

# IMPLEMENTATION OF PRIVACY AND SECURITY IN CASHLESS SOCIETY USING BLOCKCHAIN TECHNOLOGY

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**Abstract** – The term "cashless society" refers to an economic state in which financial transactions are carried out without the use of money in the form of physical banknotes or coins, but rather through the exchange of digital information (usually an electronic representation of money) between the transacting parties. In our project, we give several ways to provide privacy and security for such transactions. We devised three-pronged remedies; including adopting a randomised technique to generate a random credit card number, providing adequate online transaction education, and utilising block chain technology for increased privacy.

**Index terms** – Cashless Society, Privacy, DataSecurity, Block-chain Technology, Credit Cards.

## I. INTRODUCTION

Computer security, sometimes known as cyber security or information security, is the protection of computer systems and networks against information disclosure, theft of or damage to their hardware, software, or electronic data, as well as disruption or misdirection of the service they provide. Due to the increased reliance on computer systems, the Internet, and wireless network standards such as Bluetooth and Wi-Fi,

as well as the growth of "smart" devices such as smartphones, televisions, and the various devices that make up the "Internet of things," the field is becoming increasingly important. Because of its complexity, both in terms of politics and technology, cybersecurity is one of the most pressing issues facing the modern world.

A cashless society is one in which all transactions are carried out without the use of real currency such as coins or paper bills. Privacy is a critical component of a cashless system that requires examination. In a cashless culture, increasing privacy is and will continue to be a crucial task. The vast majority of consumers have no idea what type of information is being gathered about them or how that information is being used. We believe that the entire paper has recognized the need to improve privacy, and we propose a three-pronged approach to do so. To begin, supporting good education on data collecting and privacy can help individuals understand the importance of enhanced privacy. Second, a randomized credit card system will aid in the prevention of third parties gathering sensitive and personal information about people. Three, blockchain will prove to be an extremely effective authentication

mechanism. The implementation of these three measures will significantly increase security. Users will have a better understanding of the systems they use, deceiving the blockchain system, and data will be difficult to link to specific people.

A blockchain is a growing list of records, referred to as blocks that are connected together using encryption. A cryptographic hash of the preceding block, a timestamp, and transaction data are all included in each block (generally represented as a Merkle tree). In order to get into the hash of the block, the timestamp shows that the transaction data existed at the time the block was published. Each subsequent block contains the hash of the previous block, forming a chain, with each additional block reinforcing the ones before it. In order to get into the hash of the block, the timestamp shows that the transaction data existed at the time the block was published. Each subsequent block contains the hash of the previous block, forming a chain, with each additional block reinforcing the ones before it. Although blockchain records are not unalterable due to the possibility of forks, they can be deemed secure by design and demonstrate a distributed computing system with strong Byzantine fault tolerance. This proposed work ensures that the user's privacy and security are protected to the greatest extent possible. There are three solutions in our new concepts

1. Educating the public so that they understand how a transaction is carried out and, as a result, how a hacker can access and utilise their data.
2. Whenever a user requests a credit card, a randomised method will be employed to

establish a unique credit card number for each user. As a result, the user's privacy will be protected.

3. Every transaction will be stored using blockchain technology. Unauthorized users may find it difficult to steal personal data details due to the blockchain technology's storage of data in the form of blocks. As a result, we protect user data as well.

## **II. BACKGROUND WORK**

### ***A. Carry Your Credit in Your Pocket': Bank of America and Chase Manhattan's Early Credit Card History***

This article examines the early history of one of today's most common financial tools, the bank credit card, using newly available archival evidence. It examines the managerial decisions that led to the installation and development of charge card programmes at two of America's top banks in the late 1950s and early 1960s. Despite the fact that the two programmes initially performed similarly, top management at each bank ultimately pursued different business strategies. Managers' differing assessments of the acceptable market for the credit card, created within the context of two distinct banking cultures, resulted in the disparities.

### ***B. Surveillance, race, and the future of law enforcement: the emergence of big data policing***

A computerised map lights up with 911 calls at a high-tech command centre in downtown Los Angeles, television displays track breaking news items, surveillance cameras sweep the streets, and rows of networked computers connect

analysts and cops to a trove of law enforcement intelligence. This is only a look into a future in which software predicts future crimes, algorithms build virtual "most-wanted" lists, and databanks collect personal and biometric data. Big Data Is Taking Off Policing explains how cutting-edge technology is altering the way cops work and why it's more crucial than ever for civilians to understand the far-reaching implications of big data surveillance as a law enforcement tool.

**C. Blockchain: A New Economy's Blueprint**

Bitcoin is gaining traction as a digital currency, but the blockchain technology that underpins it has the potential to be far more significant. This book goes beyond the currency ("Blockchain 1.0") and smart contracts ("Blockchain 2.0") to show how the blockchain, after mainframes, PCs, the Internet, and mobile/social networking, is poised to become the fifth revolutionary computing paradigm.

The blockchain, according to Melanie Swan, Founder of the Institute for Blockchain Studies, is essentially a public ledger with the potential to serve as a worldwide, decentralised record for the registration, inventory, and transfer of all assets—not just money, but also property, software, health data, and ideas.

Topics involve:

- Bitcoin and the blockchain: concepts, features, and functioning
- Using the blockchain for automatic tracking of all digital endeavors
- Enabling censorship?

- Creating a decentralised digital repository to verify identity
- Possibility of cheaper, more efficient services traditionally provided by countries
- Blockchain for science: better data-mining network use
- Personal health record storage, including access to one's own genomic data
- Open access academic publishing on the blockchain

**III. PROPOSED WORK**

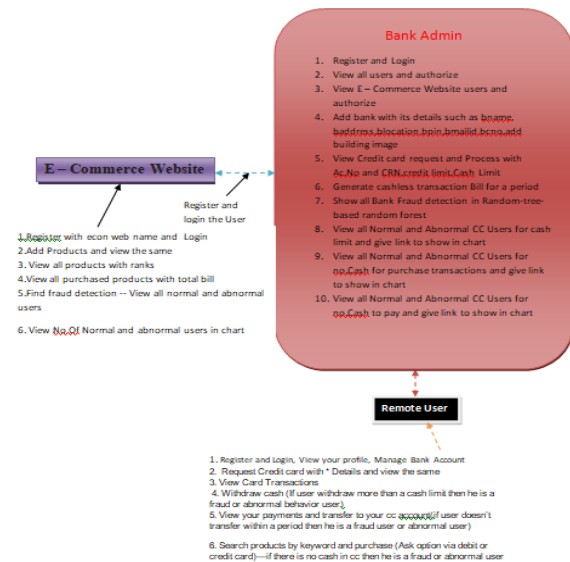


Fig 1: Architecture of Proposed Work

In our system, there are three entities, as shown in Fig. 1: User, Bank Admin, E-commerce User

**A. Bank Administration:**

The Admin must login with a valid user name and password in this module. After successfully logging in, he can perform tasks such as viewing all users and authorizing them. View and authorize users on the E-Commerce Website. Add the bank's information, such as its name,

address, and phone number. View and process credit card requests with, Create a card transaction bill for a specific time period. Show all Bank Fraud detections in a random forest based on random trees, View the cash limits of all normal and abnormal CC users and provide a URL to display in the chart. View all CC Users, both normal and abnormal, for no. Provide cash for buy transactions and a link to display on a graph. View all CC Users, both normal and abnormal, for no. Pay with cash and provide a URL to display in the chart.

**B. *Electronic commerce User:***

There are an unknown number of users in this module. Before doing any actions, the user of the Transport Company should register with the group option. After a successful registration, he must wait for admin to authorise him, and then he must wait for admin to authorise him. He can access the system by entering his permitted user name and password. After logging in successfully, he will perform certain tasks such as adding products and viewing them, viewing all products with ranks, viewing all purchased products with total cost, and so on. Find fraud detection, view all normal and abnormal users, and monitor the number of normal and abnormal users.

**C. *User:***

There are an unknown number of users in this module. Before performing any operations, the user must first register with the group option. After a successful registration, he must wait for admin to authorize him, and then he must wait for admin to authorize him. He can access the

system by entering his permitted user name and password. After successfully logging in, he will perform several tasks such as seeing your profile, managing your bank account, requesting a credit card, viewing card transactions, and so on. Withdraw money, Check your payments and make a transfer to your credit card account. Search for products by keyword and buy them. View all of your purchases.

**IV. METHDOLOGY**

We explain the detailed design of our approach in this part, including randomised credit card numbers, Blockchain, and Implementation

**A. *Credit Card Numbers That Have Been Randomized***

Randomized card numbers can be used to prevent merchants and businesses from collecting information about their consumers. If a customer wishes to buy something from an E-commerce site, they must first have a bank account. Only once the user has been allowed by the Bank Admin may he access that specific Bank website. The randomised card system would act similar to a VPN (Virtual Private Network) used for Wi-Fi connectivity. When a mobile device is searching to connect to a Wi-Fi signal, without using VPN, it gives out its genuine IP address (Internet Protocol address) . A VPN, on the other hand, enables the mobile device to send out a proxy IP address, authenticate the network, and then reveal its true IP address. A primary account number will be generated using the randomised technique in the randomised credit card system. As a result, the credit number will be assigned at random. If an

account holder wants to see their transaction history in real time, they can do so by logging into their bank's app or website.

**B. Blockchain technology**

A nationalised blockchain network, which would handle transaction monitoring in a secure and private manner, will be another mechanism that all levels of government will need to put in place. Blockchain functions as a public ledger of all transactions, according to Melanie Swan's Blockchain: Blueprint for a New Economy. Each transaction's complete details, as well as the data of each person involved in the transaction, will be stored on the blockchain. Other record-keeping systems are less secure than this technology. Because of blockchain's capacity to track in real time, it eliminates the need for error handling and improves traceability. A achievement like this would require the combined efforts of developers, engineers, and designers. Legislators can set regulations and operators/maintainers by first adopting legislation that address who will operate and maintain the secure blockchain network, as well as moving financial areas of life to the network.

**C. Implementation**

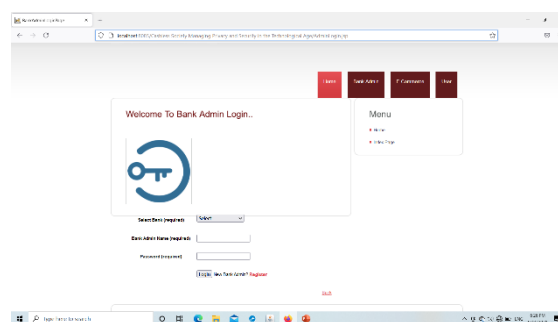
Users must either have an incentive to switch accounts or no need to transfer at all for the public to adopt a randomised credit card system. A publicly acknowledged desire for improved privacy may impact incentives to move bank accounts. If the randomised credit card system becomes a standard, every bank will be able to adopt and utilise it for its customers. This effort

will not be easy, but it will deliver the best possible result for users in terms of privacy and ease of use. The previously mentioned properties of blockchain will provide enhanced privacy and security to those living and working in the United States.

**V. RESULT**

This project identified the need for privacy & security in cashless society. Here, the results that are observed in the project.

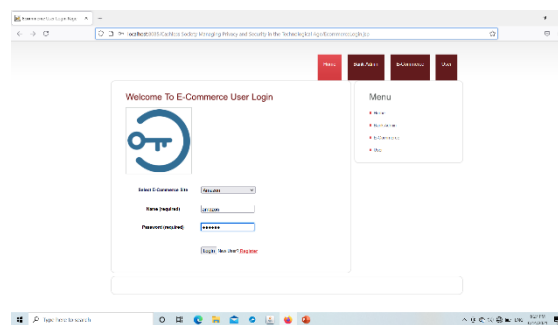
**A. Bank Admin Page**



**Fig. 2. Bank Admin Page**

**Description:** This is the Bank admin login page. The bank admin can login by using the credentials or if he/she is new they can register by filling details.

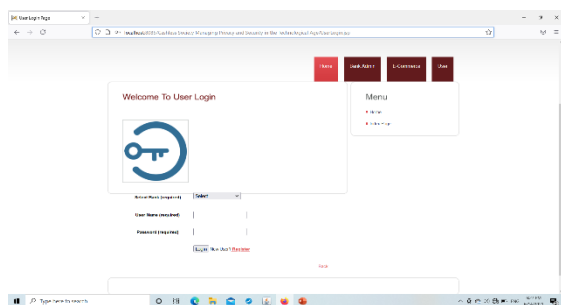
**B. E-commerce Login Page**



**Fig. 3 E-commerce login Page**

**Description:** This is E-commerce login page. The E-commerce admin can login by using the credentials. If they are new they can register.

**C. User Login Page**



**Fig. 4 User Login Page**

**Description:** This is User login page. He can login by giving correct credentials. If he/she is new then they have to register after bank admin authorize them then only they can login to the site.

**D. Random Credit Card Numbers**

ID	Bank Name	Account No	Card No	Expiry Date	PIN
1	SBI Bank	5678	3456	09/2020-12/21	123456
2	SBI Bank	9876	1234	01/2021-03/22	654321
3	SBI Bank	1010	1010	01/2021-03/22	101010
4	SBI Bank	1010	1010	01/2021-03/22	101010
5	SBI Bank	1010	1010	01/2021-03/22	101010
6	SBI Bank	1010	1010	01/2021-03/22	101010
7	SBI Bank	1010	1010	01/2021-03/22	101010
8	SBI Bank	1010	1010	01/2021-03/22	101010
9	SBI Bank	1010	1010	01/2021-03/22	101010
10	SBI Bank	1010	1010	01/2021-03/22	101010

**Fig. 5 Random Credit Card No**

**Description:** After creating an account user can request for a credit card for future purchases. Bank admin will issue a random credit card number to the user.

**VI. CONCLUSION**

Because data and metadata about their transactions are collected and used in a cashless society, its members are at danger. The idea of a cashless society has several structural complications, according to our organisation. Opportunities to implement emerge inside the complicated system. The best answer to an issue is sometimes the result of combining numerous techniques. Disseminating information to the

broader public enables people to get a better understanding of the systems they use and to make more informed decisions. Through its authentication procedure, blockchain aids in the promotion of privacy and security. Users can keep their account numbers confidential by using randomised credit cards. All three strategies are viable options for adapting to a changing currency system. We increased the bar for privacy and security in the cashless world with the proposed approach. As a result, the user will be aware of their online transactions and will be able to spot any unusual account activity. The bank administrator, on the other hand, can distinguish between normal and atypical users in order to deauthorize the latter.

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