

# A Survey on Smart Electronic Voting System through Block-Chain Technology

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## Abstract

India is the world's largest democracy with a population of more than 1 billion; India has an electorate of more than 668 million and covers 543 parliamentary constituencies. Voting is the bridge between the governed and government. The last few years have brought a renewed focus on to the technology used in the voting process. The current voting system has many security holes, and it is difficult to prove even simple security properties about them. A voting system that can be proven correct has many concerns. There are some reasons for a government to use electronic systems are to increase elections activities and to reduce the elections expenses. Still there is some scope of work in electronic voting system because there is no way of identification by the electronic voting system whether the user is authentic or not and securing electronic voting machine from miscreants. The proposed system is to develop a compatible voting machine with high security by using Block-chain technology in order to increase security and transparency between the users.

**Keywords:** Electronic Voting System, Voter ID, Security, Block Chain, Vote.

## Introduction

Voting, whether traditional ballot based or electronic voting (e-voting), is what modern democracies are built upon. In recent years' voter apathy has been increasing, especially among the younger computer/tech savvy generation. E-voting is pushed as a potential solution to attract young voters. For a robust e-voting scheme, a number of functional and security requirements are specified including transparency, accuracy, auditability, system and data integrity, secrecy/privacy, availability, and distribution of authority. Block-chain technology is supported by a distributed network consisting of a large number of interconnected nodes. Each of these nodes have their own copy of the distributed ledger that contains the full history of all transactions the network has processed. There is no single authority that controls the network. If the majority of the nodes agree, they accept a transaction. This

network allows users to remain anonymous. A basic analysis of the block-chain technology suggests that it is a suitable basis for e-voting and moreover, it could have the potential to make e-voting more acceptable and reliable.

## Motivation

By developing e voting through block-chain technology we can take care of chores of casting and counting votes. By developing this E-voting help us in many different levels of usability, security, efficiency and accuracy. This innovative type of E voting can increase voter participation either from increase accessibility, decrease cost and difficulty or any other method clearly as it benefits to the larger community through the E-voting system. E-voting system also has ability to reduce fraud by eliminating the opportunity for ballot tampering.

## Related Work

Literature survey is the most important step in any kind of research. Before start developing we need to study the previous papers of our domain which we are working and on the basis of study we can predict or generate the drawback and start working with the reference of previous papers.

In this section, we briefly review the related work on Online Voting System.

This paper, proposed secure voting system with fast voting results through RFID based biometric voting system. In this paper, there are two verification steps involved. First, RFID tag is used which contains the verification data which is already stored in LPC 2148. Second, the Fingerprint scanner is used to check whether the RFID is belonging that particular person or not. The drawback of this paper is cost maximized due to use of RFID method. [1]

In this paper, used of Aadhaar card provided by UIDAI with QR code present in it. Online instead of offline mode and storing the voting data to secured online server. Results can be displayed by admin after entering user id and password. [2]

The proposed method is to build a Smart voting system using fingerprint recognition technology that allows any voter in INDIA to cast the vote to their respective constituency from anywhere in INDIA by going to their nearest voting booth in the place of stay. Also to develop a secure smart voting system based on biometric recognition. Provides the voter to vote from any region with in India to their Residential Constituency from the nearest Voting Booth with a secure voting process without neglecting to vote. [3]

This paper, proposes protected voting system to avoid the unlawful voting. The authentication of an individual is made using biometric and capability of the voter is affirmed using the Aadhaar. In this system the data stored in the Aadhaar card act main criteria for authentication and conformation. The security is provided through biometrics such as fingerprint. The fingerprint information stored in the Aadhaar is taken as the reference and used for authentication at the time of voting. [4]

Basic electronic machine which is used nowadays has some laggings like multiple vote casting from one member and invalidity of votes are checked automatically. To reduce these disadvantages, the smart automatically processed and fingerprints are used to reduce multiple vote casting in simple way. [5]

This paper has shown the possibility of establishing E-Voting protocol based on public-key encryption cryptosystem. The security of the proposed E-Voting depends on RSA public key encryption protocol. It allows the voter to vote from his/her own personal computer (PC) without any extra cost and effort. This protocol is proposed to replace the unreliable previous voting system, since voters feel justifiably confident that their votes will be counted. [6]

This system provides security from all type of attacks, when vote is travelling from voting client to voting server from their experimentation. These attacks include security threats from passive as well as active intruder. For authentication of voter instead of USERNAME, if we can use thumb impression of voter or capture photo of his/her face and compare it with photo stored in our database, it will be more secure. [7]

In this paper, a block-chain-based voting system. It needs time to popularize block-chain for a voting system as it is a novel idea and voting itself is a crucial matter in a democratic country. [8]

The proposed model is more secure than other models and it is suitable for use in major elections on a large scale. After casting a vote with NCVVS system, the voter receives a confirmation email containing the ballot fingerprint (and also the fingerprint of the election) calculated by standard hash function SHA (256) [46]. [9]

The proposed work is based on the block-chain technology, which remove all the threats from the communication link. It is a decentralized system, contain hashing and encryption concept for providing the security. [10]

## Problem Statement

The existing machine had security risks that can potentially undermine the election process. In addition to human error; internet e-voting is susceptible to a range of threats such as hacking by domestic and foreign saboteurs, technical glitches, voter impersonation and even system failure.

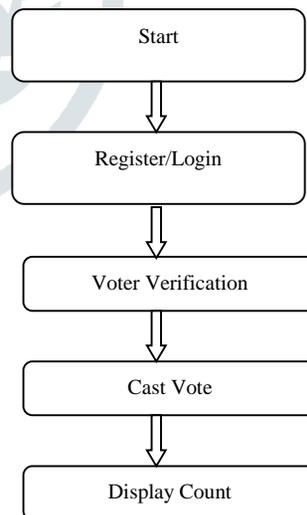
## Proposed Method

In our system Block Chain Concepts are applied to **Online Voting System** when we are developing a Smart E-voting system by taking advantage of block Chain concepts with web interface.

### Advantages: -

1. Time Saving Working load reduced.
2. Information available at time and Provide security for data.
3. This is simple, safe & secures methods that minimum of time.
4. Using Block Chain Concepts, the calculated time is reduced.
5. Integrity of result is granted, preventing the chance of false voting.

In this we are using 2 modules i.e. Admin and Voter  
**Module 1** - Administrator (Admin): - Admin Add Candidate, Candidate details and check user(Voter) are legal or not.  
**Module 2** - User (Voter): - Voter can cast the vote to the candidate.



**Fig.1 Flow diagram**

## Architecture

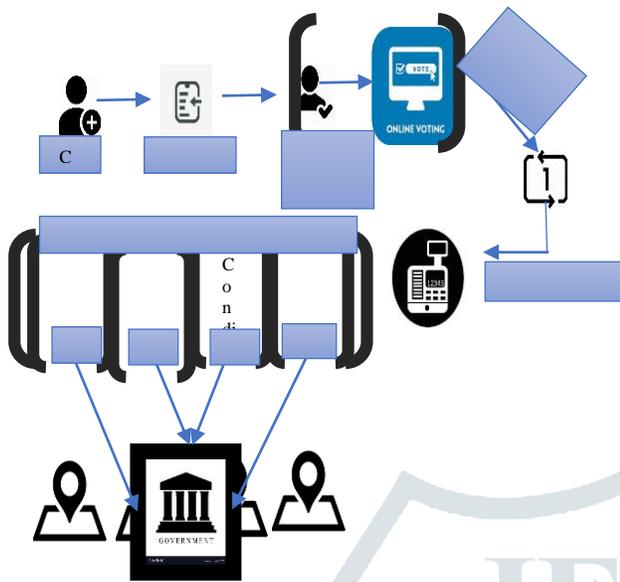


Fig.2 System Architecture

## Conclusion

This paper described, an electronic Voting system for small to medium sized Internet-based public opinion systems that provides privacy of vote, voter's authentication, auditability, security, double-voting prevention, fairness voting device from manipulating the authenticated voters voting choices.

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