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INDIA'S ELECTRONIC VOTING MACHINES: A GLIMPSE INTO THE WORLD'S LARGEST DEMOCRACY ELECTIONS

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Abstract: According to the most recent census (2011), India has over 1.4 billion people, making it the world's largest country. It is appealing because it has the potential to assist move the world toward democracy while also accepting regional, sociological, economic, and cultural differences. There were more than 90,87,17,791 voters (including NRIs) in 543 parliamentary districts, according to the 2019 election summary report (ECI, 2019). Elections serve as a route for residents to express their will to their government because elected officials rely on the public's vote to continue in office. To vote, you must first fill out a ballot with your preferences. Because India is the world's largest populous democracy and a rising economic and political power, its elections garner international interest. Elections are more significant in India's political system than in any other country. According to Article 21 of the Universal Declaration of Human Rights (UDHR), everyone has the right to vote in free and fair elections to choose their representatives in government. The Election Commission of India, an independent constitutional organization, is in charge of organizing elections in India. Voter awareness and involvement are very important in election management. We can draw anything from the current status of international trade.

Keywords: democracy, government, accommodates, public, Human Rights.

1. ELECTRONIC VOTING IN INDIA

The Election Commission of India (ECI) conducts extensive inspections before publishing the voter list to the general public. This is due to the fact that it personally visits each household to guarantee that each citizen is properly registered to vote. Prior to 2004, the ECI used a technique identical to the one used today in its elections. Over 8,000 metric tons of paper and over 400,000 gallons of permanent ink were necessary for the national vote. According to reports, there were 2.5 million secure boxes that had to be placed somewhere safe until the results of each election were calculated (Kumar et al., 2012; Aditya et al., 2004). Aadhar cards or voter ID cards are valid forms of identification during voting. When casting their ballot, voters should use permanent ink to mark their left forefinger and then sign the voters' record. It has been suggested that if votes were counted manually, the results could be skewed in favor of one candidate. However, advances in ICT created a one-of-a-kind and low-cost solution that enabled additional advancements in e-government. By adding additional validation steps to ensure that ballots are real, the technical solution has lowered the likelihood of fraud such as vote rigging and impersonation. E-voting, often known as electronic voting, is a new application of ICTs in e-governance. There are several approaches to computer voting, but none is universally accepted. In recent years, India, the United States, Japan, South Korea, and Brazil have all used cutting-edge technology to increase the security and efficiency of their voting procedures. Some countries, such as India, produce their own voting machines, while others, such as Bangladesh, Nepal, Bhutan, Namibia, and Bhutan, import them from other countries (The Hindu, 2014). A number of countries are promoting the use of electronic voting machines.

Aditya et al. (2004) list electronic voting systems as direct recording electronic (DRE) voting tools, Internet voting systems, mobile devices, machine-readable ballot systems, and DRE voting tools. As new technologies arise, so do more convenient and secure electronic voting techniques. Blockchain voting, for example, could reduce election fraud since it protects voters' anonymity while retaining transparency (Alam et al., 2020). The Indian EVMs are incredibly simple in design and run very little software. Previous study has revealed that complex software is at the foundation of the problem. As a result, it was suggested that the size of the TCB (trusted computing base) be lowered. The EVMs used in India were manufactured by the government-owned enterprises Electronics Corporation of India (ECI) and Bharat Electronics Limited (BEL). With the inclusion of Section 61A to the Representatives of the Peoples Act of 1951, as well as other revisions to the Act and the Conduct of Election Rules of 1961, the ECI is now able to effectively implement EVMs and VVPATs across the country.

ECI held its first election using electronic voting machines on May 19, 1982, at fifty polling places in Kerala's No. 70 Parur Assembly Constituency. In the early 1980s, ECIL, a government-owned corporation, created the first generation of EVMs using Hitachi 6305 microcontrollers. They were never used in national elections, however, and were only tested in a few sites across India during the 1998 elections for three state assemblies in Madhya Pradesh, Rajasthan, and Delhi (ECI, 1999). In the early 2000s, both ECIL and BEL built second-generation EVMs. They have been regularly utilized in India since the 2004 national elections. Based on ECI comments, ECIL and BEL create enhanced EVMs. It is critical to remember that, despite being owned by the government, these businesses are not part of the ECI; the most recent generation of EVMs, created since 2013, are referred to as "M3 EVMs," and the oldest version, created before 2006, are referred to as "M1 EVMs." The Ministry of Information and Technology's Standardization Testing and Quality Certification (STQC) division verifies and approves all EVMs before they are introduced to the market. To guarantee that each EVM is suitable for use in an actual election, at least three mock elections are organized among members of each political party.

According to Wolchok et al. (2010), paperless DREs are no longer utilized in elections anywhere in the globe. This encompasses both the United States and Australia, as well as Ireland, the Netherlands, and Germany. The Indian government, on the other hand, has just reaffirmed its faith in the trustworthiness of electronic voting equipment. With the deployment of DREs in 2006, the Netherlands became a forerunner in the use of electronic voting systems. The 2019 Dutch provisional elections, on the other hand, show a vulnerability in security-based verification due to the possibility of employing changed ES3B rather than a hacked EPROM to aid specific candidates. In 2016, the US accused the Russian government of interfering with American elections through cyber methods. It is commonly assumed that Russia tampered with electronic voting equipment in order to help Donald Trump win the presidency in 2016. It's worth recalling that Mr. Trump, a business magnate turned politician, stunned the globe when he was elected as the 45th President of the United States in 2016. Electronic voting was used in the 1996 municipal elections in the Federative Republic of Brazil, the largest country in South and Latin America, using the Advanced Encryption Technique (AET).

The results show that the official technique for large-scale voting is the most problematic choice (Adekunle, 2020). In India, however, the Election Commission (ECI) supports the use of EVMs and has challenged those who oppose their use (such as political parties and other groups) to establish their faults. DREs cost several thousand dollars in the United States and other developed countries. Due to the use of low-quality components, the new EVMs are affordable (about $200 per unit). Booth capture is a popular technique of election fraud in the United States, which can be avoided by restricting the number of votes cast each minute to five.

The two basic components of India's electronic voting machines are the Control Unit (CU) and the Ballot Unit (BU). The CU stores and counts votes, whereas the BU is where voters cast their ballots. Both are located within the electoral unit. The voting unit is at one end of a 5-meter

cable that connects the two devices. The machine appears to be powered by the CU's internal battery pack. When not in use, a plastic masking tab can be used to disguise the polling unit's sixteen candidate buttons. Assume there are more than 16 applicants for the job. In this situation, one extra ballot unit (BU) can be added, for a total of four additional BUs and 64 candidates. Because 25.63 percent of the Indian population is illiterate in 2018, poll officials have begun attaching paper labels with candidates' names and party emblems to buttons worn by voters. The control unit has various compartments that are sealed to prevent access to the counting and cleaning functions before the voting time ends. Poll workers will always have access to a current tally using this method.

The Election Commission of India (ECI) created the Voter Verified Paper Audit Trail (VVPAT). The voter can then use a third-party verification system to determine whether their ballot was properly counted. The voting machine generates a sheet of paper with the candidates' names, a number, and a group symbol. Voters can confirm that their ballot was properly cast for the candidate of their choice by gazing into the VVPAT machine's transparent window for seven seconds. In the event of charges of vote fraud or inaccurate counting, the ballot is placed in a closed ballot compartment after 7 seconds. The paper results would take precedence over the electronic voting machine tallies when totaling the VVPAT slips. ECIL and BEL developed the VVPAT equipment in case of complications during the 2014 Indian elections. VVPATs were used for the first time in Nagaland's 51-Noksen AC by-election. Because EVMs and VVPATs are separate entities, they are not networked together for security reasons (ECI, 2022).

When the Supreme Court (SC) issued its ruling in a case brought by 21 protest organizations, N. The Supreme Court determined that each assembly section should have five electronic voting machines (EVMs). The court stated that it "would be of greater satisfaction not only for political parties but for the entire electorate" (Mathur, 2019). This move was endorsed by national and regional party leaders like as Sharad Pawar and Chandrababu Naidu.

THE POPULAR PERCEPTION OF EVMS

Claims that EVMs are vulnerable to hacking and other forms of assault have thrown the security of the vote and the final tally into doubt (Chauhan et al., 2018). As a result, it is unclear whether the data and the institution that conducted the study are trustworthy. Keep in mind that Indian political parties have never been fast to profess their antipathy for automated voting equipment. But the party leadership doesn't always support those who say it. Studies have indicated that people are more willing to adopt internet-based technology if they have reason to feel that their personal information is protected. Many studies, including one by Venkatesh et al. (2003) and others on electronic voting, support the concept that word-of-mouth influences people's intentions to use EVMs.

Indian EVMs include less TCB and simpler software, although academic security articles have exposed the paperless DREs as frauds. The ECI does, however, continue to deploy them for nationwide voting. According to research by Wolchok in 2010, dishonest insiders and other crooks with legal or unlawful access to the machines might install malicious technology that could be used to steal votes for as long as the equipment worked, which in India is typically more than 15 years, or three general elections. Electronic voting machines are deployed in many key elections, including those at the state and local levels. Electronic voting machines in India carry complete responsibility for the integrity of the voting process and the security of the equipment themselves. Since EVMs were utilized, the occurrence of some forms of election fraud may have diminished, yet the rise of other forms is also plausible. The potential for bribes, intoxication, threats at voting sites, and technological attacks on EVMs means election workers must be watchful.

More and more research over time have proved the advantages of computerized voting. Independent Centre for the Study of Developing Societies (research institute supported by the Indian Council for Social Research) survey data was used in a 2017 study by the Indian School of Business (ISB), the Indian Statistical Institute (ISI), and the Brookings Institution (now the Center for Social and Economic Progress) following the

elections. Using EVMs benefitted smaller parties and vuvuzela parties, the study revealed. Debnath et al. (2017) observed that the introduction of electronic voting machines (EVMs) resulted in a significant drop in violent crimes including murder and attacks against women, including rape. There is little doubt that the deployment of EVMs has lessened election-related violence. According to South Asia Monitor, 70 percent of polling places in Bihar were classed as either sensitive or hypersensitive, indicating a greater chance of violence. Since EVMs have been adopted, tensions have dropped, as it is more difficult to take over a box owing to technical issues like as the limited amount of votes that can be cast per minute. Voters were more likely to be happy with EVMs than with ECI since more public goods were accessible to them. There are a lot fewer spoiled ballots and a lot more votes for small candidates when voting machines are deployed.

The Election Commission of India (ECI) has proposed utilizing the Remote Electronic Voting Machine (RVM), which allows voters to cast ballots for up to 72 distinct seats from a single off-site polling place. According to the Economic Survey of 2017, India has nearly 14 billion domestic migrants. The ECI is commencing this action for the third of eligible voters who did not cast a ballot in the 2019 General Elections (67.4 percent of those who were qualified). The ECI's hasty moves aren't helping, especially as the body intends to establish RVMs by 2023. Trust in EVMs has not increased beyond existing levels.

Up to 17 opposition parties, including the Trinamool Congress (TMC) and the Indian National Congress (INC), have pointed fingers at electronic voting machines (EVMs) for the victories of the Bharatiya Janata Party (BJP) in state assembly elections (Chatterji & Ramachandran, 2018). The BJP has announced that it will be present for the RVM prototype demonstration. The INC, however, announced that they will not be participating in the protest and instead encouraged the ECI to "restore trust" in the electoral process. It is more vital than ever to keep a watchful check on the ECI as it moves forward and seeks to produce democratic elections that incorporate everyone while preserving the support of the voters. There is rising skepticism regarding the authenticity of EVM statistics, and numerous parties are raising doubt on the ECI's objectivity and dependability. Still, the ECI is vital to India's development because it brought in various progressive electoral systems such the National Electronic Voting Machine (EVM) and the VVPAT.

CONCLUSION

The Indian Election Commission should do two things: (1) invest in the security of electronic voting machines (EVMs); and (2) use various media (including print, television, government websites, and special events) to raise public awareness of EVM features, transition benefits, and technological security. The responsibility for the section's operation should be shared by everyone who voted. Because the outcome of the election will have far-reaching consequences for the country's economic development, all levels of government, as well as all major political parties and media sources, are involved. The democratic system would collapse if citizens did not feel elections were free and fair.

Secure electronic voting is more challenging than using regular counting software in large democracies like India, where security, privacy, eligibility, avoiding duplicate voting, and ensuring voters are not issued receipts are all difficulties that must be handled. This is critical when electronic voting is used. There were 57 different political parties functioning at the state level and 8 national parties in January 2023. The ECI should be pressed by voters, the media, and think tanks to protect the human right to fair elections. The bulk of polls have one and only one requirement: that the results be accepted.

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