

ONLINE DIGITAL CHEQUE CLEARANCE & VERIFICATION SYSTEM USING BLOCK
CHAIN TECHNOLOGY

S.Lakshmi, Asst. Professor,
K.Anitha, Asst. Professor

Department of Computer Science & Engineering, Loyola Academy, Alwal, Telangana, India, 500015
[sirinilakshmi@gmail.com](mailto:sirinenilakshmi@gmail.com), thumma.anitha@gmail.com

Abstract:

Our nation uses the Cheque Truncation System (CTS), an image-based check clearing system. An inter-bank national check can clear in our nation in up to 3 working days using this semi-manual approach, although it has several drawbacks. Due to the shortcomings of this system, commercial banks and cheque users must have access to an effective and secure system that can clear a check in less than 24 hours while maintaining the system's integrity and anonymity. This study presents an automated solution to the aforementioned problems that might be implemented by any commercial bank in Sri Lanka[8]. All banks intending to participate in this framework must connect to the proposed block chain-based system, which is the foundation of the proposed system. A comprehensive framework with four primary phases was presented as the solutions: I) Payee Login & deposit cheque, (ii) scan the cheque to find whether it is fraud or genuine, (iii) verify the cheque with payees bank server (iv) clearance request to Drawers bank server. The main technologies used for system implementation by storing the data in blockchain Technology using cryptography to ensure high level of security.

Keywords: Digital Cheque, Block chain technology, Encryption

Introduction:

One of the reports that banks use the most frequently and where duplication is most common is a cheque. Cheques are the most used non-cash payment method worldwide, worth 96.8 billion USD in 2018 [1]. It takes a lot of effort and time to clear a check. The existing check clearing mechanism in our nation is a semi-manual procedure. By minimizing physical delivery and increasing system efficiency, the Cheque Imaging and Truncation (CIT) System, which went into service on May 11, 2006, decreased the amount of time needed for the clearing and settlement of checks. When the CIT system was implemented, the time it took for a check to clear was shortened to T+1, where T is the day the clearing house receives the check for clearing and 1 denotes one business day from, T, but often the full process takes up to 3 working days[8]. Due to the lengthy nature of the current check clearing procedure, commercial banks and check users need a fast, safe, and efficient check clearing solution. As a result of technological improvements making them harder to detect, check fraud has now become a common occurrence. In our country, bank workers typically identify fake checks by utilizing their characteristics. Additionally, many commercial banks make use of hardware instruments based on scanners and software development kits (SDK). These processes are time-consuming and inefficient, making it impossible to set them up in any commercial bank.

Encryption: It is a process of plaintext (normal text) to a cipher text (random sequence of bits).

Decryption: The inverse process of encryption, conversion of cipher text to plaintext.

EXISTING SYSTEM

The functionality of traditional CITS, which focus on watermarks, ultraviolet (UV) rays, pantographic images, and various microscopic features on the scanned copy of the manual check, is limited. These CITS use magnetic ink character recognition (MICR) and optical character recognition (OCR)

technologies. Therefore, irregularities in the name and amount, the duplication of features using picture editing software, the use of invisible ink, and damaged photographs may result in security violations and ultimately result in the creation of a fake paper cheque. This fake check may get through the clearing house's image authentication processing mechanism, which would result in the bank paying the wrong person. The drawer commercial bank finds and reports the majority of check frauds. Less frequently, the collecting commercial bank—where the check is deposited—discovers and reports these frauds. Manual identification is frequently used to distinguish these fraudulent checks. Without a doubt, manual identification is the least effective method of preventing check fraud. Staff must be able to recognise phony checks based on visual characteristics such as security highlights. Furthermore, OCR won't be able to recognize the paper check if it is damaged. Consequently, it needs to be manually cleansed by a person. In that case, the automated procedure will fail. Additionally, the current CITS-based paper cheque clearance process takes at least one day and maybe up to three working days to clear a check. Additionally, the user must travel to the bank to deposit a check, which takes time and money. Now days, in online digital cheques are storing in the block chain directly, to provide security.

DISADVANTAGES OF EXISTING SYSTEM:

- 1. Taking up time and money
- 2. The automation procedure won't work
- 3. security breaches

PROPOSED SYSTEM:

The proposed system is based on the blockchain, and all banks that are interested in participating must link to the proposed blockchain-based system in order to provide their clients with faster check clearance. A full framework with four key phases was offered as the solutions: Checks must first be scanned to determine whether they are legitimate or fraudulent, verified with the payee's bank server, then cleared with the drawee's bank server. By applying encryption and decryption throughout a communication process, a third party cannot access or learn the contents of private messages thanks to cryptography's techniques and protocols. For added security, the encrypted text in this instance is kept in a block chain.

ADVANTAGES OF PROPOSED SYSTEM:

- 1. More Security Increased
- 2. Speed

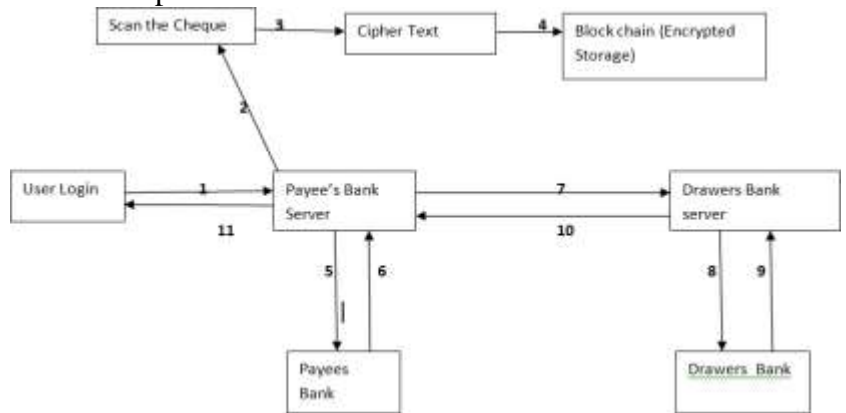


Fig: Architecture

- 1. Login
- 2. Scan the cheque
- 3. Encryption

4. Storage (Block chain)
5. Verification Request
6. Verification Report
7. Clearance Request
8. Amount Transaction
9. Transaction Report
10. Clearance Notification to Payees Bank
11. Clearance Notification to User

MODULE DESCRIPTION

To implement this project we have designed following modules

- 1) User Login: using this module user can login to application. If Login Application is failed then it stops process.
- 2) Scan the cheque: using this module user can select desired receiver name and upload cheque and enter the cheque amount and then cheque and template image processing will be started to detect it as fraud or genuine cheque. Once Cheque is scanned then it will match the signature with the corresponding signature in the database.
- 3) Now Plain text(cheque) is converted into cipher text
- 4) After Converting into Cipher Text, now it is stored in Block Chain Technology.
A block chain is a mechanism for storing data in a way that makes system changes, hacking, and cheating difficult or impossible. A block chain is essentially a network of computer systems that duplicates and distributes a digital ledger of transactions called a ledger of transactions. Every transaction is written in blocks in a block chain. Since we know the independence is the crucial component in this transaction, you can actually see everything about these transactions by looking at a few specific blocks. When nothing in these blocks can be changed. In order to offer a high level of security, the encrypted check is put here in the block chain.
- 5) Cheque Verification request is sent to Payees bank to check all the details Acc. No, Branch code, Cheque S.no, etc.
- 6) Verification report is given to the payees bank server
- 7) Clearance request is sent to the drawers bank server
- 8) Amount transaction is done to Drawers bank
- 9) Transaction Commit Report is sent to Drawers Bank server.
- 10) Clearance Notification is sent back to the Payee's Bank Server.
- 11) Clearance Notification is sent to Payee.

Conclusion:

Encrypted checks are recorded in the block chain as a result of the research study to increase security. It will assist in enhancing and accelerating the automated process as well as the features of the check. Additionally, when used in conjunction with paper checks, digital checks will save costs. The security of the check truncation system will increase as a result of this study component's use of smart contacts that are block chain based. Additionally, by replacing paper checks with digital ones, paper waste and labour costs will be reduced.

References:

- [1] -Cheque: What is Cheque, Know All about Cheque | Steps for filling Cheque | Paisabazaar.com. [Online]. Available: <https://www.paisabazaar.com/banking/what-is-cheque/>. [Accessed: 01-Nov-2020].

- [2] —Lanka Clear. [Online]. Available: <https://www.lankaclear.com/knowledgecenter/cits/>. [Accessed: 31- Dec-2020].
- [3] N. Kabra, P. Bhattacharya, S. Tanwar, and S. Tyagi, –MudraChain: Blockchain-based framework for automated cheque clearance in financial institutions, || *Futur. Gener. Comput. Syst.*, vol. 102, pp. 574–587, 2020.
- [4] N. Singh and M. Vardhan, –Blockchain based E-Cheque clearance framework, || *Scalable Comput.*, vol. 20, no. 3, pp. 511–526, 2019.
- [5] M. A. E. A. Abd-ElZaher, –Different types of inks having certain medicolegal importance: Deciphering the faded and physically erased handwriting, || *Egypt. J. Forensic Sci.*, vol. 4, no. 2, pp. 39–44, 2014.
- [6] S. G. and M. E. Moghaddam, –Off-Line Persian Signature Identification and Verification based on Image Registration and Fusion, || 2009.
- [7] M. Abd- ElZaher, –Different types of inks having certain medicolegal importance: Deciphering faded and physically erased handwriting, || 2014.
- [8] [Bogahawatte W.W.M.K. A](#) , [Isuri Samanmali A.H. L](#) , [Perera K.D. M](#), [Kavindi M.A. T](#), [Senaratne A. N](#) , [Rupasinghe L. P](#) Department of Computer Systems Engineering, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka