Electronic Voting Machines and Transparency in the Electoral Process: A Case Study of India

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Electronic Voting Machines (EVMs) are electronically advanced apparatus introduced to enhance the efficiency, transparency, and credibility of the electoral process. Their primary purpose is to ensure free, fair, and secure elections. In India, the electoral system initially based on a manual paper-ballot voting method, which was often plagued by issues such as electoral fraud, booth capturing, inefficiency, rigging, and ballot tampering. To address these challenges, India adopted EVMs as a means to bring greater transparency and accountability to its electoral process. This study aims to evaluate the role of EVMs in improving transparency and efficiency within India's electoral system. It also analyzes the responses of key stakeholders including voters, political parties, the media, the intelligentsia, and the judiciary towards the introduction and implementation of electronic voting technology. The qualitative method was used in this study. The researchers apply transparency and efficiency theory as well as system theory to highlights the critical importance of free and fair elections in a democratic setup. The study concludes that the adoption of EVMs has significantly reduced the time required for both casting and counting votes. Furthermore, it has contributed to the decline of electoral malpractices such as ballot stuffing, booth capturing, and invalid voting. Overall, EVMs have enhanced the efficiency and transparency of the Indian electoral process, reinforcing public trust in democratic institutions.

Keywords: *Electoral process, EVMs, transparency, electorate, election rigging*

Introduction

In democracy, election is a common practice through which the people choose their representatives for public offices. Different democratic countries around the world use elections as the authorized practice to shape and control their governments and used various methods for voting. One of the methods of the voting is through electronic voting machines. An Electronic Voting Machines (EVM) is a new electronic device that is used to record votes and maintain transparency in the electoral system. Its considerably reduces certain types of fraud, rigging, provides exact counts by removing spoiled ballots, and has enhanced voter turnout, overcome electoral expenditures and encourage oppressed communities to vote. The main aim of this machine is to stores votes in place

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of ballot papers and boxes before which were used in manual voting system. This machine can be easily operated by both the polling personnel and the voters. It is made up of mainly two units: The control unit and the Ballot unit (Kumar, 2012).

In worldwide many countries have using this machine in their electoral system for the soft running of the elections like Belgium, Brazil, Italy, the US, the UK. Estonia and Switzerland etc. As India, is the biggest democracy having the multi party system and compromised of 800 million, one of the major concern was the electoral fraud. For example, during the manual voting method booth capturing and the ballot stuffing was normal (Kumar et al, 2011). To address the problems like fraud and simplify the electoral process, the Election Commission of India (ECI) introduced electronic voting machines (EVMs). It was first time used in 1982 in the bipole-election of the North Paravur Assembly Constituency in Kerala. But this election was declared null and invalid by the court. The court declared that the Representation of People's Act (1951) clearly talks about that Election Commission must conduct and hold elections using ballots papers. There was not mentioned of voting Machine in the act .So on this basis the elections was declared null and void. Then the Indian parliament amended the People's Representation Act in the December 1988 and introduced Section 61A which lays down the provisions for the use of Electronic Voting Machine by Election Commission of India to conduct general and state election in India (Jus, 2017).

After its early success, the ECI bought 150,000 machines in 1990 to use them on a national scale. Though at that time, many political parties criticized it about their security concerns but after the amendment in the Constitution these were used by 16 constituencies in the state elections (Saraiba,2012). The main objectives of this research are :To evaluate the role of Electronic Voting Machines (EVMs) in bringing transparency and efficiency in the electoral process of India and To analyze how stakeholders such as voters, political parties, media, intelligentsia and the judiciary responded to the introduction of EVMs in India. The study focused on these research question: What is the performance of Electronic Voting Machines in terms of improving transparency and efficiency in the electoral process in India? How do various stakeholders such as voters, political parties, media, etc. view the adoption of EVMs in India?

Review of the Literature

Notable work had done on electronic voting machines by the various scholars Kooreman& Maarten (2008), Prasad et al. (2010). Kumar et al. (2011), Wolf et al. (2011), Aung.et al (2013), Herstatt et al. (2014), Rao (2015). Raghav & Bandi (2016), Purim et al**.** (2017), and Sisir et al. (2017). The scholars examined the various aspects of the electronic voting machines, its structure and its effectiveness in reducing the electoral fraud (Desai et al., 2019; Kumar & Priyadarshini, 2020; Pandey & Dube, 2018; Prannoy & Dorab, 2019; Singh et al., 2017; Singh et al, 2018). They give an in-depth analysis of the Indian election system and its evolution over time and also impact of electronic voting machine on voter turnout and explore blockchain for the secure and absolute recording of votes.

The prominent studies on the electronic voting machines (EVMs) were done by Desai et al. (2019), Prannoy and Dorab (2019), and Kumar and Priyadarshini (2020). The studies focused on the diverse features of India's electoral process, including the role of EVMs, the security challenges associated with Indian EVMs and discuss vulnerabilities, tampering concerns, and possible counter measures to strengthen the security of EVMs in the Indian electoral process. Kersting (2021) explained the significance of electronic voting systems in modern democratic countries and provide a complete overview of the different types and functions of electronic voting system. Shukla (2018), discussed the technical aspects and features of electronic voting machines. Romero et al (2020) and Kersting, (2012) focus on evaluating the consequences arising from the introduction of these new democratic instruments and answer the questions like are these new techniques strengthening political participation. Prasad, (2021) explained the role of smart voting system using face recognition technology that allows any voter in India by going to their respective constituency from "anywhere in India.

Theoretical Framework

The concepts of transparency and fairness are central to discussions in economics, political science, and other disciplines. These principles are not attributed to a single author or school of thought but have been explored through various frameworks across academic fields. Political theorists such as Robert Dahl and John Rawls have emphasized the critical role of transparency in political institutions and decision-making as a means of promoting justice and fairness in democratic societies.

A core assumption in democratic theory is that transparency in political processes and decision-making is essential for the effective functioning of democracy and the fair representation of citizens. In India, this principle is institutionalized through the establishment of the Election Commission of India (ECI), which operates under Article 324 of the Constitution. The ECI is entrusted with the responsibility of conducting elections to the Parliament, State Legislatures, and other constitutional offices, ensuring that these processes are free and fair.

To further promote transparency in political funding, the Government of India introduced the Electoral Bonds Scheme. This initiative seeks to reduce the opacity in political donations by providing a structured and monitored channel for contributions, thereby curbing the influence of untraceable funds in the electoral system. Another significant measure to enhance electoral transparency and fairness has been the introduction of Electronic Voting Machines (EVMs) in the electoral system. These machines aim to minimize human error, manipulation, and electoral fraud, thereby making the voting process more transparent and reliable. EVMs offer a verifiable and secure method for casting and counting votes, contributing to the efficiency and credibility of elections. Gabriel Almond's Structural-Functional System Theory offers a foundational framework for analyzing political systems and their functioning. Emphasizing the importance of political culture, Almond's theory highlights the importance of system inputs (such as citizen communication) and feedback (like election

outcomes) in maintaining political stability. While the theory does not directly address voting technology, it provides a lens through which electoral innovations can be understood. Voting technologies, such as Electronic Voting Machines (EVMs), serve as instruments of communication between citizens and the state and represent the system's adaptation to technological change. In India, the adoption of EVMs exemplifies this adaptive capacity, aiming to enhance electoral transparency, efficiency, and trust in democratic processes.

Research Dsign and Methodology

The researcher employed both exploratory and analytical research designs to investigate the role of Electronic Voting Machines (EVMs) in enhancing transparency within India's electoral system, as well as to analyze the responses of various stakeholders toward their adoption. This study utilized both primary and secondary sources for data collection. The primary data includes relevant legislation pertaining to EVMs in India, reports published by the Election Commission of India and secondary data includes expert opinions, academic research articles, newspaper articles, and books. In addition, the researcher conducted a review of international literature concerning electronic voting technologies and conducted an online survey to gather voters' perspectives on the performance and reliability of EVMs.

Indian Voting System and Introduction of EVMs

As India is the democratic country in the world one of the important features of the democratic form of the government is elections. Through direct democracy, citizens exercise their power to make political decisions, elect their leaders, and monitor their performance, ensuring accountability and representation (Wabb, 2024). Using this democratic practice, citizens change into designers of their own governance, electing representatives who will guide the country in the right direction. They guarantee that voting is carried out with the highest honesty and fairness is just as important to democracy as actually casting a ballot. Before freedom, the right to vote and participation were strictly controlled for the Indian peoples but after the independence, India introduced universal adult suffrage, providing every eligible Indian adult the right to vote. In India, voting is one of the constitutional right of the citizens. According to the Article 326 of their constitution it is clearly mentioned that every citizen who have attain the age of 18 exercise this particular right (Constitution of India).

Following India's independence, a primary challenge was to establish a democratic electoral framework. As per Article 324 of the Indian Constitution, the Election Commission of India (ECI) was constituted to ensure free and fair elections. The first general elections, held, 1951-1952, were a significant milestone, marking the implementation of universal adult suffrage. Over 173 million citizens voted, with 4,500 candidates contesting 489 Lok Sabha seats and over 3,283 candidates in state legislative assemblies. The election process was managed by the ECI under Chief Election Commissioner Sukumar Sen. To facilitate fair representation, the First Delimitation

Order was issued in August 1951. The elections were conducted using paper ballots and steel ballot boxes marked with candidate symbols. A total of 620 million ballot papers were printed. Despite the logistical complexity and limited infrastructure, the Indian National Congress won a decisive majority, securing 364 out of 489 seats with a 44.87% voter turnout (Srinivasan, 1998).

The ECI faced numerous challenges, including economic constraints, refugee resettlement post-Partition, lack of voter education, and logistical hurdles in rural areas. Additionally, issues related to transparency in campaign financing and maintaining security in conflict-prone areas were major concerns. Despite these obstacles, the successful conduct of the first general elections remains a landmark in the history of democratic governance. Similarly, in the following year's challenges such as electoral roll accuracy, voter identification, socioeconomic issues, the rise of electoral malpractices, including booth capturing, vote buying, violence, and inadequate security, undermining electoral integrity persisted. Over time, the influence of money in elections also grew, with allegations of voter bribery and manipulation of electoral rolls becoming more frequent. Notably, the first reported case of booth capturing occurred in Matihani, Begusarai (CNN, 2015).

Introduction of EVMs in India

To overcome these mal-practices, the Indian Election Commission first time used the Electronic Voting Machine on an experimental basis in bi-pole elections at Paravur Assembly Constituency in Kerala in 1982 and were also further utilized in 10 bye-elections nationwide. However, the absence of a specific legal framework governing EVM use led to a petition challenging the election. On March 5, 1984, the Supreme Court of India ruled that EVMs cannot be employed in elections unless explicitly authorized by law. Therefore, that election was declared invalid by the court. The court declared that the Representation of People's Act (1951) clearly talks about that Election Commission must conduct and hold elections using ballots papers. There was not mentioned of voting machine in the act. So on this basis the elections were declared null and void (BYJU'S).

Then the Indian parliament amended the People's Representation Act in the December 1988 and the insertion of Section 61A empowered the Election Commission of India to use EVMs in elections, with specified provisions governing their use (Jus, 2017). The 61A of the People's Representation Act provides that the voting machines at elections.: Notwithstanding anything contained in this Act or the rules made there under, the giving and recording of votes by voting machines in such manner as may be prescribed, may be adopted in such constituency or constituencies as the Election Commission may, having regard to the circumstances of each case, specify. For the purposes of this section, the term "voting machine" encompasses any device, whether electronic or non-electronic, used for casting or recording votes. Unless otherwise specified, any mention of a ballot box or ballot paper in this Act or its associated rules shall be interpreted to include a voting machine, wherever such a machine is utilized in an election (Representation of India Act, 1951).

So the law authorized the use of Electronic Voting machines in 1989. In the state elections held in Delhi, Madhya Pradesh, and Rajasthan, Electronic Voting Machines (EVMs) were tested in 16 carefully selected constituencies. These constituencies were chosen for their stability and robust infrastructure, which enabled the smooth implementation and management of EVMs and then from 2004 to onwards India used these machines everywhere (Kumar, 2012). It was commissioned by the Election Commission of India in 1989 with the help of two public sector undertakings Bharat Electronics Limited (Banglore) and Electronics Corporation of India Limited (Hyderabad) with the Japanese-imported microprocessor.

EVMs and Transparency in Indian Electoral System

The installment of Electronic Voting Machines (EVMs) in India has significantly improves transparency in the country's electoral process reduced the various irregularities and malpractices which were practiced before.

Reduced the Practice of Booth Capturing: Booth capturing was a serious issue in the earlier days of Indian elections, where political goons would forcefully take control of polling booths, threaten voters, and manipulate the voting process to ensure favorable results for a particular candidate or party. In 1957 general elections first case of booth capturing was recorded at Rachiyahi, located in the Matihani assembly constituency of Begusarai district. Then in the late 1970s and 1980s, a period marked by a surge in the number of political parties and candidates. This increase led some parties to adopt unethical tactics, including booth capturing, particularly in rural regions of the country. But after the implementation of the electronic voting machines it eliminate the evil practice of the booth capturing because the design of the EVMs makes booth-capturing a challenging task. With a maximum voting capacity of five votes per minute, the machines slow down the voting process, making it significantly more time-consuming for individuals attempting to manipulate the election by stuffing the machines, compared to traditional ballot boxes (Sharma, 2000).

Speedup Election Process: One of the major improvements after adoption of EVMs is that it made voting process faster and more efficient. With traditional paper ballot system, counting process was time-consuming and often took several days. EVMs allow for quicker counting and significantly speed up the result declaration process and minimize post-election delays. For example, in 2014-2019 elections results were declared in four days.

Simplified Logistics: Electronic voting systems simplify the logistics associated with elections. There is no need for printing and distributing paper ballots, staffing numerous polling stations, or transporting ballot boxes. This smooth process saves time, resources, and reduces the chances of logistical errors.

Increased Accuracy: Accuracy is vital in any electoral process, and electronic voting systems provide several benefits over traditional methods to ensure the integrity of votes.

Minimized Human Error: Human mistakes like miscounting or tallying errors can greatly influence election outcomes. Electronic voting systems reduce these risks by automating the vote counting process, thereby minimizing dependence on manual input.

Validation mechanisms: Electronic voting systems typically feature built-in validation tools that help prevent invalid votes. They can automatically identify and reject overvotes (selecting more candidates than permitted) and under votes (failing to select any candidate), thereby minimizing the chance of errors.

Auditability and transparency: Electronic voting systems can offer strong audit trails that enable the verification of results. Detailed logs and encryption techniques ensure the integrity of the voting process, allowing for thorough post-election audits if needed. This transparency further bolsters public trust in the electoral system.

Empower marginalized communities: During paper ballot system often marginalized groups like the illiterate, elderly, and disabled were not allowed to cast vote due to difficulties interpreting signatures and thumb impressions but EVMs have improved convenience, allowing these weak citizens to participate and have their votes properly counted. Moreover, electronic voting process ensures greater accuracy and transparency through creation of an electronic record of voting signatures and thumb impressions, which is accessible for public scrutiny. Unlike traditional paper balloting, where ballot inquiries were only possible under court orders and ballot validity was determined by election officials, electronic voting provides an additional layer of openness and accountability by making records available for public inspection **(**Kumar, 2021).

According to the Centre for the Study of Developing Societies, the introduction of EVMs led to a significant increase in voter turnout among marginalized groups, including women, scheduled castes and tribes, senior citizens, and illiterate voters. Notably, EVMs boosted the likelihood of less educated voters casting their ballots by 6.4%, thereby empowering vulnerable populations and enhancing their participation in the electoral process. Similarly, according to the Center for Social and Economic Progress, number of voters decreased to 3.5% of the states (Bihar, Jharkhand, Maharashtra and Uttar Pradesh) where the electoral fraud was practice on a high rate and where the politicians faced serious criminal charges (Ravi,2019).

Enhanced Voter Turnout

As these machines were used nationwide following the 2004 general elections...Before EVMs turnout ranged between 57.94% and 61.9% but after introducing the EVMs, turnout increased, with 66.4% in 2014, 67.11% in 2019, and 65.7% in 2024 which represents the improved voter confidence, increased accessibility, and more efficient voting processes. Also the other factors such as political mobilization, public awareness, and electoral reforms also influence turnout, the data suggests a positive trend post-EVM implementation.

Table 1: *Enhanced Voter Turnout*

Year	Election-Type	Voting-Method	Turnout%
1996	General	Paper-ballot	57.94
1998	General	Paper-ballot	61.9
1999	General	Paper-ballot	59.9
2014	General	EVM	66.4
2019	General	EVM	67.11
2024	General	EVM	65.7

Source: https://en.wikipedia.org/wiki/2024_Indian_general_election

Stakeholders' Perspectives on EVMs

Every new system that introduced in any state met with both positive and negative feedback from the public. The Election Commission of India faced significant hurdles when it initially adopted these voting machines. Various stakeholders had differing opinions about the new technology. While some people supported this initiative, others were critical of it. In every democratic state when the elections has occurred governments and electoral authorities typically struggle to maintain order, transparency, and sincerity in the electoral process. They may implement electoral laws, ensure the security of polling stations, and oversee the counting of votes. Their response directly affects the integrity and legitimacy of elections.

There are the different stakeholders in India that plays their important part in the electoral system. Primarily, voters express concerns about the election system. As eligible citizens, voters play a crucial role in selecting representatives by casting their ballots. To exercise these right, voters must be Indian citizens aged 18 or older, registered at their designated polling station as indicated on their Voter's Card, and listed in the Register of Voters for that specific station. Their response determines the overall legitimacy of election outcomes. Similarly, political parties also have an influence in the electoral system. It often engages in campaigning, voter mobilization efforts, and sometimes legal challenges to electoral processes they identify as unfair or biased. Their response can influence voter turnout and perceptions of the electoral process. In India, political parties arrange extensive resources during elections, including rallies, door-to-door campaigns, and social media outreach, which significantly impact voter participation and outcomes. The media plays a vital role in elections by promoting electoral activities, ensuring equitable coverage of political parties and candidates, and providing comprehensive news coverage of the entire electoral process. This enables the electorate to make informed decisions, as the media facilitates transparency and accountability throughout the election cycle.

Perspectives of Political Parties

A group of persons structured to get and exercise political power is called a political party (Duverger, 2024). A democratic state cannot exist without the presence of the political party and it can also be described as a recognized political entity that

regularly nominates and supports election candidates (Sartori, 1976). The importance of political parties can also be highlighted that they are basic to functioning of a democratic state, helping as the keystone of representative democracy because it acts as mediator between citizens and the government, representing the various interests, ideologies, and concerns of the population. In a democratic state, political parties provide stability and continuity by offering organized structures for governance and play an important role in shaping public policy. They develop broad platforms and election manifestos that outline their vision for governance and specific policy proposals (Müller, 2003).

The BJP had a mixed response to Electronic Voting Machines (EVMs) since their introduction. Initially, the BJP criticized EVMs after losing elections, arguing that they were rigged. For example, after losing the 2009 Lok Sabha elections, BJP supporters and member especially Mr. Advani alleged that EVMs were manipulated to favor the opposition (Naqvi, 2024). This criticism was recalled by party members who published books and made public statements against the use of EVMs. Interestingly, Mr. Advani's concerns seemed to scatter when his party secured a significant majority in the 2014 general elections, as he did not raise his previous objections.

EVMs were first introduced in India during the Congress-led government in the 1990s and were used in several state assembly elections before being deployed nationwide in the 2004 Lok Sabha elections. The Congress party has not been constantly opposed to the use of EVMs (India News, 2024). However, in recent years, the Congress has raised concerns about the integrity of EVMs. Rahul Gandhi, President of the Indian National Congress has questioned the fairness of the Election Commission and has demanded transparency in the electoral process and has demanded a 100% verification of Voter Verifiable Paper Audit Trail (VVPAT) slips to enhance public confidence in the electoral process. The party has blamed the Election Commission of refusing to meet with opposition leaders on this issue (Economic times, 2024). Moreover, Congress leader Digvijay Singh, the former Chief Minister of Madhya Pradesh, regularly campaigns against electronic voting machines. He leads a strong coalition of critics from the country's opposition parties and nonprofit organizations, advocating for a return to paper ballots (Kapoor, 2024).

The implementation of these voting machines in India has give rise to various responses from regional and smaller political parties. Telugu Desam Party (TDP) initially, supported the introduction of EVMs. But then N. Chandrababu Naidu, who was prominent politician and former Chief Minister of Andhra Pradesh, has been vocal about his concerns regarding electronic voting machines (EVMs) in India. He has repeatedly expressed his belief that EVMs are prone to hacking and manipulation, arguing that there is a "100% chance of hacking" these machines. Naidu's statements are part of his broader call for a return to paper ballots to ensure the integrity and transparency of the electoral process (Hindustan Times 2023). Similarly, The Dravida Munnetra Kazhagam (DMK) has raised significant concerns regarding the design and use of Electronic Voting Machines (EVMs) in India. Start of the 2024 Lok Sabha elections, the DMK filed a writ petition in the Madras High Court, arguing that the position of the Voter Verifiable Paper

Audit Trail (VVPAT) between the Balloting Unit and the Control Unit could lead to discrepancies and corrupt practices. They claimed this setup violates election rules and could affect data integrity, calling for a more transparent approval process for EVMs by the Election Commission (Outlook India, 2024).

Moreover, Communist Party of India (CPI) MP Binoy Viswam said it is a serious matter to consider over. He said: "The confidence over EVMs is losing. More and more people are believing that EVMs are doing mischief in elections," (The Hindu, 2023). Likewise, Chirag Paswan, an MP from the Lok Janshakti Party has expressed his support for electronic voting machines (EVMs) amidst criticisms from the Opposition. Paswan has stated that the Opposition is being repetitive in their allegations against EVMs, and he emphasized that elections conducted with these machines have been free and fair. He believes that questioning the integrity of EVMs without significant evidence undermines the democratic process and distracts from more pressing political issues (Rediff, 2023). The Aam Aadmi Party (AAP) has been also outspoken in its criticism of electronic voting machines (EVMs) in India. AAP leaders have often expressed concerns about the potential for tampering and the integrity of the voting process. Notably, in a high-profile demonstration in the Delhi Assembly, AAP MLA Saurabh Bhardwaj illustrated how EVMs could supposedly be tampered with to manipulate election results**.** And also in 2017, when the Aam Aadmi Party lost the Punjab assembly elections; they said the EVMs were manipulated. But they did not declare the claim when they won the state in 2022 (Vij,2024).

GVL Narsimha Rao, was also member of the BJP, who are the louder critics of the EVM. He wrote a book entitled, Democracy at Risk, in which he advocated that EVMs should not be used in elections. The anti-EVM response was lessen for a short time after the BJP win in the 2014 Lok Sabha elections. Some members of the BJP were the most voiced critic of EVMs before the 2014 general elections. However, after its huge win in the polls, it forgot its history of opposing EVMs (Shukla, 2018). Nonetheless, there are some members that defended it like Amit Shah who was the former President of the BJP and a prominent leader within the party, has consistently defended the integrity of EVMs. In 2019, he stated, "EVM is not a football that can be kicked around. It is a machine made by the Election Commission, and if you have a problem, go to the EC" (The Times of India, 2019).

Similarly, Prime Minister Narendra Modi, due to whom BJP achieved historic success in the 2014 Lok Sabha elections, has been firm in his support for EVMs. Modi has refused to consider reverting back to ballot papers, praising the efficiency and transparency of the EVM system. Before the 2024 elections, during the opening session of the ninth G-20 Parliamentary Speakers Summit, he invited the delegates to visit India and observe festival of democracy and also stated that EVMs has brought transparency and efficiency to the election process (Business Standard, 2023). The BJP has also defended the use of EVMs in various incidents such as in the recent allegations of "BJP tags" on EVMs in West Bengal, where the Election Commission explained that the tags were part of the commissioning process and were videographed under CCTV coverage.

After the 2024 general elections addressing newly elected members of Parliament, Modi turn over at opposition parties for their frequent allegations of EVM rigging. He accused them of attempting to weaken the Election Commission by blaming EVMs for their electoral losses. He emphasized that the election results effectively silenced these accusations (Times of India, 2024).

Perspective of Judiciary

The Indian judiciary has taken mixed views on EVMs Initially, when EVMs were introduced in the late 1990s, there was careful confidence and general acceptance by the judiciary. The Supreme Court of India underscored the significance of conducting free and fair elections. as the essence of democracy. But the opposition parties have oftenly approached the courts and the Election Commission to say their concerns about the reliability and transparency of EVMs.

In 2009, political parties questioned the EVMs' perfect nature, but no specific allegations were proven. The ECI invited critics to display tampering, but no one succeeded from 2009 to 2010. In 2010, all political parties, except a few from Assam and Tamil Nadu, expressed satisfaction with EVMs. The idea of VVPAT was then introduced for further examination. In 2009, the Delhi High Court, satisfied with the ECI's response, expected of a case, suggesting VVPAT's development in consultation with political parties (India Election Commission, 2017).

In 2013, the Supreme Court of India granted voters the right to reject all candidates by introducing the "None of the Above" (NOTA) option. This decision approved the 'right to oppose' as a fundamental aspect of the electoral process. The court instructed the Election Commission to implement a NOTA button on Electronic Voting Machines and ballot papers (Kumar, 2021).

In 2017, the Indian judiciary was involved in a important case related to EVMs. The Supreme Court of India heard a public interest litigation (PIL) filed by the Bahujan Samaj Party (BSP) and other political parties challenging the use of EVMs without Voter-Verified Paper Audit Trail (VVPAT) in elections. The petitioners argued that without VVPAT, the integrity and transparency of the electoral process were compromised. The Supreme Court bound the Election Commission of India (ECI) to introduce VVPAT in phases for greater transparency in elections. This decision shows the judiciary's role in ensuring the credibility of the electoral process (The Indian Express, 2017). Similarly, in 2019 during the general elections, the subject of EVM tampering and security was once again raised by various political parties.

The Indian judiciary interfere when the opposition parties approached the Supreme Court alleging differences in the functioning of EVMs and demanding increased VVPAT verification to ensure the integrity of the electoral process. The Supreme Court recommended that the Election Commission increase the random matching of VVPAT slips with EVMs from one to five polling booths per assembly segment. This decision aimed to increased transparency and address concerns raised by political parties regarding the accuracy of EVMs (The Hindu, 2019).

Media's Perspective on Electronic Voting Machines

Media plays a very important role in any democratic state. It is responsible for informing citizens exactly about electoral processes, announcing election dates, voting procedures, and information about candidate and political party. It must investigate and expose any allegations of electoral malpractice or fraud to protect the reliability of the process. Their function is to closely observe voting method, counting, and results announcement to prevent irregularities. Initially EVMs were adopted in the India with the aim of reducing electoral fraud and increasing efficiency in the voting process.

Many media platforms and journalist appreciated the technological advancements and the potential for EVMs to make elections more transparent and reliable. EVMs are intended to be tamper-proof, operate on standalone systems without internet connectivity, and have various in-built safeguards to reduce manipulation and ensure accurate vote recording (Brookings, 2009). Nonetheless, some media group has respond differently towards the adoption of electronic voting machines (EVMs) in electoral system. They have raised questions about the integrity and transparency of EVMs, especially after the questionable electoral funding practices in India. Doubts have been arisen about whether people's choices are being recorded and counted accurately (Mukherjee, 2024).

View Point of International Observers

International media has shown major interest in India's adoption of electronic voting machines (EVMs), with a mix of positive response and concerns about security. Many international observers and institutions, such as the Brookings Institution, have discussed the positive blow of EVMs on reducing electoral fraud and enhancing democratic processes in India. It has been attributed with making elections fairer by reducing incidents of booth capturing and ballot stuffing, common issues with the paper ballot system.

Some studies have explained that EVMs have led to a turn down fake voting practices and increased voter confidence in the electoral process (Brookings, 2021). However, there are also issues raised regarding the cybersecurity and reliability of electronic voting systems. According to the Council on Foreign Relations the EVMs have improved electoral processes in some countries, but there are ongoing debates and concerns about their vulnerability to hacking and other cybersecurity threats due to which some countries revert to paper ballots after initially adopting electronic voting technologies (Council on Foreign Relations, 2020).

Voter Perceptions of Electronic Voting Machines: Themes from Survey Analysis

An online survey was conducted to explore Indian voters' perceptions of electronic voting machines (EVMs). The questionnaire included open-ended questions, allowing participants to express their views in depth. After qualitative analysis of the responses, five key themes emerged: accuracy, security risks, transparency, new forms of malpractice, and voter convenience.

Voters' Opinions on Accuracy and Validity

Participants were asked how EVMs influence the accuracy and validity of election results in comparison to traditional paper ballots. Analysis revealed that 90% of respondents provided positive feedback, emphasizing the reliability and accuracy of EVMs. Some participants expressed their views regarding accuracy and validity. A participant said: **"**EVMs have greater accuracy and are faster process. They also facilitate voting in areas that have low rates of literacy" (Pooja Mehta, personal communication, July 21, 2024). Another participant expressed his views in these words: **"**EVMs are accurate and ensure that there are no discrepancies. The Supreme Court in 2011 introduced the Voter Verified Paper Audit Trail (VVPAT), and a 2019 judgment made it mandatory for EVMs to be used alongside VVPATs, allowing double verification of results" (Ramesh Kumar, personal communication, July 15, 2024). A participant told that EVMs offered "greater accuracy and are part of a faster voting process. They also support voting in areas with low literacy rates" (Smruti S. Pattanaik, personal communication, July 25, 2024). These responses suggest that most voters perceive EVMs as both technologically reliable and efficient, contributing positively to the electoral process.

Perceptions of Security Risks

With the introduction of new technology, EVMs initially faced scrutiny over potential security vulnerabilities. Concerns included the risks of hacking, tampering, and manipulation. Over time, the Indian Election Commission implemented several measures such as the VVPAT system to enhance the transparency and security of EVMs. Respondents' views on EVM security were mixed. While some voters expressed confidence in the system's integrity, others remained concerned about potential threats. Some of the opinions are as follow: A participant said: "I do not see any security risks pertaining to EVMs" (Amit Patel, personal communication, August 4, 2024). Another participant acknowledged the potential vulnerabilities but expressed trust in the safeguards implemented. He said, "I understand that EVMs could face risks like tampering or hacking. To reduce these risks, the ECI ensures that EVMs are not network-connected and are stored securely. The VVPAT system allows me to verify that my vote is recorded correctly. Regular testing and audits also contribute to maintaining their security" (Pooja Mehta, personal communication, July 21, 2024).

Views on Emerging Malpractices

The introduction of any new technology into an electoral system may give rise to new forms of malpractice or unethical behavior. When Electronic Voting Machines (EVMs) were first implemented in India, there were concerns regarding possible vulnerabilities such as hacking, tampering, and manipulation of results. These concerns are often sensitive during the initial phases of adoption due to unfamiliarity, insufficient testing, and the evolving tactics of malicious actors. However, as the technology matures, the issues tend to be addressed through more careful testing, enhanced security protocols, and public awareness. When respondents were asked about the emergence of new

malpractices with the introduction of EVMs, the majority indicated that no significant new issues had emerged. Most participants stated that EVMs had not introduced any new forms of electoral misconduct. But some respondents have acknowledged. For instance, a respondent said, "Hacking attempts have emerged, which required updated security measures and awareness" (Sunita Verma, personal communication, July 28, 2024). Another respondent told, "While EVMs have reduced traditional election fraud, new issues have emerged, like voter intimidation and misinformation on social media. The ECI continues to update its strategies to tackle these new challenges and ensure fair elections" (Ramesh Kumar, personal communication, July 15, 2024).

At the same time, several participants noted a reduction in traditional forms of malpractice, such as booth capturing. As one respondent observed: "I have not seen any news regarding booth capturing. With 24/7 media and social media, it is impossible." Another respondent said, ""Booth capturing has become less common with EVMs. The quicker voting process and strict security measures make it harder for such practices to occur. However, it hasn't been completely eliminated, and there are still occasional reports of it happening" (Smruti S. Pattanaik, personal communication, July 25, 2024).

Opinions on Electoral Transparency

Transparency is a cornerstone of any credible electoral process. Following the adoption of EVMs in India, concerns over electoral transparency have been widely discussed, particularly during the 2014 and 2024 general elections. Allegations of EVM tampering gained attraction through social media platforms and public statements from political parties, including the Indian National Congress and the Aam Aadmi Party. These concerns provoked public debates and demands for investigations.

Despite these allegations, the Election Commission of India (ECI) has consistently maintained that EVMs are secure and tamper-proof. The machines undergo randomization and rigorous verification procedures before being deployed. Additionally, the use of Voter Verified Paper Audit Trail (VVPAT) systems has been implemented to further enhance transparency. Pranesh Prakash, Policy Director at the Centre for Internet and Society, emphasized the design simplicity and security of Indian EVMs, in these words: "The Electronic Voting Machines used in India are the simplest, with no general operating system requirements and are not networked" (Vasudeva, 2017). When survey respondents were asked to evaluate transparency in elections following the adoption of EVMs, the majority expressed strong confidence in the system's ability to facilitate fair and transparent elections. Some of the opinions of the respondents are as follow:

A respondent told, "I think EVMs play a major role in ensuring free and fair elections" (Pooja Mehta, personal communication, July 21, 2024). Another respondent highlighted the operational advantages that promote transparency. He said, "EVMs help prevent election fraud in several ways. They stop invalid or multiple votes by the same person and are designed to be tamper-proof. The faster voting process and randomization of polling stations have also reduced the chances of booth capturing" (Amit Patel, personal communication, July 4, 2024). Yet another participant expressed his views in

these words: "To build trust, the ECI has introduced VVPAT, which lets me verify my vote. They also conduct demonstrations and awareness campaigns to show how EVMs work and their security features. Independent audits of the voting process also help assure us that everything is fair and transparent" (Smruti S. Pattanaik, personal communication, July 25, 2024). These perspectives suggest that among voters, there is widespread trust in the role of EVMs in promoting transparency and electoral integrity, even during broader political discourse that occasionally challenges these claims.

Voters' Perception of the Convenient Election Procedure

An analysis of the survey responses reveals that a significant majority of voters perceive Electronic Voting Machines (EVMs) as a convenient and efficient component of the election process. Respondents highlighted the simplicity and speed of using EVMs, with one participant noting, "The process is straightforward you just press a button corresponding to your choice. It's much quicker than the old paper ballots." Another respondent remarked, "It is a fast process of voting, unlike traditional voting," further emphasizing the efficiency of the system. Such feedback reflects the broader public approval and positive perception of EVMs within the Indian electoral context. Similarly, other participant noting, "EVMs have made voting much more convenient for us. The process is faster, which means less waiting in long queues. They are designed to be user-friendly, even for people with disabilities. Mobile voting booths using EVMs ensure that everyone, even in remote areas, can vote easily."

EVMs have not only modernized the voting process but have also contributed to enhancing the transparency and credibility of elections. Voters expressed trust in the system, support by the integration of Voter Verified Paper Audit Trails (VVPAT), which provide an additional layer of verification and accountability. The convenience, accuracy, and reliability of EVMs, as reflected in the survey data, indicate a strong voter approval of the modernized electoral process. Overall, the implementation of EVMs has significantly improved public confidence in the Indian electoral system.

Conclusion

TEVMs are used to record votes and maintain transparency in electoral system. They reduce anomilies, provide accurate counts by eliminating spoiled ballots, and improve voters' turnout, reduce electoral expenses and empower relegated communities to vote. The aim of EVMS is to make the electoral process free and fair. With the advancement in the technology electronic voting methods are introduced to makes the electoral system more effective and efficient like Internet voting and EVMs. In the South Asia, India is first country that introduced EVMs in electoral system. After gaining independence in 1947, being a large democracy in the world, India made provision for the use of machinery to conduct free and fair elections. Under the provision of Article 324 of the Constitution, Election Commission was established in 1950, to plan, monitor and conduct free and fair elections in the country. Initially the Indian Election Commission, adopted the paper ballot or manual voting method for elections but during

this voting, incidents of booth-capturing, rigging, tampering and for the printing of paper-ballots more than 8000 tonns of paper were used and other evil-practices were very high. Therefore, to overcome these issues India has adopted Electronic Voting Machine in order to bring transparency in their electoral system. It was manufactured by the two state owned companies. For the first time they were used the Electronic Voting Machine on an experimental basis in bi-pole elections at Paravur Assembly Constituency in Kerala in 1982 and were also further used in 10 bye-elections across the country in 1982-83. Then after the proper amendment in the People Representation Act of 1951, it was used in the whole country.

The findings of this study suggest that Electronic Voting Machines (EVMs) have played a significant role in enhancing the efficiency and integrity of the electoral process in India. EVMs have notably reduced the time required for both casting and counting votes, reform the overall voting procedure. Furthermore, they have contributed substantially to decrease electoral malpractices such as ballot stuffing, booth capturing, and the prevalence of invalid votes. The unique design and built-in security features of EVMs, combined with strict protocols established by the Election Commission of India (ECI), have effectively minimized incidents of physical tampering and electoral fraud. The implementation of the Voter Verifiable Paper Audit Trail (VVPAT) system has further strengthened electoral transparency by allowing voters to verify their selections through a paper trail, reinforcing trust in the final outcomes. Additionally, the ECI's positive efforts in conducting public awareness campaigns and demonstrations have played a vital role in boosting public confidence in electronic voting technology.

Despite the overall success of EVMs, certain challenges remain. While technical malfunctions are relatively rare, they highlight the necessity for continuous monitoring, strong emergency planning, and rapid-response mechanisms. Moreover, misinformation and a general lack of technical understanding among some segments of the electorate can give rise to unnecessary doubt about the credibility of the process. However, the constant efforts of the Election Commission of India to enhance the reliability and security of the electronic voting system demonstrate a strong commitment to upholding the democratic principles of free, fair, and transparent elections. As technology continues to evolve, it is essential to sustain and strengthen these efforts to ensure that electoral systems remain flexible, trustworthy, and reflective of the democratic will both within India and potentially as a model for other democracies.

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