

# Online Digital Cheque Clearance and Verification System Using Block Chain

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## ABSTRACT:

Sri Lanka uses Cheque Truncation System (CTS), an image-based check clearing system. semi-manual approach has some drawbacks & can take up towards 3 working days in Sri Lanka towards clear an inter-bank national check. Due towards shortcomings about this system, commercial banks & cheque users must have access towards an effective & secure system that can clear a check in less than 24 hours while maintaining system's integrity & anonymity.

This study presents an automated solution towards aforementioned problems that might be implemented through any commercial bank in Sri Lanka. All banks intending towards participate in this framework must connect towards proposed blockchain-based system, which is foundation about proposed system.

A comprehensive framework among four primary phases was presented as solutions: (i) paper check clearing process; (ii) digital check issuing & clearing process; (iii) check fraud detection process; & (iv) check transaction security procedure.

Main technologies used for system implementation were Python, Flutter framework, & Ethereum. Due towards Ethereum's enhanced integrity, suggested method is very scalable. strategy promotes a significantly faster, simpler, & more secure check clearing process for both customer & bank. It also offers a quicker & more accurate paper check fraud detection mechanism. through addressing need towards create a secure, efficient, & eco-friendly system, suggested solution helps both user & bank. Last but not least, Check Mate enables a continuous stream about check clearing operations for payer & payee without need about any middlemen.

## INTRODUCTION:

One about reports that banks use most frequently & where duplication is most common is a cheque. Cheques are most used non-cash payment method worldwide, worth 96.8 billion USD in 2018. It takes a lot about effort & time towards clear a check. present check clearing procedure in Sri Lanka is a semi-manual procedure. through minimizing physical delivery & increasing system efficiency, Cheque Imaging & Truncation (CIT) System, which went into operation on May 11, 2006, decreased amount about time needed for clearing & settling checks. time it takes towards clear a check has been shortened since CIT system was implemented towards T+1, where T is day clearing house receives check for clearing & 1 denotes one business day after T.

Normally, entire procedure can take up towards three working days. Due towards this lengthy traditional check clearing process, commercial banks & check users need a fast, secure check clearing system that

clears checks more quickly. As a Result, about technological improvements making them harder towards detect, check fraud has now become a common occurrence. In Sri Lanka, bank workers typically identify fake checks through examining their characteristics. Additionally, many commercial banks make use about hardware instruments based on scanners & software development kits (SDK). These processes are time-consuming & inefficient, making it impossible towards set them up in any commercial bank.

### **LITERATURE SURVEY:**

A Cheque is one of the most predominant reports of a bank where being duplicated is greatest. Cheques are the excessively delighted non-cash payment method with about 96.8 billion dollars worthy worldwide in 2018 [1]. Clearing a cheque is a tiresome and a time-consuming task. In Sri Lanka, the current cheque clearing system is a semi-manual process. Cheque Imaging and Truncation (CIT) System which commenced operations on 11th May 2006, reduced the time taken for clearing and settlement of cheques, by avoiding physical delivery and enhancing efficiency of the system.

### **EXISTING WORK:**

The usefulness about conventional CITS, which center around watermarks, bright (UV) beams, pantographic pictures, and different tiny elements on filtered duplicate about manual check, is restricted. These CITS utilize attractive ink character acknowledgment (MICR) and optical person acknowledgment (OCR) innovations. In this manner, anomalies in name and sum, duplication about highlights utilizing picture altering programming, use about undetectable ink, and harmed photos may bring about security infringement and at last outcome in creation about a phony paper check. This phony check might get past going through house's picture verification handling component, which would bring about bank paying incorrectly individual. drawee business bank finds and reports larger part about actually look at cheats. Less every now and again, gathering business bank — where check is stored — finds and reports these cheats. Manual recognizable proof is as often as possible utilized towards recognize these false checks. Point of fact, manual distinguishing proof is least powerful strategy about forestalling really look at extortion. Staff should be capable towards perceive fake checks in light of visual attributes, for example, security features. Moreover, OCR will not be capable towards perceive paper check assuming it is harmed. Therefore, it needs towards be physically scrubbed through an individual. All things considered; robotized technique will come up short. Moreover, current CITS-based paper check leeway process requires no less than one day and perhaps up towards three working days towards clear a check. Furthermore, client should go towards bank towards store a check, which takes time and cash.

- **Mudra Chain**

(Blockchain-based framework for automated cheque clearance in financial institutions)

Authors: N. Kabra, P. Bhattacharya, S. Tanwar, and S. Tyagi

Abstract: Currently, the burden on the cheque clearing houses in financial institutions is increasing day-by-day, which necessitates the upgrading of the existing cheque truncation system (CTS). It is a manual process which uses Magnetic Ink Character Recognition (MICR), where cheques have been scanned and sent to the clearing house for further processing. The limitations of existing CTS are — illegal duplication of cheque images, invisible ink usage, visibility issues in beneficiary name, and amount on the cheque

- **Blockchain based E-Cheque clearance framework**

Authors: N. Singh and M. Vardhan,

Abstract: This research work proposes a novel and comprehensive electronic cheque transactions framework. The proposed e-cheque system is free from the various security attacks such as alteration of the e-cheque, double spending of e-cheque, counterfeits e-cheques. The e-cheque generated in the proposed system can be deposited electronically or physically via teller machines. This facility provides greater flexibility to the customers of the banking system

- **Deciphering the faded and physically erased handwriting**

Authors: M. A. E. A. Abd-ElZaher

Abstract: Disappearing ink is a type of ink which could be used to forge documents as it will fade away without any trace within 40–65 h. Erasable ink is another type of ink easily removed by certain rubbers incorporated in each pen. Both types of inks were applied separately on different types of papers (checks, standard white foolscap, and plain white A4 paper). For vanishing ink, it was observed visually in the first 6 h and then every 6 h. It was found that the vanishing ink disappeared completely within 2 h on checks, 36 h on standard white foolscap paper, and 40 h on plain white A4 paper

- **Off-Line Persian Signature Identification and Verification based on Image Registration and Fusion**

Authors: S. G. and M. E. Moghaddam

Abstract: Signature verification and Identification has great importance for authentication purpose. Persian signatures are different from other signature types because people usually do not use text in it and they draw a shape as their signature, therefore, a different approach should be considered to process such signatures. In this paper, a method for off-line Persian signature identification and verification is proposed that is based on Image Registration, DWT (Discrete Wavelet Transform) and Image Fusion

### **LIMITATIONS OF EXISTING WORK:**

1. Time consuming
2. automation process will not be successful
3. security violation

### **PROBLEM STATEMENT**

- The proposed system is based on the blockchain where all banks willing to take an interest in this framework must connect the proposed blockchain based system to supply the quicker cheque clearance to its clients.
- The proposed system is highly scalable as Ethereum provides added integrity to the system. The approach advocates the customer as well as the bank with much simpler and speedier cheque clearing process with increased security.

### **PROJECT OBJECTIVES**

- Main objective of the proposed solution is to speed up the cheque clearing process and increase the security of cheque transactions using Checkmate automated cheque clearing system.

- The proposed solution can provide a 24-hour service for customers. Further, the mobile device-based technology helps users to easily issue and clear both digital and paper cheques using a simple mobile application installed in their mobile devices.

### 2.3 PROPOSED SYSTEM

- The proposed system is based on the blockchain where all banks willing to take an interest in this framework must connect the proposed blockchain-based system to supply the quicker cheque clearance to its clients.
- Answers were proposed with a complete framework consisting of four main phases:
  - (i) paper cheque clearing process,
  - (ii) digital cheque issuing and clearing process,
  - (iii) cheque fraud detection process and
  - (iv) cheque transaction securing process.
- Python along with Flutter framework and Ethereum were the major technologies used for implementing the system. The proposed system is highly scalable as Ethereum provides added integrity to the system.
- The approach advocates the customer as well as the bank with much simpler and speedier cheque clearing process with increased security.

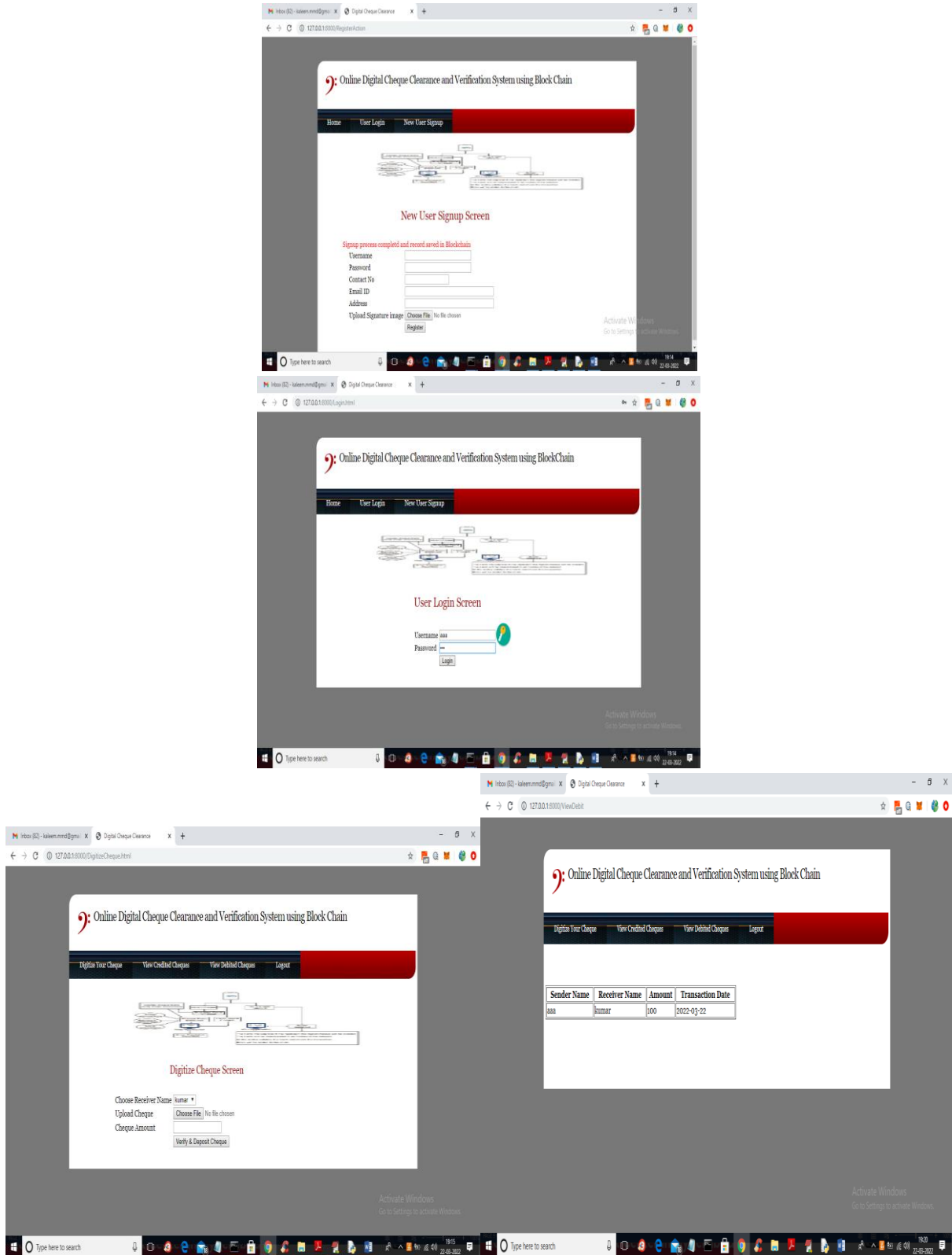
### CONCLUSION:

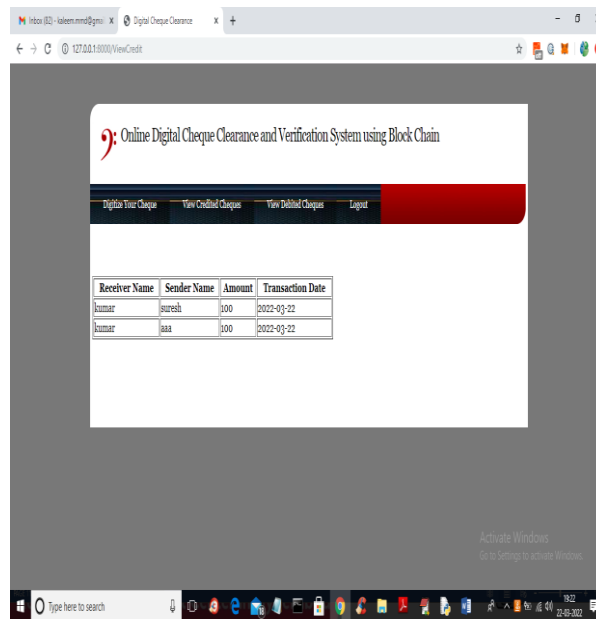
The outcomes of the research project include block chain-based cheque issuing and clearing process. It will help to improve the functionalities of the cheque as well as improve and speed up the automation process. Furthermore, the digital cheques will reduce the costs combined with the paper cheque. Since this research component is based on blockchain-based smart contract, the security of the cheque truncation system will be increased.

Moreover, digital cheque will reduce the wastage of the paper and labor cost by replacing the paper cheque. The proposed system has certain restrictions. The approach only analyzes the scope of three types of cheques; order cheques, cash cheques and dated cheques when clearing. CheckMate Mobile and web applications only support English language for the moment. Ethereum, which is a publicly available blockchain, may lead to certain privacy and slowness issues than private or a federated blockchain.

The principal restraint is that the methods must conform to specific bank cheque layouts, including color schemes from various banks including private and public banks. Other limitations that will be addressed in future research on the approach include the handling of defective and damaged cheques, background artwork and signatures written in multicolored ink.

## Results:





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