cash-Back Token and loyalty programs often result in customer friction during the redemption process. Customers may encounter difficulties in understanding and accessing their rewards, or they may face limitations when attempting to redeem rewards for desired products or services. These friction points can lead to frustration and dissatisfaction, diminishing the overall value proposition for customers.

The fragmentation of Cash-Back Token and loyalty programs has a detrimental impact on both vendors and customers. Vendors face challenges in establishing a consistent and compelling loyalty offering, hindering their ability to differentiate themselves in a crowded market. Customers, on the other hand, experience confusion, limited flexibility, and reduced value from their loyalty efforts, potentially leading to disengagement and decreased loyalty towards specific platforms or retailers.

In conclusion, while the concept of Cash-Back Token and loyalty programs holds promise for enhancing customer engagement and driving sales, the current fragmented landscape poses significant challenges. The lack of standardisation, limited interoperability, complexity for vendors, and customer friction all contribute to a suboptimal experience for both vendors and customers.

2. Background and Significance of Cash-Back Tokens in the E-commerce Industry:

In the highly competitive landscape of the e-commerce industry, businesses constantly seek innovative ways to attract and retain customers. Cash-back tokens have emerged as a popular incentive mechanism that benefits both e-commerce platforms and customers.

Cash-back tokens are digital assets or rewards given to customers based on their purchasing activities. They provide a form of monetary value that can be redeemed for future purchases, creating an additional incentive for customers to engage with a specific platform. These tokens typically offer a percentage or flat discount on purchases, providing customers with a tangible benefit.

The significance of cash-back tokens lies in their ability to enhance customer loyalty, encourage repeat purchases, and drive engagement. By offering discounts in the form of tokens, e-commerce platforms can incentivize customers to choose their platform over competitors. The allure of earning rewards creates a positive feedback loop, where customers are motivated to make additional purchases to accumulate more tokens. This not only increases customer retention but also boosts overall sales volume for the platform.

Furthermore, cash-back tokens provide a unique opportunity for e-commerce platforms to establish partnerships with other businesses. By leveraging commission-based partnerships, e-commerce platforms can earn revenue based on the transactions made by customers who are redirected from their platforms to partner websites. This symbiotic relationship benefits all parties involved, as e-commerce platforms earn commission income, partner websites gain increased traffic and potential customers, and customers receive attractive discounts in the form of tokens.

The adoption of cash-back tokens also aligns with the growing trend of utilising blockchain technology in the e-commerce industry. By building these tokens on blockchain platforms like Ethereum, HLF, etc. E-commerce platforms can ensure the security, transparency, and immutability of token transactions. Blockchain technology enhances trust among stakeholders, mitigates fraud risks, and provides seamless interoperability with other blockchain-based applications and services.

In summary, cash-back tokens have become increasingly relevant in the e-commerce industry due to their ability to foster customer loyalty, drive engagement, and generate additional revenue through partnerships. Their integration with blockchain technology further enhances their value proposition. Understanding the background and significance of cash-back tokens helps e-commerce platforms grasp the potential benefits and design effective strategies to leverage this incentive model successfully.

3. Problem Statement and Research Objectives:

Problem Statement:

The e-commerce industry is highly competitive, and platforms constantly seek effective strategies to attract and retain customers. Traditional methods of discounts and promotions may not always provide the desired impact or sustainable results. Therefore, there is a need to explore innovative approaches to incentivize customer engagement and foster loyalty.

Research Objectives:

The white paper aims to address the following objectives:

1. Design a Cash-Back Token System: A comprehensive framework and mechanism for implementing a cash-back token system within an e-commerce platform. This includes defining tokenomics, determining earning mechanisms, and establishing a secure and efficient distribution process.

2. Incentivize Customer Visits: Design a system that incentivizes customers to visit partner e-commerce websites through the platform. Explore different approaches, such as flat discounts based on product categories, to encourage customers to engage with the platform and complete purchases.

3. User Experience and Benefits: Focus on delivering a seamless user experience by providing intuitive interfaces for customers to earn, manage, and redeem cash-back tokens. Explore potential benefits for users, such as increased purchasing power, enhanced loyalty, and improved engagement with the e-commerce platform.

4. Evaluation of the Cash-Back Token System: Assess the effectiveness and impact of the implemented cash-back token system. Measure user adoption, engagement levels, customer satisfaction, and the overall impact on revenue generation for the platform.

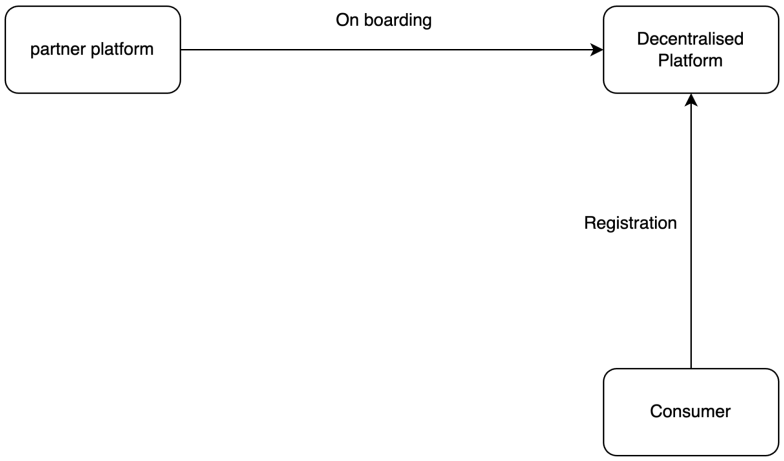
By addressing these research objectives, the research paper aims to provide insights and guidelines for designing and implementing a successful cash-back token system in

an e-commerce platform. The ultimate goal is to create a sustainable model that benefits both the platform and its customers, while fostering long-term loyalty and enhancing the overall customer experience.

4. Basic Architecture

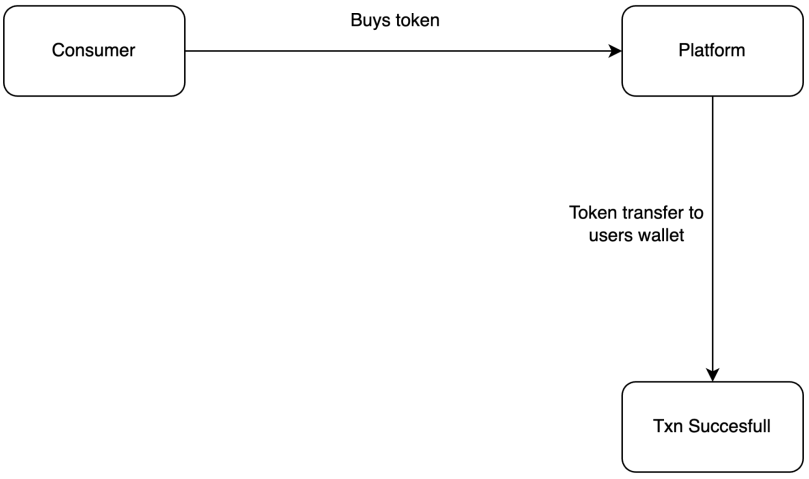
1. Onboarding Process

At first the partner platform will be onboarded on our platform after which they will be able to list their products on our platform. Similarly, consumers will register on our platform in order to buy products and earn cashback.



2. Buying token flow for consumer

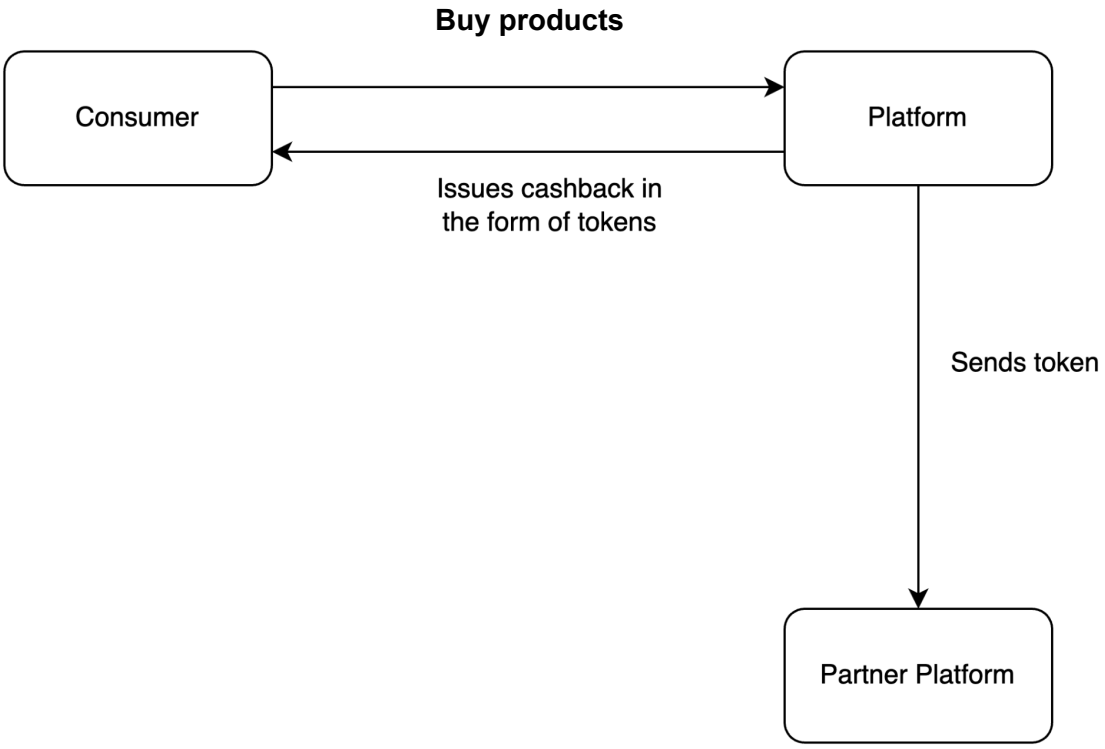
After the user is registered on our platform they will first buy tokens in order to purchase products.



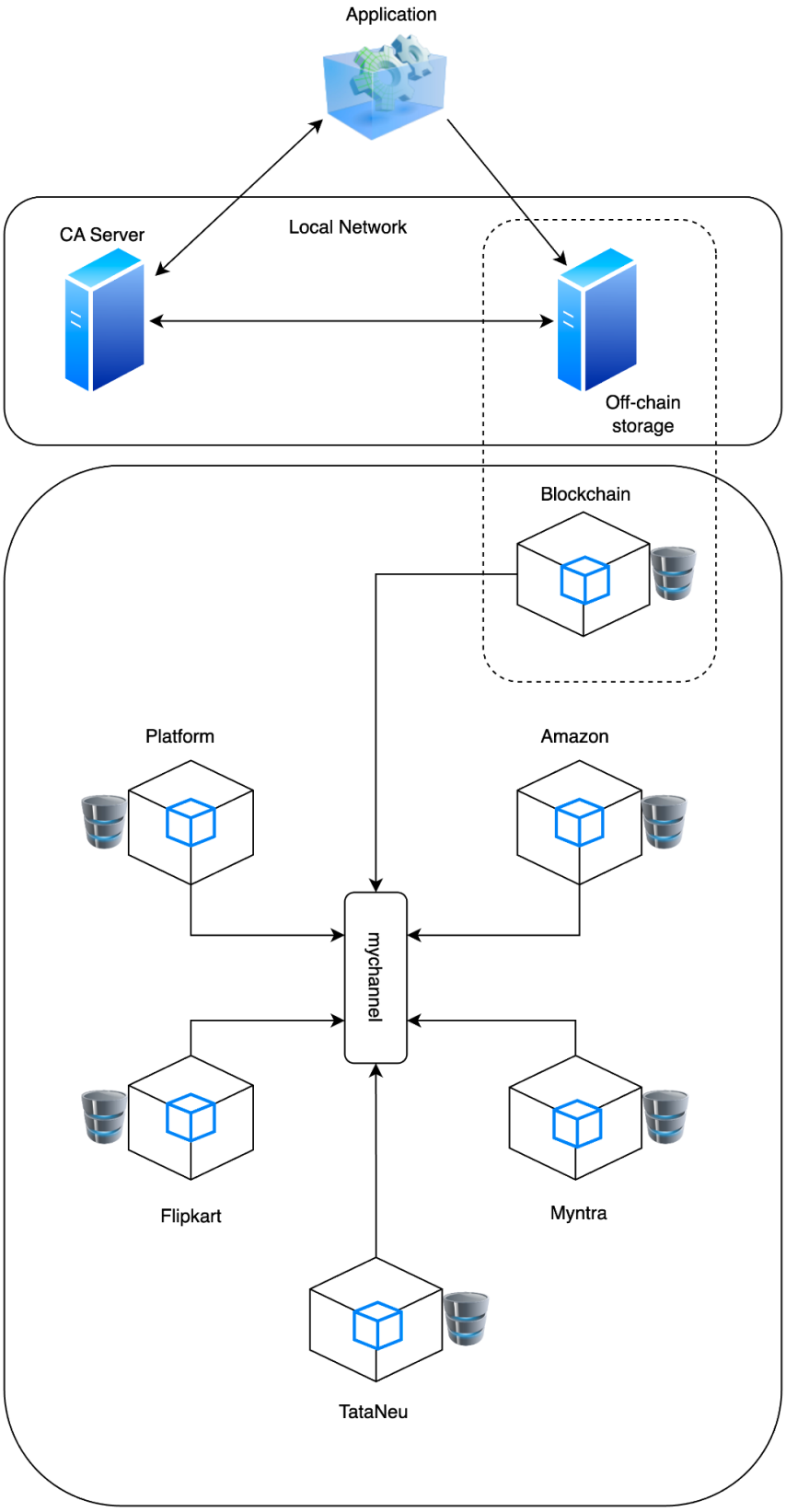
3. Shopping and cashback flow:

Consumers will buy products listed on our platform with the tokens, once the platform receives tokens from consumers they will send them to the partner platform and the order will be placed. Also, the platform will issue cashback in the form of tokens to the user.

In case the order is cancelled, tokens which will be refunded to the consumer will be the total amount paid by the consumer minus the cashback issued.



HLF Network Architecture



5. **Tokenomics of the Cash-Back Token**

- Purpose and utility of the cash-back token within the platform.
    - To use the tokens to buy anything on the platform
- Total token supply and its dynamics.
    - We don’t have a fixed token supply.
- Consumers have to purchase tokens from the platform
- Consumers can buy products using these tokens.
- Token will have a fixed value which will be equal to ₹1

The Cash-Back Token serves as a utility token within the platform, providing users with a means to purchase products and services offered on the e-commerce platform. The token acts as a digital currency, allowing users to make transactions and enjoy the benefits of cashback.

Purpose and Utility:

The purpose of the Cash-Back Token is to provide users with a convenient and flexible method of payment within the platform. Users can utilise these tokens to purchase any product available on the platform, thereby incentivizing them to make further transactions and engage with the platform regularly.

Total Token Supply and Dynamics:

The total token supply for the Cash-Back Token is not fixed, as it is determined by user demand and participation. The platform employs a dynamic token supply mechanism, ensuring that tokens are available based on user requirements and purchases.

Token Acquisition:

Consumers can acquire Cash-Back Tokens through various means. One option is purchasing tokens directly from the platform using fiat currency. Additionally, users can earn tokens as cashback rewards based on their transactional activities within the platform. This dual acquisition model provides users with flexibility in obtaining tokens.

Token Value and Stability:

The Cash-Back Token is designed as a stablecoin, ensuring that its value remains constant and predictable. The fixed value of ₹1 per token provides users with a clear understanding of the token's worth and enables seamless transactions without concerns about price volatility.

Creation and Burning Process:

The creation of Cash-Back Tokens is facilitated by the platform based on user demand and participation. As users make purchases and earn cashback, new tokens are minted to accommodate the earned rewards. This process ensures a sufficient token supply to meet user demands.

Conversely, the burning process occurs when users redeem their tokens for products or services on the platform. As tokens are utilised for purchases, they are removed from circulation, helping to maintain a balance between token supply and demand. This burning process ensures that the token economy remains sustainable and prevents an excessive token surplus.

Stablecoin Implementation:

The Cash-Back Token is implemented as a fiat-backed stablecoin. It is backed by a reserve of fiat currency held by the platform to ensure the stability and redeemability of the tokens. This reserve provides confidence to users that their tokens hold value and can be exchanged for products or services as promised.

By implementing a fiat-backed Cash-Back Token system, the platform ensures that users have a secure and predictable digital currency to facilitate their transactions. The creation and burning processes help maintain a balanced token supply, while the stablecoin implementation provides stability and confidence to users within the ecosystem.

6. **Cashback Model**

We will be using standard rates for cashback which are set by us and can be modified by partner platforms, these are as follow:

5% - Rewards on Clothing | Luggage | Footwear & Watches (excluding Smartwatches)

5% - Rewards on Jewellery (excluding Gold Coins, Gold Bars, Silver Coins, Gold Jewellery, Silver Jewellery & other Precious Jewellery)

5% - Rewards on Home | Kitchen & Dining

5% - Rewards on Beauty & Luxury Beauty

2.50% - Rewards on Sports | Automotive | Home Improvement | Office Products | Books

2.50% - Rewards on Televisions & Home Entertainment | Refrigerators | Washing Machines | Microwaves | Air Conditioners | Dishwash

7. **Blockchain Platform Selection**

Hyperledger Fabric (HLF) is a powerful blockchain framework that offers numerous advantages for implementing a cash-back token system in an e-commerce platform. When compared to other systems, HLF stands out in the following ways:

1. Security and permissioned network: HLF provides a permissioned blockchain network, ensuring that only authorised participants can join and access the data. This enhances the security of the system, making it more resistant to unauthorised access and tampering.

2. Enhanced control and authorizations: HLF enables fine-grained control over network access and authorizations. Platform administrators can define specific roles and permissions for participants, allowing for more granular control over read and write access to the blockchain. This level of control enhances data privacy and ensures that only authorised entities can participate in the cash-back token system.

3. Self-executing smart contracts: HLF utilises smart contracts, known as chaincode, which enable the self-execution of terms and policies between organisations. These smart contracts automate the process of issuing and redeeming cash-back tokens, ensuring accuracy and transparency in the system. Compared to traditional manual processes, smart contracts eliminate the need for intermediaries, reduce the potential for human error, and enhance operational efficiency.

4. Trackable and irreversible transactions: HLF provides a robust and immutable transaction history. Every transaction on the blockchain is recorded and timestamped, ensuring transparency and traceability. This feature enhances security by allowing the platform to track and audit cash-back token transactions, reducing the risks associated with fraud and disputes. Additionally, the decentralised nature of the blockchain ensures that transactions, once recorded, cannot be altered or reversed, further enhancing the integrity of the system.

5. Scalability and performance: HLF is designed to handle large-scale enterprise applications with high volumes of transactions. Its modular architecture allows for horizontal scalability, enabling the system to accommodate growing demands without sacrificing performance. This scalability feature is crucial for e-commerce platforms, as it

ensures that the cash-back token system can handle increased transaction volumes as the user base grows.

By leveraging these features, Hyperledger Fabric provides a secure, scalable, and efficient foundation for implementing a robust cash-back token system in the e-commerce industry.

Endorsement Policy for Cash-Back Token:

The endorsement policy for the cash-back token system in our platform, built on Hyperledger Fabric, ensures that transactions are validated and approved by the specific platform on which the order is done. This policy restricts the endorsement to the transaction platform and enhances the integrity and trustworthiness of the system.

Endorsement Policy Configuration:

The endorsement policy requires endorsement from only the platform on which the transaction is performed. Transactions must be validated and approved by the endorsing peers from the respective organisation where the transaction occurred.

Communication Channels:

Secure communication channels will be established between our platform and partner platforms to facilitate the exchange of transaction proposals, endorsements, and other necessary information.

Chaincode Endorsement Policy:

The endorsement policy is defined within the chaincode (smart contract) for the cash-back token system. It specifies that transactions must receive endorsements from the endorsing peers of the platform, and participant platform.

By implementing this endorsement policy, we ensure that transactions in the cash-back token system are endorsed and validated, maintaining the integrity and reliability of the system.

8. **Smart Contract Development**

- Smart contract for transferring tokens to the user's wallet
- Sending tokens to the partner platform when the product has been successfully bought.
- Tokens will be refunded if the order cancelled subtracting the cashback amount
- User registration and adding it to the ledger

9. **Earning Model: Commission-based Partnership**

- Commission from the partner platform
- In future scope manufacturers can also register themselves and we can get a commission from them as well

10. **User Experience and Benefits**

1. User onboarding and wallet setup process:

A well-designed user onboarding process is crucial for a seamless user experience. When it comes to setting up a wallet for a token-based system, it is important to make the process intuitive and user-friendly. By providing clear instructions and simplifying the required steps, users can easily understand and complete the wallet setup process. Additionally, incorporating a visually appealing and easy-to-follow setup wizard or video tutorials can further enhance user comprehension and engagement. Prioritising user experience during onboarding ensures that users can quickly and effortlessly start using the token-based system.

2. Tracking token balances and transaction history:

A key benefit of a token-based system is the ability to accurately track token balances and transaction history. Users can conveniently monitor their token holdings and view their transaction history within their wallets or through a dedicated interface. This transparency empowers users to have a clear overview of their token activity, enabling them to effectively manage their assets. Real-time updates on balances and transaction records provide users with up-to-date information, fostering trust and confidence in the system.

3. Redemption options and benefits for users:

Redemption options refer to the ways in which users can utilise their tokens. Offering a variety of redemption options provides flexibility and value to users. For instance, users can redeem tokens to purchase products or participate in special events. By providing attractive redemption options, we can incentivize users to engage with the token-based system and enhance their overall satisfaction. This not only adds value to the user experience but also encourages continued interaction and loyalty.

4. Potential advantages for e-commerce websites and customers:

Token-based systems bring several advantages to both e-commerce websites and customers:

a. Enhanced customer loyalty: Integrating tokens into an e-commerce platform allows customers to earn and accumulate tokens through various activities such as making purchases, referring friends, or engaging with the platform. This incentivizes customer loyalty and encourages repeat business, leading to increased customer retention.

b. Improved customer engagement: Tokens can serve as a gamification element, adding an element of fun and excitement to the e-commerce experience. Users can participate in challenges, earn badges, or unlock rewards, creating a sense of achievement and motivating them to interact more with the platform. This increased engagement can result in higher conversion rates and increased customer satisfaction.

c. Expanded customer base: Token-based systems can attract new customers by offering unique benefits and rewards. This differentiation from competitors and the appeal of token-based loyalty programs or the potential for token value appreciation can attract users who are interested in such programs. Expanding the customer base leads to increased sales opportunities and business growth.

Overall, token-based systems have the potential to create a more engaging and rewarding experience for both e-commerce websites and customers. By fostering loyalty, driving customer retention, and increasing business growth, these systems unlock new opportunities for customer engagement and contribute to the success of e-commerce platforms.

11. **Challenges and Future Enhancements**

- Adding staking rewards for tokens: Implementing staking rewards can incentivize users to hold onto their tokens for a specific period, thereby increasing token stability and promoting long-term engagement.
- Refer and earn for users to improve engagement: Introducing a referral program where users earn additional tokens for referring new users can boost user engagement and drive user acquisition.
- Giving specific discounts based on shopping done by users: Tailoring discounts based on a user's shopping behaviour and preferences can enhance personalization and incentivize more frequent purchases.

12. **Conclusion**

The proposed cash-back token system, built on Hyperledger Fabric, provides an innovative solution to enhance customer loyalty and incentivize repeat purchases on e-commerce platforms. Leveraging HLF's privacy, security, scalability, and interoperability features, the cash-back token system offers a transparent and rewarding shopping experience. By adopting this blockchain-based solution, e-commerce platforms can unlock new opportunities for customer engagement and business growth.

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