

An Efficient Aadhar card based Online Voting System

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Abstract- *This paper proposes an Aadhar card-based online voting system designed to enhance the efficiency, security, and inclusivity of the electoral process. Leveraging Aadhar's robust authentication and verification capabilities, the system aims to streamline voter registration, authentication, and voting, thereby increasing voter turnout and reducing electoral fraud. The system employs a decentralized architecture with blockchain technology to ensure transparency, immutability, and tamper-proof vote counting. While addressing privacy concerns through data minimization, encryption, and explicit consent, the system also focuses on inclusivity by providing accessibility features and alternative voting options for those unable to use the online platform.*

Keywords- Aadhar card, online voting system, authentication, blockchain, security, privacy, inclusivity, voter turnout, electoral fraud, decentralized architecture.

I. INTRODUCTION

These days, a lot of companies are trying to build and use analytics capabilities. We examine supply and demand visibility as the primary resources for analytics capability and organizational flexibility as a supplementary capability using organizational information processing theory (OIPT). We also investigate the correlations between these variables in different market volatility scenarios, which represent a form of environmental uncertainty. Our examination of data from 191 international companies yielded results that show a correlation between the growth of analytics capabilities and supply and demand visibility. Consequently, it has been demonstrated that when supply chain companies have the organizational flexibility required to promptly and effectively act upon insights offered by analytics, their analytics competence is also more closely correlated with their operational performance. [1]

Deep learning has revolutionized the fields of computer vision, natural language understanding, speech recognition, information retrieval, and more. However, with the progressive improvements in deep learning models, their number of parameters, latency, and resources required to train, among others, have all increased significantly. Consequently,

it has become important to pay attention to these footprint metrics of a model as well, not just its quality. We present and motivate the problem of efficiency in deep learning, followed by a thorough survey of the five core areas of model efficiency (spanning modeling techniques, infrastructure, and hardware) and the seminal work there. [2]

Due to the outbreak of Coronavirus, humans all over the world are facing several health problems. The present study has explored the spatiotemporal pattern of Coronavirus spread in India including spatial clustering, identification of hotspots, spatial heterogeneity, and homogeneity, spatial trend, and direction of COVID-19 cases using spatial statistical analysis during the period of 30 January to 20 June 2020. Besides, the polynomial regression model has been used for predictions of COVID-19 COVID-19-affected population and related deaths. The study found positive spatial heterogeneity in COVID-19 cases in India. The study has also identified 17 epicenters across the country with high incidence rates. The directional distribution of the ellipse polygon shows that the spread of COVID-19 now trending towards the east but the concentration of cases is mainly in the western part of the country. The country's trend of COVID-19 follows a fourth-order polynomial growth and is characterized by an increasing trend. [3]

This chapter aims to enhance the concept of “smart cities” to “inclusive smart cities.” For doing so, the authors in this chapter advocate a three-sieved filter that insists all smart cities to be necessarily “accessible,” “adaptable” as well as “affordable” (3As) to the needs and aspirations of “elderly,” “poor and disadvantaged,” and “people with disabilities,” henceforth referred together as “differently abled communities” (DAC). This three-pronged approach, the 3As approach, insists that for a smart city to be “inclusive,” the first and foremost criterion is that its facilities must be “accessible to all” especially to DACs that continually struggle with differences in terms of physical mobility, mental abilities, and economic abilities. The second essential characteristic is its “adaptability” which refers to its flexibility that must emanate from various smart features for addressing the personal aspirations and contextual needs of its DAC. [4] The purpose of this article is to analyze and propose the impact of emerging markets on existing diversified firm

practices. Moreover, this paper seeks to identify the sustainability issues of diversified firms in emerging economies. In addition, based on institutional and resources-based perspectives, we develop 12 propositions that can identify what challenges are faced by a company when it tries to diversify in emerging economies. The paper draws from the literature and experiential knowledge of the authors in emerging markets to address the paper's objective. The literature review starts with the influential work of Harvey et al. (1999) and ends with the report of the World Economic Outlook Update, January 2015.[5]

II. LITERATURE SURVEY

According to Patel N. and Desai M. (2012). Elections are a necessary component of any democratic society, thus their integrity and fairness must be ensured. Numerous aspects of social life have been greatly enhanced by technology, and electronic voting systems have shown to be a practical means of enhancing election security, effectiveness, and transparency. Traditional e-voting systems are susceptible to a number of security and privacy threats, including voter impersonation, vote tampering, and hacking. Given this, blockchain technology has attracted attention as a potential solution to these issues and as a means of providing secure and transparent electronic voting procedures. Blockchain is a distributed ledger technology that allows several parties to administer a single database, doing away with the need for middlemen. This technology has several features that make it suitable for e-voting systems, such as transparency, immutability, and decentralization. Moreover, the Aadhaar card authentication system used in India can be integrated with blockchain technology to create a secure and efficient e-voting system.[6]

According to Gupta, A. and Reddy, V. ,(2023). Right to privacy is not a common law right but is widely recognized under the doctrine of equity and the right to democratic justice. Anyone can learn a great deal about this law, from the history of privacy and how, when, and where it was derived from, to the current situation. The principles from the privacy protection cases in the United States of America and the laws formed in the European Union had a big impression on how the Indian privacy bill was developed. The amount of scrutiny that the topic of privacy protection had to go through in this country is unmatched. Starting with privacy invasion from the very first cases in the 1880s to the famous Puttaswamy case and GRDR & CCPA comparisons today, privacy laws are yet to attain their true place in society. The paper aims to acknowledge the new laws of privacy as a forward-looking step towards success, it is also important to find a way to eradicate other present loopholes and changes that need to be

made to improve privacy and the safety of citizens ensuring a more foolproof way.[7]

According to Kumar, S. and Jain, A., (2023), in the modern world, a system that can automate the patient's treatment in the event that medical facilities are inaccessible is required. In order to help the patient become more self-reliant, smart healthcare can intervene. With such features, 6G is viewed as the IoT and AI-powered smart healthcare of the future. The book 6G-Enabled IoT and AI for Smart Healthcare: Challenges, Impact, and Analysis provides an overview of the industry's current state of affairs, history, and obstacles. It goes on to analyze what was done as well as the theories, instruments, and methods of smart healthcare. The book describes how 6G-enabled IoT concepts and machine learning-based deep learning contribute to the automation of smart healthcare systems..[8]

According to Chopra, R. and Khan, M. (2023). We did a second household serosurvey among individuals aged 10 years or older in the same 700 villages or wards within 70 districts in India that were included in the first serosurvey. Individuals aged younger than 10 years and households that did not respond at the time of survey were excluded. Participants were interviewed to collect information on sociodemographics, symptoms suggestive of COVID-19, exposure history to laboratory-confirmed COVID-19 cases, and history of COVID-19 illness. 3-5 mL of venous blood was collected from each participant and blood samples were tested using the Abbott SARS-CoV-2 IgG assay. Seroprevalence was estimated after applying the sampling weights and adjusting for clustering and assay characteristics. We randomly selected one adult serum sample from each household to compare the seroprevalence among adults between the two serosurveys. [9]

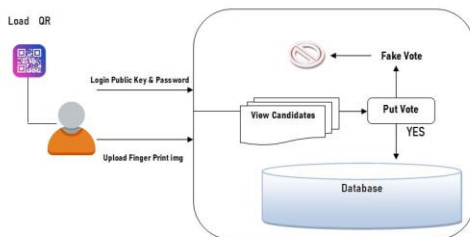
According to Banerjee, D. and Dasgupta, S., (2023). This book provides a detailed insight into Robotic Process Automation (RPA) technologies linked with AI that will help organizations implement Industry 4.0 procedures. RPA tools enhance their functionality by incorporating AI objectives, such as use of artificial neural network algorithms, text mining techniques, and natural language processing techniques for information extraction and the subsequent process of optimization and forecasting scenarios for the purpose of improving an organization's operational and business processes. The target readers of this book are researchers, professors, graduate students, scientists, policymakers, professionals, and developers working in the IT and ITeS sectors, i.e. people who are working on emerging technologies. This book also provides insights and decision support tools necessary for executives concerned with different industrial and organizational automation-centric jobs,

knowledge dissemination, information, and policy development for automation in different educational, government, and non-government organizations.[10]

III. PROPOSED SYSTEM

Proposed Aadhar card-based online voting system aims to streamline the voting process by integrating Aadhar authentication with a secure online platform. Eligible voters would register by linking their Aadhar card to their voter ID and undergo biometric verification for identity confirmation. Upon successful verification, voters would receive a secure OTP for logging into the voting platform during the voting period. The voting process would be facilitated through a secure and transparent blockchain technology, ensuring the integrity and immutability of the votes cast. To safeguard privacy and security, the system would employ end-to-end encryption, multi-factor authentication, and regular security audits. Additionally, voter data would be minimized, anonymized, and protected to adhere to stringent data protection regulations. The system would also focus on inclusivity by providing accessibility features and alternative voting options for those unable to use the online platform, ensuring a comprehensive and equitable voting experience for all eligible voters.

ARCHITECTURE DIAGRAM



1.Identity Verification Module (IVM):

This module is responsible for validating the identity of voters through Aadhar details and biometric authentication. It interacts with the Aadhar database securely to fetch and verify voter information.

2.Voting Platform Module (VPM):

Hosted on a secure server, this module provides the interface where voters can log in and cast their votes.

It ensures a seamless and user-friendly voting experience while maintaining the integrity and security of the voting process.

3.Data Management Module (DMM):

This module manages the storage and retrieval of encrypted voter data, vote records, and audit trails.

It uses a relational database with strong encryption and access control mechanisms to protect voter information.

4.Blockchain Integration Module (BIM):

To ensure transparency and immutability, this module integrates with a blockchain network where all voting transactions are recorded.

It facilitates real-time updating of the blockchain with encrypted vote data and provides APIs for blockchain verification.

IV. RESULT AND DISCUSSION



FIGURE.1 Home Page

Welcome to our Online Voting System! Make your voice heard with our efficient and secure Aadhar card-based voting platform. Experience the convenience of casting your vote from the comfort of your home while ensuring the integrity of the electoral process.



FIGURE.2 Admin Login

Admins, access the backend of our online voting system securely and efficiently. With our robust authentication measures, you can manage voter registration, monitor voting activities, and oversee the entire electoral process with confidence.

Aadhar Number	Name	Address	Mobile	Status	Action
4402700396	SPV31049WHSTgpeYq8BUC	PC8W10hPageT11j4h453PM4F1ogfnum,pahw5MaCQ	94350qNF8DK4M661Q	Active	De_Active

FIGURE.3 User Status

Check your voting status easily with our user-friendly interface. Simply log in with your Aadhar card details to view your registration status, verify your eligibility, and ensure that your voice is counted in the democratic process.

Sd	Candidate Name	Party Place	Party Symbols	Party Post	Aadhar Name
1	Chopank				MSHAKP8-UB8d-FYmAKNRJm

FIGURE.4 Admin View Result

Admins, track the outcome of elections in real-time with our comprehensive result viewing feature. Gain insights into voter turnout, analyze voting patterns, and access detailed reports to facilitate transparent and accountable governance.

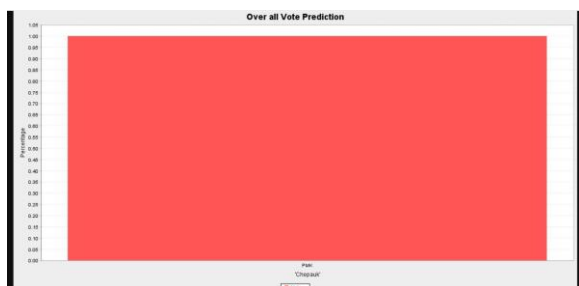


FIGURE.5 Vote Prediction

Stay informed with our innovative vote prediction tool. Utilizing advanced analytics and predictive modeling, this feature offers insights into potential election outcomes, helping stakeholders make informed decisions and strategize effectively.

V.CONCLUSION

The Aadhar card-based online voting system presented in this paper offers a promising solution to the challenges faced by traditional electoral systems. By integrating Aadhar's strong authentication and verification

capabilities with advanced security measures, blockchain technology, and privacy safeguards, the system provides a secure Admin Login:

Admins, access the backend of our online voting system securely and efficiently. With our robust authentication measures, you can manage voter registration, monitor voting activities, and oversee the entire electoral process with confidence., transparent, and efficient platform for voters to cast their votes remotely. Furthermore, by focusing on inclusivity and accessibility, the system aims to ensure that all eligible voters, including those with disabilities and those unable to access the online platform, can participate in the electoral process. While further research and testing are required to validate the system's effectiveness and address potential implementation challenges, this innovative approach has the potential to revolutionize the way elections are conducted, making them more accessible, convenient, and trustworthy for all citizens.

REFERENCES

- [1] Srinivasan, R. and Venkatesh, R- "Aadhar-Based Online Voting: Feasibility and Security Analysis" (2018)
- [2] Sharma, P. and Gupta, S.- "Enhancing Voter Accessibility through Aadhar Integration in Online Voting" (2019)
- [3] Chatterjee, A. and Das, S.- "Securing Aadhar-Based Voting Systems: Challenges and Solutions" (2020)
- [4] Malhotra, M. and Singh, A.- "Usability Evaluation of Aadhar-Enabled Voting Platforms" (2021)
- [5] Verma, R. and Sharma, K.- "Legal and Regulatory Framework for Aadhar-Based Online Voting" (2022)Gupta, A. and Reddy, V.)
- [6] Patel, N. and Desai, M - "Scalability Assessment of Aadhar-Based Online Voting Systems" (2022)
- [7] "Privacy Protection Mechanisms in Aadhar-Enabled Voting Systems" (2023)
- [8] Kumar, S. and Jain, A.- "Implementation Guidelines for Aadhar-Based Online Voting" (2023)
- [9] Chopra, R. and Khan, M.- "Public Perception of Aadhar-Based Voting Systems: A Survey Study" (2023)
- [10]Banerjee, D. and Dasgupta, S - "Pilot Project Report: Testing Aadhar Integration in Online Voting" (2023)