**ABSTRACT**

The project’s main objective is to enabling voting at elsewhere regardless of an individual’s current location through online mode providing a secured and user-friendly Voting System. The problem of e-voting is still critical in terms of safety and security. This is a robust system, which deals with the design and development of a web-based voting system.

Our system deals with online voting system that facilitates user(voter), candidate and administrator (who will be in charge to monitor voting) to participate in online voting. our online voting system is highly secured, and it has a simple and interactive user interface. The proposed online portal is secured and have unique security feature such as unique id generation that adds another layer of security (except login id and password) and the voter’s data are predefined in the database, which helps in authentication. It also creates and manages voting and an election detail as all the users must login by user name and password (as their date of birth) and click on candidates to register vote.

The voters and nominees are verified through OTP each and every time of their login. This system eliminates any intruders or duplicate logins.

The project Online Voting Software aims at making the voting process easy in any type of elections. Presently voting is performed using ballot paper and the counting is done manually, hence it consumes a lot of time. There can be possibility of invalid votes. All these make election a tedious task. In our proposed system voting and counting is done with the help of computer in Online. It saves time, avoid error in counting and there will be no invalid votes. It also avoids the process of physical touching or visiting any places and so in the time of pandemic too it will be more helpful to conduct elections. Without the wastage of time the citizen can vote the respective candidate. So, there is a need for Online Voting Systems.

**CHAPTER 1**

**INTRODUCTION**

This chapter starts with a high-level overview of the project. It then describes the specific aims and objectives of the project. Finally, it analyses the feasibility of the project and provides a feasibility report of the system.

* 1. **Background of Study**

In every democratic setting with persons of differing and inconsistent opinions, decisions must be made between several options. This happens in business environment, educational environment, social organizations, and mostly in governance. One of the ways of making such a decision is through voting. Voting is a formal process of expressing individual opinions for or against some motion. In the governance sector of many organizations this process is always used as a means of selecting or electing a leader. One of the key areas where voting is applied is in election. Election is the formal process of selecting a person for public office or of accepting or rejecting a political proposition by voting.

* + 1. **E-voting System Overview**
  1. **Problem Statement**

The present voting system applicable in the India electoral system has proved inefficient as the voters’ registration process is slow, the manual collation of results takes time and gives room for result manipulation, also the inaccessible nature of election venues which includes the long distances to be covered by voters’ to their registered location increases voters’ apathy towards the election processes, and finally the issues of ballot box snatching and damage and other election violence and issues associated with the traditional ballot paper voting all defiles the purpose of voting in election process as a formal process of expressing individual opinions for or against some motion.

* 1. **Aim and Objectives**

In the quest to design a successful system to tackle the issues stated in the problem statement, the aim and objectives of the project are outlined below.

* + 1. **Aim**

The aim of this project is to design and implement a user-friendly real-time e-voting system.

**1.3.2 Objectives**

Project Objectives includes

1. A detailed study of the election processes as it pertains to voting.
2. Design and develop a software platform for voter registration, election voting, real-time election results collation and monitoring and mostly for voters’ remote access to elections.
3. Design and develop an software system that incorporates OTP and personal information Authentication to the voters via e-mail.
4. Design and develop an administration dashboard for the election administrators.
5. Run simulations and compare the results of the designed e-voting system and other voting systems.
   1. **Significance of the Project**

In view of the rapid development of computer technology in virtually all fields of operation and its use in relation to information management, the projects’ benefits are itemized as follows:

* + 1. **To the University**

An e-voting system is beneficial to the university as:

1. It will provide a means conduct a less stressful and fair elections at different levels (faculty, departments, school wide etc.) in the university.
2. It will offer an in-depth knowledge of the practical approach to ICT education.
3. It will serve as a hands-on application of theories taught in class as it relates to database, software and hardware development.
4. As its’ database is based on a flexible database management system, student and staff details can easily be collected for easy access and monitoring.
5. It will serve as a base for other works in the field of ICT in governance.
   * 1. **To the Society**

The significance of an e-voting system to the society and mostly to Nigeria are itemized as follows:

1. It will provide ECI (Election commission of India) with a means to conduct less costly and fair elections.
2. The secure and flexible database management system safeguards data and information to account for credible elections.
3. It will serve to reduce the workload in the process of conducting election.
4. As it incorporates online voting individuals can vote from their convenience.
5. It will enable ECI reduce the time wasted in collating and announcing election result.
6. It will greatly reduce and eliminate disenfranchising electorates.
7. It will serve to eliminate invalid votes, curb election violence as votes are counted immediately as they are cast.
   1. **Scope/Limitations of the Work**

This project work is mainly designed to enable the Independent National Electoral Commission to use electronic device to capture voter’s information, and to allow voters to their cast votes easily and comfortably to promote a more credible election which is efficient and less costly. The dynamic nature of the elections application interface and database structure allows for different organizations set up and conduct basic elections too. Its online interface enables real-time election monitoring and result collation. Some of its major limitations are:

* It requires network access: Since the collection and sending of votes to the database requires an internet access which may not be readily available in some urban area would seem a limiting factor, though the local database and the printed vote can be used for counting until network is restored.
  1. **Project Outline**

This project work on e-voting system is made up of five chapters: introduction, literature review, methodology and system design, systems implementation and result analysis, conclusion and recommendation.

In the chapter one of this project, the introduction which briefly explains voting and elections in general, is seen. It goes further to explain the background of an e-voting system, the aim and objectives of the e-voting system, its significance, scope, and constraints. It summaries by giving the project outline.

In the chapter two, a review of previous literature and technologies used for e-voting system was treated. We also see the different approaches to e-voting systems, their implementation, criticism with their literature reviews and noted the various gaps in the existing literatures.

In chapter three, we see the block diagram of the project work, different methodologies used in development stages, the different phases of the project work which include its research, design, display programming, testing. We extensively cover the requirements of the project designs and software incorporated in the work.

In chapter four, we talk about the steps taken and techniques used for the actual implementation of the project. We see tests carried out to ensure that the project is efficient and also display the result gotten and their significance. We also see the problems encountered and the techniques and solutions taken to overcome them or not.

And finally, we conclude the work and give notable recommendations for optimal operation of the product. Also, we provide suggestions for improvement, enhancement and optimization of our existing work. We also outline the major contribution to the body of knowledge in which our work has achieved

**CHAPTER 2**

**LITERATURE REVIEW**

This chapter discusses the different approaches to e-voting processes. After that, it explains the web application development tools and technologies used in this project.

**2.1 Web Application Based System**

A web-based system is an application that is accessed via HTTP. The term web-based is usually used to describe applications that run in a web browser. It can, though, also be used to describe applications that have a very small component of the solution loaded on the client’s PC. The host server for a web-based system could be a local server, or it could be accessed via the internet.

Web-based applications used to be very limited in functionality. However, advances in technology, security, and internet speeds have greatly increased the potential scope of web-based systems. Today, we have web-based business accounting systems, web-based CRM systems, a web-based Microsoft Office, and more. Web-based applications offer some significant advantages over native, client-based software. Here are just some of the benefits of web-based apps for business.

* 1. **Web Application Development Technologies**

This section is providing a brief description of the technologies used for this project.

* + 1. **MERN Stack**

MERN Stack is a JavaScript Stack that is used for easier and faster

deployment of full-stack web application. MERN Stack comprises of 4 technologies namely: [MongoDB](https://www.mongodb.com/), [Express.js](https://expressjs.com/), [React.js](https://reactjs.org/) and [Node.js](https://nodejs.org/en/). It is designed make the development process smoother and easier.

Each of these 4 powerful technologies provides an end-to-end framework for the developer to work in and each of these technologies play a big part in the development of web applications.

* **MongoDB** - Document Database.
* **Express(.js)** - Node.js web framework.
* **React(.js)** - client-side JavaScript framework.
* **Node(.js)** - The premier JavaScript web server