ELECTRONIC VOTING MACHINES AROUND THE WORLD AND THE NEED OF EVMs IN PAKISTAN: A COMPARATIVE ANALYSIS

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ABSTRACT

This study examines the viability of adopting EVMs in Pakistan based on the successful experiences of other countries, particularly India. Pakistan's conventional paper ballot system has faced persistent issues of fraud, lack of transparency, and inefficiency, resulting in political gridlock and citizen distrust in elected representatives. In contrast, India's widespread adoption of EVMs has improved electoral integrity, transparency, and efficiency, leading to increased voter turnout and confidence in the democratic process. The paper analyzes the electoral processes in India and Pakistan using a comparative methodology, highlighting the advantages of EVMs in India and the challenges faced by Pakistan's current system. Given the shared history and culture between India and Pakistan, the study suggests that Pakistan should draw inspiration from India's successful implementation of EVMs. The EVMs have proven to be secure, transparent, and cost-effective, providing real-time monitoring and auditing of election results. By carefully adapting and implementing the Indian model, Pakistan can address the challenges of transparency and confidence in its voting process, resulting in more impartial, open, and credible elections that increase public confidence in the democratic system.
Keywords: *Electoral Processes, e-voting, Typologies, EVMs.*

INTRODUCTION

The electoral process is a fundamental pillar of any democratic society, shaping the governance and representation of its citizens. Traditional paper ballots have long been used to conduct elections in Pakistan, a dynamic country in South Asia. However, the electoral process has been marred by persistent issues of fraud, lack of transparency, and poor implementation. Contentious polls have led to political gridlock, widespread protests, and violence, eroding citizens' trust in elected representatives and hindering public participation in the democratic process (Haq, Ali, 2022).

Electronic voting machines (EVMs), conversely, have been implemented by numerous nations globally as technology develops to improve the effectiveness, accuracy, transparency, and security of their election processes. In order to comprehend the advantages and challenges of electronic voting systems, this study examines the international experiences of nations including Brazil, the Philippines, Estonia, and India that have

successfully implemented them (Kumar, Walia, 2011).

The need for electronic voting machines has become clear given the difficulties Pakistan's electoral process faces with conventional paper ballots. Adopting EVMs has many benefits, including improved accuracy, efficiency, transparency, security, and inclusivity. Additionally, it offers ways to cut costs and successfully accommodates votes from other countries. Accepting electronic voting would raise Pakistan's stature on the world stage and fix problems with the current electoral system (Wolf, 2011).

In this work, the researcher analyzes the electoral processes in India and Pakistan using a comparative methodology. Due to their shared history and culture, it is clear from a comparison that Pakistan should take inspiration from India's successful adoption of an electronic voting system (EVM). The introduction of EVMs in India has resulted in a significant decline in electoral fraud because electronic voting is more secure and resistant to manipulation than paper ballots. The integrity of the voting process is ensured by the tamper-resistant design of EVMs, which also gives voters more assurance that their votes are reliably recorded and counted. Additionally, the ease of use provided by EVMs has increased voter turnout in India. The electronic voting method accelerates the voting procedure, shortening lines and simplifying the voting process for voters. A more representative democracy is aided by the higher voter turnout, which also encourages a sense of civic duty among the voters (Nadeem, n.d.).

Pakistan could address the challenges of transparency and confidence in its voting process by implementing India's EVM model. Because EVMs are digital, real-time monitoring and auditing of election results is possible. This increases transparency and dispels concerns about the validity of the results. Pakistan must, however, carefully adapt and execute the electronic voting system while taking into account its particular circumstances and difficulties. This might result in elections that are more impartial, open, and credible, which would eventually increase public confidence in the democratic system and promote a more positive political environment in the nation (Khwaja, Jamal, 2016).

TYPES OF ELECTRONIC VOTING MACHINES

At the turn of the century, voting machines were implemented when paper ballots came under scrutiny for ongoing fraud. Different forms of Electronic Voting Machines are used across the world. The variations of EVM are as follows (Haq, Ali, 2022):

Precinct Count Optical Scanning (PCOS) Machines

In several countries, paper ballots are scanned and counted using PCOS devices. On a physical paper ballot, which is subsequently passed into the PCOS machine for scanning, voters mark their selections. The voting machine reads and counts the marked ballots using optical mark recognition (OMR) technology. PCOS machines eliminate human counting inaccuracies, speed up the tabulation process, and improve accuracy. In the Philippines, the PCOS system has been widely implemented, and each machine is thought to have cost roughly 1600 USD (Haq, McDermott, Ali, 2019).

Direct Recording Electronic (DRE) System

Direct recording electronic voting systems allow voters to cast their ballots on an electronic device directly (Goldsmith, Ruthrauff, 2013) . Voters choose their options by tapping on the touchscreen of these devices, which often include a touchscreen interface. The system stores a direct record of these cast votes in its memory (Kumar D, Begum T, 2012) . Once voting is complete, DRE devices immediately produce results and store votes electronically (IFES, n.d) . They are user-friendly and have built-in validation features that lessen the likelihood of excessive or insufficient voting. These are the main machines used in Brazil. Each unit is anticipated to cost approximately USD 700 (Haq, Ali, 2022).

Direct Recording Electronic with Voter Verified Paper Audit Trail (DRE-VVPAT) Voting Machines

The advantages of DRE systems are combined with an additional layer of transparency and auditability with DRE-VVPAT voting machines. The device produces a paper receipt or ballot that shows the choices made by the voter after they electronically

cast their ballots on the touchscreen. Before being safely placed into a sealed container, the printed ballot can be visually checked by the voter (IFES, n.d) . This paper trail boosts voter confidence and offers a tangible record in case there are audits or recounts in the future. The average price of a DRE-VVPAT in India is USD 660 (Committee Report, 2010).

Electronic Ballot Printers or Ballot Marking Devices (BMD)

Electronic ballot printers, often referred to as ballot marking devices, are used to help voters who are unable or who prefer to cast their ballots on paper. To meet various demands, these devices provide accessible user interfaces with features like large letters, audio choices, or braille keypads (Ali, n.d) . When a voter makes their selections on the device, the BMD prints a paper ballot with their choices on it. This ballot is then fed into a scanner or tabulation system to be counted. This approach is being investigated in Bangladesh, where it is projected to cost USD 2,400 per machine (Haq, Ali, 2022).

Remote Internet Voting (I-voting)

I-voting, also known as remote internet voting, enables eligible voters to cast their ballots online from a distance (Goldsmith, Ruthrauff, 2013) . By using their own technology, such as computers or mobile phones, voters can participate in elections using this approach without going to the polls in person. I-voting systems use safe authentication and encryption procedures to guarantee the confidentiality and accuracy of votes. The only country in the world now holding legally binding national elections online is Estonia (Wolf, 2011).

Voting Technology: International Experiences

Due to the impossibility of covering all countries in our research, we have chosen to concentrate on a selected few that have successfully implemented electronic voting. The countries that have successfully employed the e-voting are mentioned below (Risnanto, Abd Rahim, Herman, 2020).

Brazil

EVMs have a long and successful history in Brazil, which makes it one of the forerunners in implementing this technology for its election process. Midway through the 1990s, the nation started using EVMs, which have now developed into a complete and well-liked electronic voting system (Haq, Ali, 2022).

EVMs were first used by the Brazilian electoral authority in the 1996 municipal elections. The approval and oversight of the nationwide adoption of electronic voting was greatly aided by the Superior Electoral Court (SEC). The initial use of electronic voting machines (EVMs) was a key step toward modernizing the election process, increasing effectiveness, and lowering the likelihood of electoral fraud and mistakes brought on by manual vote counting (Kumar, Walia, 2011).

No electoral system, however, is totally immune to problems or objections. Brazil's EVMs have occasionally experienced technical issues throughout the years, and security calls have been made. Although, concerns regarding potential flaws and the requirement for ongoing improvements to maintain the validity of the voting process have been voiced by some detractors but the advantages outweigh the disadvantages. (Wolf, 2011).

What makes it so Effective?

• Through the use of Public Security Tests, Brazil's voting system has consistently improved across the country's election cycles, particularly in terms of the source code utilized in the voting machines. Brazil's experience with e-voting may have been effective since the country's SEC has been active in its efforts to continuously improve the elective structure (Goldsmith, 2011).

• The TSE follows the proper procurement procedure to centralize the manufacturing of both electoral hardware and software. The TSE oversees the production facility's hardware manufacture and writes the software internally. In addition to the EVM, which is purchased in accordance with the TSE's security architecture criteria, the TSE also employs internal teams to create apps connected to elections (Haq, McDermott, Ali, 2019).

Philippines

In the voting and counting processes for the 2010 elections, the Philippines used PCOS machines for the first time. The Philippine election committee (COMELEC) provided broad guidelines on voting, vote counting, and the sending process of the ballots

at the polling places in advance of the broad Elections in May 2010. There were also given additional procedures, such as those for resolving disagreements regarding the outcomes of electronic voting (Haq, Ali, 2022).

Each PCOS machine has an i-Button and memory card, allowing just specific ballots from a polling place to be scanned. Voters' marked ballots were placed into the scanner to be read. When the voting place was shut down, this machine read the sign that the voters had left. The election in the Philippines still used ballots or papers because it printed the voting report at the polling place with details about the votes cast for each candidate and sent the results to the municipal or district level tabulation office. Voters arrived at the polling location, received a ballot, and then marked the ballots with their selections (Risnanto, Abd Rahim, Herman, 2020).

Some people viewed the implementation of E-Counting with this PCOS machine as a failure. In fact, due to some issues surrounding the 2013 elections, AES, one of the most well-known election observers in the Philippines, referred to the election as a "technological and political disaster" (Herstatt, Herstatt, 2014).

Why is it so Effective?

• Transparency was essential in the 2016 elections for winning support for the results. Election officials, experts, and political parties examined the source code for seven months. The code was additionally certified by an unaffiliated organization with US roots. The media was given full access to the records, and COMELEC hired technical staff to serve as field monitors to record any irregularities on Election Day (Ali, n.d).

• A significant paper trail was employed in the 2016 elections' audit procedures, consisting of about 43 million voter-marked ballots and corresponding voter receipts. A random manual audit was used to verify the election results with 99.8% accuracy (Haq, Ali, 2022).

Estonia

In the development of internet voting, commonly referred to as i-voting or online voting, Estonia is widely regarded as a pioneer and a leader. Since 2005, the nation has used internet voting in its elections, making it one of the leading countries to do so (Risnanto, Abd Rahim, Herman, 2020). Given NEC's technological prowess, expertise, transparency, and adherence to electoral standards, the public has a natural high level of trust in online voting technology (Haq, Ali, 2022).

The potential risks of online voting, including as cyber threats and voter intimidation, have, nevertheless, drawn criticism. These issues are still being addressed by Estonian authorities, who are also working to increase the accessibility and security of the e-voting system (Risnanto, Abd Rahim, Herman, 2020).

What makes it so Effective?

Estonia began putting money into its electronic setup in the 1990s and since then, it has been offering e-government services. Residents began receiving electronic identification cards from the government in 2001, and online voting was introduced in 2005 (Ali, n.d). Given the capabilities of NEC, the nation's technological prowess, know-how, transparency, and adherence to electoral ideals have resulted in high levels of public trust in the internet voting system (Conny, 2016).

Estonia's success with online voting can be ascribed to its technological preparedness, stringent security measures, dedication to openness, and public involvement. This illustrates the potential advantages of digital advances in the area of democracy and governance by resulting in an effective, reachable, and trusted electoral process (Haq, Ali, 2022).

India

India's journey toward modernizing its election system with Electronic Voting Machines (EVMs) has been transformational. Beginning with small pilot projects to gauge their viability and accuracy, the nation began switching from manual paper ballots to electronic voting machines (EVMs) in the 1990s (Jain, Jain, n.d.) . EVMs were gradually implemented on a greater scale, and by the early 2000s, they had taken over as the main method of voting for elections to state and parliamentary assemblies (Baruah, 2019).

By allowing voters to select their favourite candidates by pushing a button next to their names and symbols, the interface of EVMs streamlined the voting process. The time needed to announce

election results was decreased because to this effective procedure, which enabled rapid and precise vote counting. EVMs have also reduced electoral fraud and other irregularities that were common with paper ballots, which has improved election transparency and credibility in India (Herstatt, Herstatt, 2014) . The implementation of VVPAT allowed voters to double-check their selections and ensured a real paper record for auditing reasons, which addressed concerns about transparency. While EVMs have gained widespread acceptance and improved India's voting process, obstacles including security worries and the need for a verifiable paper trail have forced the Election Commission to make ongoing improvements to strengthen democratic practices (Zafar, Pilkjaer, 2007).

Why is it so Effective?

• The effectiveness of electoral technology in India has mainly depended on public confidence in ECI as an impartial organization and assistance from the government.

• Despite protests and litigation against e-voting in India, there hasn't been any concrete proof that EVMs failed to produce free and fair elections, and often the problems are hidden by the widespread belief that the benefits are considerably bigger. The VVPAT technology has allayed worries about the potential for fraud and manipulation.

• Due to ECI's purposeful outreach to voters and voter education activities, voter acceptance of the new technology has considerably increased.

• To address infrastructure constraints, difficulties with election administration, and assure successful use of its EVMs, ECI conducts elections in multiple phases throughout the constituency.

Comparative Analysis of India and Pakistan Electoral System

One of the most effective ways to determine whether electronic voting is required in Pakistan is to compare the election system to that of India (Zafar, Pilkjaer, 2007). Given that both nations have been independent for 75 years and have sizable populations, Pakistan is the sixth most populated nation after India. Despite having a democratic foundation prior to becoming independent, each country's post-partition democratic history are very different. In contrast to Pakistan, which has had difficulty advancing under a democratic system, India has established itself as the largest democracy in the world. This can be linked to a variety of things, containing a dearth of sincere leadership, unjust elections, and the absence of the people's real will in positions of authority (Jain, Jain, n.d.) . Additionally, corruption allegations have caused every democratically elected administration in Pakistan to leave office early before serving the full five-year term required by the nation's constitution (Risnanto, Abd Rahim, Herman, 2020).

India, on the other hand, is proud to be the largest democracy in the world. However, there have frequently been allegations of vote box stuffing, and the nation's elections have a history of being violent, with hundreds losing their lives in fights between rival political parties (Herstatt, Herstatt, 2014).

The course of events was transformed by a weapon-like plastic box, equivalent to a suitcase in size (Baruah, 2019). In India's national elections, where there were 680 million eligible electorates, the deployment of one million battery-operated electronic voting machines from this box significantly impacted the country's destiny (Zafar, Pilkjaer, 2007).

Aspect	Electoral System of Pakistan	Electoral System of India
Voting Method	Pakistan has introduced EVMs in selected constituencies as part of its modernization efforts, but the majority of the country still relies on the traditional paper ballot system.	India has widely adopted Electronic Voting Machines (EVMs) as the primary means of casting votes in elections, alongside traditional paper ballots in certain areas.
Voter Registration	Manual registration with National Identity Card	Manual registration with Voter Identity Card
Voter Turnout	Relatively lower (50-55%)	Generally higher (60-70%)
Voter Identification	National Identity Card (CNIC)	Voter Identity Card (EPIC)
Election Commission	Election Commission of Pakistan (ECP)	Election Commission of India (ECI)
Political Parties	Multiple political parties with varied ideologies	Multi-party system with diverse political parties
Transparency	Some concerns about transparency and accountability	Efforts to ensure transparency in the electoral process
Security Measures	Challenges and controversies in paper ballot system security	Continuous upgrades and security measures for EVMs
Voter Education	Limited voter education and awareness campaigns	Voter education initiatives to promote awareness
Representation Quota	Reserved seats for women and minorities	Reserved seats for Scheduled Castes and Scheduled Tribes
Voting Accessibility	Some remote areas face challenges in voting access	Wide network of polling stations for voter accessibility
Election Process Time	Election cycle usually completed within a few weeks	Election cycle may extend for several weeks
Role of Electronic Media	Significant impact on election campaigns and results	Influential in shaping public opinion during elections
Electoral Disputes	Frequent legal challenges and election disputes	Occasional legal disputes over election results
Political Campaigns	Rallies, public gatherings, and door-to-door canvassing	Extensive use of technology and social media for campaigns
Election Monitoring	Presence of domestic and international observers	Election observers from various organizations and countries
Inclusivity	Efforts to enhance women's participation in politics	Measures to promote inclusivity in electoral processes
Electoral Integrity	Ongoing efforts to improve electoral integrity	Continuous assessment and improvement of electoral integrity

Voting Method

- India has widely adopted Electronic Voting Machines (EVMs) for its elections. EVMs have been used in all national and state-level elections since 2000. As of 2019, there were approximately 1.9 million EVMs in use (Herstatt, Herstatt, 2014).

- Pakistan primarily relies on paper ballots for its elections. However, in recent years, there have been efforts to introduce Electronic Voting Machines (EVMs) in selected constituencies as part of modernization efforts (Zafar, Pilkjaer, 2007).

Voter Registration

- The Election Commission of India (ECI) has implemented several measures to increase voter registration. As of January 2020, India had over 900 million registered voters (Baruah, 2019).
- Pakistan has made progress in voter registration, but challenges remain in ensuring accurate and up-to-date voter lists. As of 2018, Pakistan had over 105 million registered voters (Sisir, Mudit, Shamika, 2017).

Voter Turnout

- Voter turnout in India varies across elections. The 2019 Lok Sabha elections recorded a voter turnout of around 67.4%. Turnout rates may differ based on factors such as region, state, and local circumstances.
- Historically, Pakistan's voter turnout has been lower than India. The 2018 general elections saw an improvement in turnout, reaching around 55% (Zafar, Pilkjaer, 2007).

Voter Identification

- In India, voter identification is primarily done through the use of voter identity cards. The Election Commission issues a unique Elector's Photo Identity Card (EPIC) to each eligible voter, which includes a photograph and other essential details. Voters are required to present their EPIC or other government-issued identification documents for verification before casting their votes. In recent years, the Indian government has also introduced the concept of linking voter ID with Aadhaar, a biometric identification system, to further strengthen the authentication process (Sisir, Mudit, Shamika, 2017).
- In Pakistan, voter identification is primarily based on the National Identity Card for Overseas Pakistanis (NICOP) or the Computerized National Identity Card (CNIC). Voters are required to show their NICOP or CNIC for verification before casting their ballots. The Election Commission of Pakistan has also introduced biometric verification systems in some constituencies to enhance voter identification and prevent fraud (Zafar, Pilkjaer, 2007).

Political Parties

- India has a diverse and vibrant political landscape with numerous political parties representing various ideologies and interests. In the 2019 Lok Sabha elections, 2,293 political parties participated (Zafar, Pilkjaer, 2007).
- Pakistan also has multiple political parties, both national and regional, playing significant roles in the country's politics. In the 2018 general elections, around 84 political parties contested for National Assembly seats (Sisir, Mudit, Shamika, 2017)

Transparency

- The use of EVMs in India has contributed to transparent counting and minimized manual errors. The electronic record of votes enhances transparency and reduces the scope for malpractices (Baruah, 2019).
- Pakistan is working to improve electoral transparency with the use of EVMs and other monitoring mechanisms. Efforts are ongoing to ensure accuracy and integrity in the electoral process (Sisir, Mudit, Shamika, 2017).

Security Measures

- India's EVMs are equipped with multiple layers of security features, including encryption and authentication mechanisms. The Election Commission ensures rigorous testing and safety protocols to prevent tampering.
- Pakistan has taken steps to enhance the security of its paper ballots, such as using indelible ink to mark voters and prevent duplicate voting but it faces many challenges on its way (Conny, 2016).

Voter Education

- India places a strong emphasis on voter education to promote awareness and understanding of the electoral process among its citizens. The Election Commission conducts extensive voter education campaigns, targeting various demographics, including youth, women, and marginalized communities. These campaigns use multimedia platforms, including television, radio, social media, and print media, to disseminate information about voter registration, voting procedures, and the significance of casting a vote. Additionally, the Commission collaborates with schools and colleges to integrate voter education

into the curriculum, fostering a culture of active citizenship from a young age (ANI, 2021).

- In Pakistan, voter education is also recognized as a crucial component of enhancing citizen engagement in the electoral process. The Election Commission of Pakistan conducts awareness campaigns to educate voters about their rights and responsibilities. These campaigns use a mix of traditional and digital media channels to reach a wider audience. However, challenges remain in reaching remote and underprivileged communities, where voter education efforts need to be further strengthened (Kumar, Walia, 2011).

Representation Quota

- India has implemented representation quotas to ensure inclusivity and representation of marginalized communities in the electoral process. The Constitution of India provides for reserved seats in the Parliament and State Legislatures for Scheduled Castes (SCs) and Scheduled Tribes (STs). Additionally, there is a reservation of seats for women in local government bodies through the 73rd and 74th Amendments to the Constitution. These representation quotas aim to empower historically disadvantaged groups and promote their political participation (Haq, Ali, 2022).

- In Pakistan, there are also provisions for representation quotas to promote inclusivity in the political system. National and Provincial Assemblies seats are reserved for women, as well as non-Muslim minorities by the constitution. These quotas are intended to ensure that underrepresented groups have a voice in the legislative bodies (Election Commision of Pakistan, 2016).

Voting Accessibility

- India has taken several measures to ensure voting accessibility for all citizens. The Election Commission provides facilities such as Braille-enabled EVMs and ramps at polling stations to accommodate voters with disabilities. Additionally, special polling stations are set up in remote and inaccessible areas to enable participation in the electoral process (Imran & Bari, 2017).

- In Pakistan, efforts are also made to enhance voting accessibility. Polling stations are established in remote and hard-to-reach areas to enable citizens, especially those in rural regions, to cast their votes.

Measures to accommodate voters with disabilities are also being introduced to make the electoral process more inclusive (Sama Web Desk, 2021).

Election Process Time

- The election process in India is a complex and time-consuming affair. From the announcement of election dates to the declaration of results, the entire process spans several weeks. The Election Commission meticulously plans and conducts each phase, including voter registration, candidate nomination, campaigning, voting, and counting of votes. The staggered multi-phase elections are conducted to ensure efficient management and security. The election process in India typically takes several months to complete (Ali, n.d).

- In Pakistan, the election process is also time-consuming but relatively shorter than in India. The Election Commission announces election dates, and the process involves voter registration, nomination of candidates, campaigning, polling, and vote counting. The entire election process in Pakistan usually takes a few weeks to be completed (Associated Press, 2023).

Role of Electronic Media

- Electronic media plays a significant role in shaping the electoral landscape in India. Television channels, radio, and digital platforms provide extensive coverage of election campaigns, debates, and political developments. Political parties and candidates use electronic media as a powerful tool to reach a wide audience and convey their messages. Additionally, news channels and media outlets conduct opinion polls and debates, which influence public opinion and voter perceptions. However, there are concerns about media bias and the potential spread of misinformation through electronic media during elections (Nadeem, n.d.).

- In Pakistan, electronic media also plays a crucial role in the electoral process. Television channels, radio stations, and digital platforms provide extensive coverage of election-related news and activities. Political parties utilize electronic media for campaigning and reaching out to the electorate. However, like in India, there are concerns about media bias and the potential impact of misleading information on voter behavior (Wigemark & Franche, 2015).

Electoral Disputes

• In India, sometimes electoral disputes arise during or after the election process. These disputes may include allegations of electoral malpractices, EVM tampering, bribery, or other irregularities. Electoral disputes are adjudicated by the Election Commission and may ultimately be taken to the courts for resolution. The judiciary plays a crucial role in addressing electoral disputes and upholding the integrity of the electoral process (IFES, n.d).

• In Pakistan, electoral disputes frequently occur during the electoral process. Political parties or candidates may raise objections regarding the conduct of elections, voter fraud, or fairness of the electoral process. The Election Commission of Pakistan is responsible for resolving these disputes and ensuring a fair and transparent electoral process. In some cases, electoral disputes may also be brought before the courts for adjudication (Haq, Ali, 2022).

Political Campaigns

• Political campaigns in India are vibrant and dynamic, with political parties and candidates engaging in extensive canvassing and rallies to garner support. Campaigns utilize various mediums, including traditional methods like posters, banners, and public meetings, as well as modern tools such as social media and digital platforms to reach a broader audience. Political campaigns play a crucial role in mobilizing voters and shaping public opinion (Dawood, 2021).

• In Pakistan, political campaigns are also vibrant and energetic. Political parties and candidates use traditional methods of campaigning, such as rallies and door-to-door canvassing, along with modern tools like social media and digital advertisements to connect with voters. Political campaigns serve as a means to communicate party ideologies, agendas, and promises to the electorate (Conny, 2016).

Election Monitoring

• Election monitoring in India is conducted by various entities, including the Election Commission, civil society organizations, and international observers. These monitors oversee the entire election process to ensure its fairness and adherence to electoral laws. The presence of election monitors contributes to the transparency and credibility of the electoral process (Ruth & Hodges, 2012).

• In Pakistan, election monitoring is also carried out by the Election Commission and independent organizations to ensure the integrity of the electoral process. International observers are sometimes invited to monitor the elections, further enhancing transparency and impartiality (FAFEN, 2018).

Inclusivity

• India's electoral system emphasizes inclusivity, with universal adult suffrage allowing all citizens above the age of 18 to vote irrespective of their caste, creed, religion, or gender. The Election Commission takes measures to ensure that marginalized and remote communities have access to polling stations and can exercise their right to vote (Shah, 2021).

• Similarly, Pakistan's electoral system is designed to be inclusive, with universal adult suffrage enabling all eligible citizens to participate in elections. Efforts are made to provide voting facilities to remote and underprivileged areas to ensure inclusivity (Yaqoob, n.d).

Electoral Integrity

• India's electoral system strives to maintain the integrity of the process through robust mechanisms, such as the use of EVMs, voter identification, and multi-layered security measures during polling and vote counting. The Election Commission actively works to prevent electoral malpractices and fraud to ensure a free and fair election (Mirbahar, 2021).

• In Pakistan, the electoral system also prioritizes electoral integrity through the use of EVMs, voter identification, and stringent security arrangements during the electoral process. The Election Commission takes measures to prevent electoral misconduct and uphold the sanctity of elections (Kumar D, Begum T, 2012).

The Need of EVMs in Pakistan

Due to the use of paper ballots, elections in Pakistan are complicated and challenging to conduct (Committee Report, 2010) . Pakistan may think about using electronic voting machines (EVMs) in its elections for the reasons listed below:

Speed and Effectiveness

Pakistan has difficulty in holding elections quickly and efficiently using manual systems. For manual systems, a lot of resources are required, including people, time, and money. Additionally, they are prone to errors and fraud, which puts the credibility of the election results at danger. The printing, packaging, and distribution of paper ballots take time and money (Yaqoob, n.d). Due to the deadlines for printing and distributing ballots, the Election Commission of Pakistan (ECP) is now experiencing significant operational difficulties (ANI, 2021).

These problems can be avoided by using EVMs. It can speed up and improve the efficacy of the voting process. Because they can accurately record and count votes and are designed to be tamper-proof, they can also reduce the likelihood of errors and fraud (Committee Report, 2010).

Estonia is a prime example of how using EVMs may improve the efficiency of elections. Being a leader in electronic voting, Estonia has taken use of its robust digital infrastructure to let people vote safely and easily online. By enabling remote voting during the pre-voting phase, electronic voting has significantly sped up the electoral process in Estonia. Due to the process's digital character, votes are counted quickly and accurately, enabling results to be announced right away. The successful use of EVMs in Estonia is proof that technology can transform electoral processes and enhance democratic norms (Dawood, 2021).

Accurateness

Pakistan's election system has had problems with accuracy, particularly when it comes to tabulating results and counting votes. These issues have eroded societal confidence in the democratic process and have led to conflicts and challenges to the validity of election results (Yaqoob, n.d) . One solution to these accuracy problems is the use of EVMs in the electoral process (Kumar D, Begum T, 2012).

EVMs can help to lessen irregularities in the electoral process by automating the tabulation of results and the counting of votes. Vote counting is a laborious human operation that can take days or even weeks, delaying the announcement of election results and inflaming difficult circumstances. On the other hand, EVMs can accurately and quickly count votes, allowing election authorities to announce results much more quickly and reducing the likelihood of chaos (Khwaja, Jamal, 2016).

The adoption of EVMs has also improved the accuracy of election results in Brazil. Vote accuracy risks existed when paper ballots were manually counted before electronic voting machines (EVMs). As votes are digitally recorded and tallied electronically, EVMs eliminate these worries. The tamper-resistant features of Brazil's EVMs further guarantee the fairness of the electoral process by reducing the likelihood of irregularities. The public's confidence in the results of the elections has grown thanks to this high degree of accuracy and transparency (Rahman, 2021).

Security

The potential for e-voting is particularly desirable for Pakistan, because the election administration is doubted, due to widespread fraud and manipulation at the elections. By utilizing EVMs, the local polling place will relinquish control of the entire process to the central election administration (Wolf, 2011) . EVMs can provide enhanced security features to prevent voting process manipulation or tampering. For instance, certain EVMs are tamper-proof by design because they include safeguards against hacking or other sorts of tampering built into them. A digital signature that can be used to verify the veracity of the voting process is also included in some EVMs (Goldsmith, Ruthrauff, 2013).

India's EVMs use several security measures to protect the integrity of the voting process. Their independence from the internet and other networks means that there is less chance of external meddling or cyber-attacks. To guard against tampering, every EVM has security seals and individual digital signatures. Votes cast for a particular candidate are precisely recorded because to the usage of dynamic candidate panels (Dawood, 2021).

Additionally, Brazil's EVMs are built with cutting-edge security features to guard against any threats. Before deployment, the equipment is rigorously examined and approved by unbiased organizations. To guarantee the validity and confidentiality of votes, they use encryption and digital signatures. EVMs are also protected throughout the electoral

process by stringent chain-of-custody procedures. Paper trails that can be verified by voters give an extra layer of security by enabling voters to compare their selections and spot any inconsistencies. These security measures have helped to reduce the likelihood of electoral fraud and preserve public confidence in the results of those elections (Goldsmith, Ruthrauff, 2013).

Cost savings

It is commonly known that Pakistan's existing electoral system is expensive to organize voter education campaigns, produce and distribute ballots, pay poll officials, provide security during elections, and maintain. Both of them experience financial difficulties as a result of the mounting costs that are frequently paid for by the government or political parties (Shah, 2021).

The 2018 elections, which cost roughly 21 billion Pakistani rupees (PKR), according to the ECP, were the priciest in the nation's electoral history. Comparatively, the costs of the elections in 2013 and 2008 were 4.5 billion and 1.8 billion PKR, respectively. As a result, such a cost increase does not bolster Pakistan's faltering economy (Yaqoob, n.d).

One of the primary grounds for modifying Pakistan's voting system is the need to reduce these costs and increase process efficiency. Electronic voting machines (EVMs) have been suggested as a way to cut expenses because they eliminate the need for paper ballots and the associated printing and distribution costs. EVMs might need a bigger initial expenditure, but they can save money in the long run. EVMs can reduce the demand for poll workers because to their simplicity of use and cheap labor needs (DAWN, 2021).

In Brazil, EVMs have shown to be more affordable than conventional paper-based voting systems. Due to the size of the country's territory, it was difficult and expensive to transport paper ballots and count votes. Voting machines (EVMs) have replaced the requirement for manual handling and storage of ballots. The cost of employing a sizable workforce for manual vote counting is also decreased by the automated counting procedure. Brazil has experienced significant cost reductions in the administration of elections as a result (Goldsmith, Ruthrauff, 2013).

Transparency

Due to imprecise symbols or printing errors, the number of invalid ballots has increased in Pakistan. In the most recent general election, which took place in July 2018, 1.67 million votes were disallowed, according to a report by the Free and Fair Elections Network (FAFEN). From the 1.5 million votes that were rejected in the 2013 elections, this is an increase of 11.7%. Additionally, it was noted that in some constituencies, more votes were cast against candidates than in favor of them, which raises some concerns regarding the voting procedure (Yaqoob, n.d) . It would be considerably easier to recognize the right candidate or party if these insignia were printed in color (IFES, n.d).

EVMs can improve election transparency by making it easier to monitor and confirm election results. For instance, some EVMs provide real-time results reporting, which can make it easier for observers and election officials to monitor the results as they come in. The audit trail provided by EVMs can be used to verify the accuracy of the results (Goldsmith, 2011).

The transparency of elections in India has been greatly enhanced by EVMs. EVMs improve stakeholder access to and visibility of the whole voting process. Each voter's choice is digitally recorded during the voting process, and the electronic voting machines (EVMs) provide a clear breakdown of the total votes cast, making the tabulation process transparent and simple to verify. The voter-verifiable paper audit trail (VVPAT) mechanism additionally enables voters to physically confirm their selections before casting a final ballot. Because voters, political parties, and election monitors may confirm that the recorded votes correspond to the voters' intentions, this additional layer of transparency inspires confidence in them (Conny, 2016).

Environmentally Friendly

Paper ballots are largely used in Pakistan's existing electoral process, which is not environmentally friendly. These paper ballots need a lot of paper, ink, and energy to produce and distribute, which has an adverse effect on the environment. Additionally, the subsequent disposal of these paper votes adds to waste and pollution (Bhatti, 2022).

As an alternative to conventional paper ballots, Electronic Voting Machines (EVMs) are more environmentally friendly. Election-related environmental effect can be greatly reduced thanks to EVMs, which do away with the requirement for paper ballots and hence minimize printing and distribution expenses. Elections need less energy when using EVMs rather than manual voting systems since they are more effective (Geo News, 2021).

Inclusivity

Under Pakistan's current electoral system, not enough social groups are adequately represented (Yaqoob, n.d) . This has resulted in a dearth of diversity in the parliament and other elected entities. Many voters, particularly women and members of minority populations, face intimidation from powerful governmental personalities, leading to their inability to vote publicly (Committee Report, 2010).

Electronic voting machines have been suggested as a potential solution to these problems. EVMs can encourage greater inclusivity by allowing voters with disabilities to cast their ballots freely and reducing the dilution of voting rights in remote areas (Goldsmith, 2011).

During the pre-voting period, Estonia's e-voting system enables citizens to cast their votes remotely, assisting those who might encounter physical obstacles in getting to polling places. A further benefit of the digital infrastructure is that it makes it possible for voters from other countries to participate in elections, promoting inclusivity among the diaspora. The inclusiveness of the voting process is further enhanced by the user-friendly online platform and the availability of multiple languages (Shah, 2021).

Appropriate method for overseas

Over five million eligible Pakistani citizens living out of the country are unable to cast their votes from their current countries of residence. To exercise their voting rights, they must return to Pakistan physically. With so many voters, the election's chances could be significantly changed (Yaqoob, n.d).

Overall, adopting EVM is the right move for Pakistan at this time. Which will not only improve Pakistan's reputation abroad but also fix all the problems with the country's current voting system (Ali, n.d).

India, Brazil, and Estonia have adopted electronic voting as an apt system for overseas voters, each implementing specific methods to enable citizens living abroad to participate in elections. These systems provide accessible, secure, and convenient options for overseas voters to cast their ballots remotely, enhancing inclusivity and promoting democratic engagement among citizens residing outside their home countries. By leveraging technology, these countries have demonstrated their commitment to ensuring that overseas voters have a seamless and efficient voting experience, regardless of their geographical location (Mirbahar, 2021).

Why the Indian System is Appropriate for Pakistan

Before the introduction of electronic voting, Pakistan and India, which have a shared border, had similar political and electoral systems. India's successful adoption of an electronic voting system makes it a potentially ideal example for Pakistan to take into consideration if they ever decide to use the technology (Zafar, Pilkjaer, 2007).

A number of factors make Pakistan's adoption of the Indian system preferable (Baruah, 2019):

Historical Aspects

Despite the fact that both Pakistan and India gained their independence 75 years ago, they have a lengthy common past. The populations of the countries have a shared past and were formerly referred to as the Indian Subcontinent. The only country in the world that had never attacked another for any reason historically was the Sub-Continent. One of the richest and most sophisticated countries ever documented in history. Due to its abundance, the Subcontinent was even referred to by the British as the "Golden Sparrow" (Conny, 2016). After then, British soldiers showed up and took over the region before it was given freedom. More work than expected was required to achieve independence. The Indian subcontinent was divided under British administration, resulting in the creation of India and Pakistan as independent nations in 1947. While Pakistan continues to struggle with having the most damaged electoral system, India has been successful in using technological devices to advance its

electoral system since gaining independence. Pakistan is anticipated to quickly adopt the electronic voting system employed by India given their common historical background (Zafar, Pilkjaer, 2007).

Social Aspects

Pakistanis typically exhibit certain views. In many aspects, they resemble Indians. There are notable parallels between the people of Pakistan and India in terms of objectives, interpersonal relationships, interactions, and cooperative tendencies, as well as in terms of realism, justice, constructivism, psychology, capital, and societal values (Ali, n.d). We presume that Pakistan's system should be able to operate with the same level of success as India's because the two countries share a lot of socioeconomic parallels (Baruah, 2019).

Cultural Aspects

Over the course of its history, India's culture has changed, incorporating concepts, customs, and behaviors from both immigrants and conquerors. The diverse cultural customs, dialects, traditions, and monuments are clear evidence of the long-term mingling of cultures. There are many different subcultures that make up Indian culture, and they all exist in India as a whole. Many various world religions and traditions have influenced Indian culture, which has resulted in the merging of religious concepts, everyday idioms, and artistic forms. Although religion undoubtedly has an impact on "traditional" Indian culture, which is mostly found in smaller towns and villages, urban India is now greatly influenced by globalization. Pakistan shares a considerable amount of the cultural past of the Indian Subcontinent, which is in favor of the idea of implementing an Indian system that is trustworthy in Pakistan (Conny, 2016).

Political Aspects

The head of state of India is the prime minister, and the country's politics are conducted within the framework of a federal parliamentary representative democracy republic and a pluralistic multiparty system. Executive power is used by the government. Both the executive branches and the two chambers of the Indian Parliament are vested with federal legislative power. The legislative branch and the executive branch have no control over the judiciary. The Prime Minister is the head of state of Pakistan, which shares the same parliamentary structure as India. The executive and legislative branches of government and the judiciary are distinct in Pakistan. The similarities compel one to draw the conclusion that the Indian system can resolve Pakistan's political conundrum (Zafar, Pilkjaer, 2007).

Literacy Aspects

Estimates place India's literacy rate at 65.38%, with males making up 66.25% of the population and females making up 54.16%, compared to Pakistan's figure of 54%. Despite the fact that both countries spend a lot of money on health and education, it is projected that both will have high literacy rates in the next years. Due to the requirement for comprehending some technological elements, it will be extremely challenging for Pakistan's big population of illiterates to use the modern country's e-voting system. Pakistan may therefore adopt the same electronic system as India because, if India finds it simple to use, Pakistan will easily use it too without any problem (Baruah, 2019).

Economic Aspects

The economy's diversity includes a wide range of services, textiles, manufacturing, handicrafts, and agriculture. Two-thirds of the workforce in India still rely on agriculture as their main source of income, but the services sector is rising and making a considerable contribution to the country's economy. India is a big supplier of skilled laborers to the engineering, financial, and software sectors. In contrast, Pakistan's economy has undergone structural change as a result of the growth of non-agricultural businesses, and agriculture now only accounts for 20% of GDP (Zafar, Pilkjaer, 2007). The services industry, which includes 30% of wholesale and retail commerce, accounts for 53% of the country's GDP. Significant foreign investment has been made in a number of industries. Pakistan's top industries include telecom, autos, textiles, cement, fertilizer, steel, shipbuilding, and, more recently, aerospace. This urges us to consider both countries on the same level of economic echelons because they are both developing countries that have many economic obstacles to overcome.

Therefore, Pakistan can take action if India can (Baruah, 2019).

Possibility of Setting up an Effective E-Voting System in Pakistan

Having carefully analyzed the situation, Pakistan needs a more technologically advanced and reliable voting system than its current one, which relies heavily on human interactions and often leads to disputes. Based on the aforementioned discussion, we recommend that Pakistan adopts a modified version of the Indian electronic voting system, incorporating features such as vote printing and ID card validation with Thumb scan. This suggestion takes into account the shared history between India and Pakistan and leverages the success and acceptability of the Indian system within its society, thereby benefiting from similar cultural characteristics (Zafar, Pilkjaer, 2007).

Conclusion

An important step in modernizing Pakistan's election system is the adoption of electronic voting machines. By learning from experiences around the world, notably India, Pakistan may improve the efficiency, accuracy, and integrity of its elections, strengthening its democratic foundation and guaranteeing the will of the people is upheld. The time has come to embrace technology developments in the voting process since doing so will improve the nation's reputation on the world stage and address the problems with the current electoral system, allowing voters to exercise their right to vote with trust and confidence.

India is cited as a successful example of totally electronic voting. To improve the integrity and fairness of its elections, India adopted an electronic voting system. Due to a number of variables, Pakistan may think of implementing India's computerized voting method. First, the historical, social, cultural, and political features of the two nations are comparable, which simplifies the process of adopting the Indian method. Second, even though Pakistan has a lower literacy rate than India, adding LEDs in front of the candidate's name on the EVM can make the system more accessible to the general public and more user-friendly. Thirdly, if records were centrally preserved at the regional level, the electoral process would be more transparent and satisfactory. The EVM is user-friendly, so special voters can get dependable support when casting their ballots. And finally, both nations' economies are comparable, showing that Pakistan can adopt the Indian system.

The present talks in Pakistan about whether electronic voting is necessary can benefit from taking into account India's experience with EVMs and its whole electoral system. This comparative research can help stakeholders and policymakers make well-informed choices on the advantages and drawbacks of implementing electronic voting in Pakistan, ultimately boosting the country's democratic foundations and electoral system.

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