

*CORRESPONDENCE

Rajib Chandra Das, ✉
rajibrajcou@gmail.com

RECEIVED 17 December 2025

ACCEPTED 30 February 2026

PUBLISHED 30 April 2026

CITATION

Das RC, Abir AAM (2026)
 Electoral Transparency and the
 Future of Democracy in
 Bangladesh: The Role of
 Biometric Technology in
 Elections. *Politeia : Journal of
 Public Administration and
 Political Science and
 International Relations*. 4 (2),
 114-121.
 doi: 10.61978/politeia.v4i2.1096

TYPE Original Research

PUBLISHED 30 April 2026

DOI 10.61978/politeia.v4i2.1096

VOL 4 Issue 2 April 2026

COPYRIGHT

© 2026 Das and Abir. This is an
 open-access article distributed
 under the terms of the Creative
 Commons Attribution License
 (CC BY). The use, distribution
 or reproduction in other forums
 is permitted, provided the
 original author(s) and the
 copyright owner(s) are credited
 and that the original publication
 in this journal is cited, in
 accordance with accepted
 academic practice. No use,
 distribution or reproduction is
 permitted which
 does not comply with these
 terms.

Electoral Transparency and the Future of Democracy in Bangladesh: The Role of Biometric Technology in Elections

Rajib Chandra Das^{1*}, Abdullah Al Mamun Abir²

^{1,2}CCN University of Science & Technology, Cumilla 3503, Bangladesh

Abstract

Ensuring fairness and justice in Bangladesh's electoral process has become an increasingly complex institutional challenge. Empirical observations suggest that opportunities for irregularities exist in both paper ballot systems and electronic voting machines (EVMs), including the occupation of polling centres, fraudulent voting, administrative bias, and interference by law enforcement agencies or politically influential groups. These issues have progressively eroded public confidence, reduced voter participation, and undermined the legitimacy of the democratic process. Reports of violence, fatalities, and extensive irregularities in recent elections have further deepened the crisis of trust. Many voters perceive limited opportunity to exercise their suffrage rights freely, while others abstain from voting due to a belief that electoral outcomes are predetermined. This erosion of confidence not only weakens democratic institutions but also affects the overall governance system. Addressing these challenges requires more than administrative reform; it calls for the strategic integration of technological and institutional innovations. Biometric or fingerprint-based voting machines may offer a viable pathway toward reducing fraud and enhancing procedural transparency. However, technology must be embedded within a transparent, accountable, and legally coherent electoral governance framework to effectively rebuild public trust and strengthen the democratic foundation of Bangladesh.

KEYWORDS

election; electoral transparency; democracy; technology; Bangladesh

Introduction

An Election is the constitutional process through which citizens elect their representatives, leaders or government. It is one of the main means of expressing people's opinions and wishes. The basic basis of democracy is people's participation, and elections are the constitutional way to participate in it. Elections are usually held at regular intervals and may be held at the local level (e.g. union council, municipality or city corporation elections) or at the national level (e.g. parliamentary elections) (A. Hossain & Habib, 2021). Through elections, people bring their favourite candidates or political parties to power (Delavande & Manski, 2012). Elections are a reflection of the will and aspirations of the people. People vote what kind of leadership they want and who will guide their development. In this way, the election gives the opportunity to the common people to participate directly in running the state. As a result, the opinion of the people gets the highest importance in the state (A. R. M. T. Hossain, 2015). A change of power without elections often occurs through conflict, violence, or irregularities, which destabilize the state. But elections show a peaceful path where a political party or leader gains power through voting and at the end of the tenure, power is transferred again through elections. In this way, democratic continuity is maintained by avoiding conflict in the state (Wilkinson, 2000). Elections are essential not only for regime change, but also for social and political stability.

People vote for the party or candidate of their choice, and the parties accept the verdict. As a result, political instability decreases and a peaceful environment are created in the state (Quddus, 2014). People elect their representatives through elections, and if they are dissatisfied with their activities, they get a chance to change them in the next election. As a result, representatives know that they have to be accountable to the people. This accountability protects people's rights and prevents abuse of power (Jahan, 2018). Participation in the election process makes people aware of the state, society and democracy. Voters get the opportunity to know about the policies, programs and promises of different political parties. In this, they not only exercise the right to vote, but also become responsible and aware as citizen (Coles, 2004) s. Unlike previous studies that only described electoral fraud and EVM limitations, this study introduces a conceptual perspective integrating biometric verification into the electoral process as a tool to enhance transparency and public trust in developing democracies like Bangladesh. This approach constitutes the main novelty of the research.

Methods

Research Design

This study is used qualitative descriptive methods. Its main objective is to analyze the challenges in ensuring fairness, transparency, and justice in the electoral process in Bangladesh and to propose practical solutions. It categorized electoral irregularities, such as fake votes, administrative bias, and technological limitations. The effectiveness and potential of fingerprint-based voting machines were evaluated by comparing international experience and the real context of Bangladesh. Based on the collected data, the root causes of current electoral irregularities were identified, and proposals for technology-based solutions for future elections were presented. The study gave more importance to practical experience, document- and news-based analysis rather than statistical analysis. The study aimed to observe the electoral structure, administrative role, voting process, technology (such as EVM), and the level of citizen trust. This method enables the author to create a comprehensive analysis (Sulung & Muspawi, 2024).

Data Source

This study used secondary data. The data was collected from the following sources: government and private media, including bdnews 24, Dhaka Tribune, The Financial Express, (2024), The Business Standard, (2024), The Daily Star, (2025), and Prothom Alo. Official reports of the Election Commission, legal documents, relevant sections of the electoral law and the constitution, research papers and reports published by research institutes and think tanks; national and international observation organizations: Transparency International Bangladesh (TIB), Click or tap here to enter text.Human Rights Support Society (HRSS), Election Working Group (EWG), United Nations Development Programme (UNDP), and Commonwealth Observer Mission. Sources related to international experience: Analysis of the electoral systems of Brazil, Ghana, Nigeria, and Albania. Previous academic research and articles discussed the electoral process and policy framework in Bangladesh.

Data Analysis

The thematic content analysis method was applied to

the data analysis. In this, electoral irregularities, administrative bias, voter suppression, polling station occupation, and technical errors were separately identified and analyzed. In addition, using comparative analysis, the differences and consistency of data across different election years (2008, 2014, 2018, and 2024) were determined. The field of study was the Bangladesh National Parliament Election. The research period was analyzed for a total of 16 years from 2008 to 2024.

Ethical Considerations

The study is completely dependent on secondary data. However, all data were utilized ethically and responsibly, guaranteeing appropriate citation, recognition of original authors, and the prevention of plagiarism.

Limitations

This study's methodology is limited by its reliance on previously published data, which may include data gaps, bias in available sources, and limited access to updated statistics. To ensure reliability and validation of the data, each data point was compared from at least two separate sources. An attempt was made to make the results realistic and credible by analyzing the data from national and international reports together.

Result and Discussion

Elections in Democratic Bangladesh

Free and fair elections are a significant characteristic of a healthy democracy. The role of elections in the politics of Bangladesh is very important. Article 7 of the Constitution clearly states that all power in the Republic belongs to the people (Hoque, 2018). This means that the people are the real source of power of the state, and the main means of exercising that power is the election. But in reality, the electoral process of Bangladesh is facing many problems. Controversial statements from the election officials, biased media coverage, early campaigning by the ruling party candidates, and expenditure by candidates exceeding legal limits have also impacted the approval rating of the election. 97.3 percent of the independent (AL) candidates, 87.5 percent of other independent candidates and 84.9 percent of the Jatiyo Party candidates have violated the election rules and regulations.(TIB, TDS, 2024). As much as 98 percent of the candidates spent more than the maximum expenditure limit of Tk 25 lakh in the election in the seats surveyed. In those seats, candidates spent an average of Tk 1.56 crore in the election, which is more than six times the expenditure limit, the ruling party used force in various forms to achieve the 50 percent voter turnout target. Journalists and election observers faced obstacles in entering centres in 61 percent of the seats (TIB, TDS, 2024).

The Election Commission has acted as one of the catalysts to implement the election agenda in the name of constitutional obligations and legal boundaries. Other state institutions, especially law enforcement and administration, have also been used to support the same agenda (Chowdhury, 2015). According to study, Irregularities, corruption, vote rigging, centre capture and violence have repeatedly questioned the election (Breedon & Bryant, 2018). For these reasons, public confidence has been undermined in many cases, and democratic stability is threatened. Elections are indispensable for democracy. Regular and credible elections establish a legitimate government in the state reflect the opinion of the people and ensure the continuation of democracy. A fair election is not possible if the neutrality and transparency of the Election

Commission is not ensured. Therefore, an independent, strong and accountable Election Commission is essential for any democratic state. (See [Figure 1](#)).

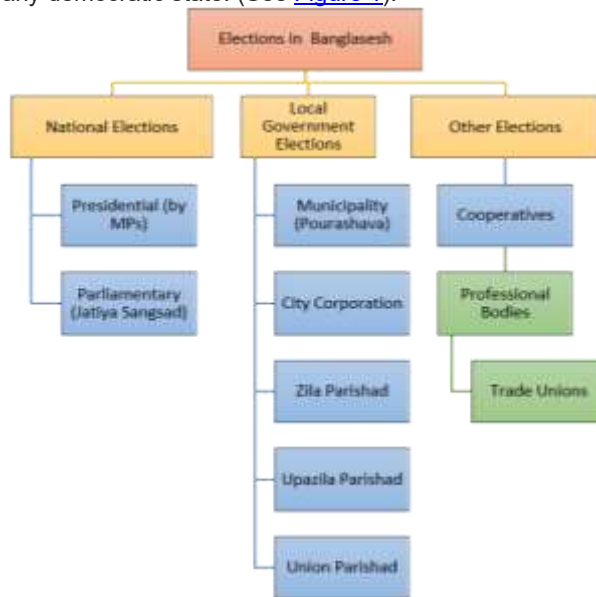


Figure 1. Hierarchy of Elections in Bangladesh

Overall, elections are not just a means of a change of power; rather, it is one of the pillars of protecting the democratic foundations of the state and society. A free, fair and participatory election restores people's confidence and ensures political stability. In order to make the election process transparent and reliable in Bangladesh, the independence of the Election Commission, the neutrality of the administration and the sincerity of the political parties are essential ([Haque & Mohammad, 2016](#); [Khan, 2024](#)). At the same time, people have to play an active and aware role ([Akter, 2023](#)). Fair elections do not depend only on the Election Commission. Elections are fair and credible only when the Election Commission, judiciary, administration, law enforcement, media, observer organizations, and political parties—all fulfil their respective responsibilities properly ([Akram & Das, 2006](#)). The roles of multiple stakeholder of election are given [table 1](#).

Election and Its Contemporary Environment in Bangladesh

The transparency and fairness of Bangladesh's electoral process has long been questioned. Various irregularities and shortcomings are weakening people's confidence in the democratic system. Fake votes, corruption, irregularities, administrative bias, poor voter list management and political violence have led Bangladesh's electoral system away from transparency and fairness. As a result, effective solutions to these problems are necessary to restore public confidence. The main problems are:

1. Fake votes and centre capture: According to the Transparency International Bangladesh (TIB) survey, in 50 centres, 51% of the booths were occupied or fake votes were cast (TIB, 2024). It has been seen many times in the elections of Bangladesh that fake votes are cast or polling stations are occupied through terrorist activities. In such activities, genuine voters are deprived of their voting rights. Sometimes, ballot boxes are stuffed up before voting begins or access to polling stations is restricted to help a particular candidate win. This caused the voting process to lose its normalcy and

create doubts about the outcome of the election ([Akhter, 2017](#)). In many booths of the polling station in Katiadi, Kishoreganj, fake votes were stuffed into the ballot boxes in the dark of night. Mobile control and CCTV were violated, and the government's symbol, Boat, was sealed to exert influence ([Prothomalo, 2019](#)).

2. Administrative bias: The role of the administration is very important in conducting elections. But in reality, there were cases of government officials openly displaying loyalty to the ruling party and participating in partisan activities, such as supporting and campaigning for the ruling party candidates (TIB, TDS, 2024). They turn a blind eye to the illegal activities of one party and suppress the activities of the opponent on the other. Such bias undermines the neutrality of elections and undermines the confidence of ordinary voters ([Haque, & Mohammad, 2016](#)).
3. Lack of voter list verification: An accurate voter list is essential for a fair election. But in Bangladesh, the voter list is not updated properly. As a result, dead people, minors or people with fake identities also remain in the voter list. Moreover, there are many errors in the voter ID card verification process on Election Day. For these reasons, the opportunity for fake votes is created and the transparency of the election is questioned.
4. Political influence and violence: Political influence and violence are a major problem in Bangladesh's elections. Influential political parties or individuals often intimidate voters, force votes or attack supporters of opposition candidates. There are even deadly acts of violence ([Almamun, 2020](#)). These activities discourage genuine voters and create major obstacles to a fair election. Instances were reported where threats were made to suspend government services and allowances from the social security programmes for marginalised and underprivileged individuals, including ordinary voters, if they failed to attend meetings of the ruling party and go to the polling centres and vote for specific symbols. According to the Human Rights Support Society (HRSS), 43 people were killed and 2,538 injured in 781 violent incidents. Three people were killed and more than 150 injured in clashes in Munshiganj, Barguna and Comilla during the national election alone ([HRSS, 2024](#)).
5. Lack of ID card verification: The national identity cards of the voters are not properly verified at the polling centres. In many cases, voters get the opportunity to vote only by showing the card, fingerprint or biometric information is not matched. This allows one person to vote more than once or to vote using the identity of another.
6. Irregularities in the staff of the centre: Although the officials in charge of the polling stations are in charge of conducting the election, some of them work for a particular candidate. Many times, without the knowledge of the voter or the voter does not come, the workers themselves cast their votes by sealing the ballot papers. Such irregularities divert elections away from transparency.
7. Casting fake votes under influence: Local influential people or activists of political parties often enter the polling centres and occupy the ballot papers by intimidating the workers. They cast fake votes on a large scale in favour of their preferred candidate. In this way, the atmosphere of the polling station becomes turbulent and ordinary voters cannot exercise their voting rights. (TIB) found serious irregularities in 55 percent of the constituencies studied where voters were forced to cast their votes to a specific symbol (TIB, TDS, 2024). A mobile court in Brahmanbaria has sentenced nine

people to different jail terms for casting fake votes in two parliamentary constituencies. They were sentenced to prison terms ranging from seven days to two years (Financial Express, 2024).

- 8. Occupying Polling Centres: In the elections of Bangladesh, it has been seen many times that the entire polling station has been occupied. At this time, genuine voters are not allowed to enter; instead a large number of fake votes are cast in favour of a particular candidate. This not only distorts the results, but also destroys people's confidence in the election process. In 77.6 percent of the seats, there were barriers to information flow or obstacles in communication. Polling agents of opponents were not allowed to enter the respective centres in 75 percent of the seats (TIB, TDS, 2024). The Dhaka Tribune also reported that chaos was seen in 30-35 centres, voting were suspended in 7 centres, and some officials at the centres were sent to jail (Dhaka Tribune, 2025).
- 9. Lack of law enforcement and impunity: Law enforcement agencies do not perform their duties properly during elections. They are reluctant to take action against the irregularities of the ruling party. In 85.7 percent of the seats, the administration and law enforcement agencies were inactive due to various breaches of discipline. Corruption and political influence have severely undermined the integrity of Bangladesh's police force, distorted its original purpose, and caused serious concern among citizens (TBS, 2024)

After these incidents, a culture of impunity has been created due to lack of proper justice. As a result, those who commit irregularities dare to do the same thing again and again. For these reasons, the election process of Bangladesh is gradually plagued by irregularities and corruption. As a result, the general public is gradually losing confidence in the election.

Limitations of Using Ballot Box and EVM System

Although Electronic Voting Machine (EVM) is used in several countries including India, its application in Bangladesh is still facing many questions. Although elections were held using EVMs in different districts including Chattogram, it was not fully successful in ensuring a fair and neutral vote. Public confidence in this process is being destroyed mainly due to lack of proper

use of technology, faulty machines and human abuse. The main limitations are:

- 1. Lack of ID verification: Although EVMs are used, the identity verification of the voter is not done properly. Many times, only showing voter ID gives the opportunity to vote, but fingerprint or biometric verification is not mandatory. This allows a person to vote more than once or to vote under the identity of another. The transparency of the election is severely damaged.
- 2. Additional control power of the operator: Election officials are responsible for managing EVMs. Starting or stopping the machine, controlling certain steps, etc. is in the hands of the operator, which creates a great opportunity for abuse. If there is a lack of neutrality, they can disrupt the operation of the machine at any time or affect it at will. . In the process of voting using the Electronic Voting Machine (EVM), as soon as a voter authenticates their identity via fingerprint on the Control Unit, they are not subsequently allowed to cast their vote personally. Although the voter is granted access to the secret polling booth, the vote is cast on their behalf by polling agents. As a result, despite the biometric verification via the EVM, the voter is unable to cast their own ballot, which compromises the secrecy and impartiality of the election. Some of the polling officials were doing the same,' the CEC said at a press conference at the EC media centre(New Age, 2025). The commission organised the press conference to clear the 'confusion' about the suspension of Wednesday's by-poll in the Gaibandha-5 constituency that was suspended by the commission following rampant irregularities in the use of EVMs (Newage, 2022).
- 3. Casting fake votes through operators: The biggest concern is that the operator can vote on behalf of others if he wants. Even if the voter is not present, he has the opportunity to vote by name. The results of the vote were distorted and the election became completely unreliable.
- 4. Emergence of Violence and Distrust: Questions about the transparency of EVMs often lead to violence, clashes and tensions on Election Day. The opposition assumes that by using the controlling power of the machine, the dominant candidate or party is ensuring the outcome in their favour. This leads to political instability and undermines the democratic process.

Table 1. Role of Key Stakeholders of Ensuring the Elections

Election Commission	Ensuring that elections are conducted fairly at all stages. Overseeing the establishment of polling stations, preparation of voter lists, setting election schedules, etc, Maintaining election freedom, Conducting elections free from the influence of political parties or the government, Ensuring voter safety, Ensuring that voters have the opportunity to vote safely and without risk, Enforcement of rules and regulations, Monitoring whether election laws, code of conduct, and other regulations are being followed, Dispute and complaint resolution, Dispute resolution, appeals, or disputes related to elections are resolved promptly and impartially, Increasing voter awareness: Ensuring that voters exercise their right to vote by educating and making them aware (M. A. Rahman, 2006).
Judiciary	Enforcement of election laws and rules, Prevents and corrects any violation of laws during elections, so that the elections are fair and impartial, Verification of nomination papers, Verifies the qualifications of candidates, so that only capable and legitimate candidates can participate in the elections, Speedy trial of election crimes: Ensures speedy trial of voter fraud, violence, intimidation or other crimes, so that the electoral environment remains peaceful, Protection of voter rights, Ensures that voters can vote without hindrance or harassment, and gives instructions to the administration if necessary, Resolution of disputes over results: If any complaint or dispute arises regarding the election results, it is resolved judicially, so that people's confidence in the democratic process is maintained, Legal assistance to the Election Commission: If the decision of the Election Commission is challenged, the court reviews it and provides validity or correction etc.
Administration	Fulfilment of responsibilities of returning and assistant returning officers: The Deputy Commissioner and Upazila Nirbahi Officer receive nomination papers, verify and sort them, and conduct polling preparations, Ensuring polling station arrangements and manpower: Setting up polling stations,

	ensuring necessary equipment and manpower, and recruiting and training polling workers (Mamun & Aminuzzaman, 2017). Maintaining law and order: Maintaining security at and around polling stations, preventing violence, and taking prompt action against illegal activities, Implementing the Commission's orders: Implementing all orders of the Election Commission on the ground, ensuring compliance with the campaign code of conduct, and preventing misuse of government resources, Processing and declaring results: Ensuring security and transparency during vote counting and collection of results and assisting the Commission, Ensuring equal opportunities for candidates, Creating an environment of equal opportunities between candidates and political parties, assisting local observers and the media (A. T. Rahman, 1974).
Law Enforcement	Ensuring voter safety: Ensuring that voters can vote without hindrance and without fear, maintaining order in the voting queue, Polling station and ballot security: Patrolling inside and outside polling stations, and handling ballot boxes and election materials safely, Prevention of electoral violence: Takes prompt action to prevent incidents such as party clashes, centre capture or forced voting, Implementation of campaign code of conduct: Prevents violations of the law in election campaigns, controls misuse of government resources or power, Role of various forces: Police provide security and immediate crime suppression, RAB prevent terrorism and organized crime, BGB and Ansar maintain general order and, if necessary, the army prevents major violence, Security during the declaration of results: Ensures security at the vote counting, returning office and during the declaration of results, patrols are strengthened to avoid violence.
Media	Voter awareness: Provides information about voters' rights, the voting process and the electoral code of conduct so that they can make the right decisions, Making elections transparent and accountable: Reports irregularities, violence or centre capture at polling stations and holds the administration and the commission accountable, Campaign Monitoring: Monitors whether candidates' campaigns are being conducted properly and whether the code of conduct is being followed, Ensuring equal opportunities for candidates: Provides equal opportunities for all candidates and political parties to campaign and avoids bias, Electoral Environment Assessment: Prepares reports by observing the field environment and voter reactions during voting, Providing information to the international community: Provides information about the election to foreign observers and the international community, creating international pressure in case of irregularities, Information awareness and prevention of fake news on social media: Makes young voters aware and helps prevent the spread of incorrect or false information (Siddiqi, 1996).
Observer Organizations	Local Observers: Monitoring the voting, registering complaints, increasing voter confidence, International Observers: Verifying fairness, creating international pressure, comparative assessment, making recommendations for the future, Entry ensures transparency and trust in the vote.
Political Parties and Candidates	Publishing election manifestos: Presenting development plans, policies and programs to the voters and helping them make the right decisions, Direct communication with voters: Establishing communication with voters through mass communication at the field level, meetings and rallies and leaflets, Adhering to the code of conduct: Following the code of conduct set by the commission to ensure equal opportunities in the election, Responsibility to keep workers and supporters peaceful: Demonstrate responsible leadership to ensure that party workers and supporters campaign legally and peacefully, Maintaining healthy competition: Candidates respect each other and conduct fair competition and avoid personal attacks or misleading campaigns, Cooperation in election observation: To facilitate the work of domestic and foreign observers and to legally report any irregularities, Ensuring voter confidence: If there is fair competition, voters find the election credible, which strengthens democratic values.

Sources: processed by researchers from various research sources.

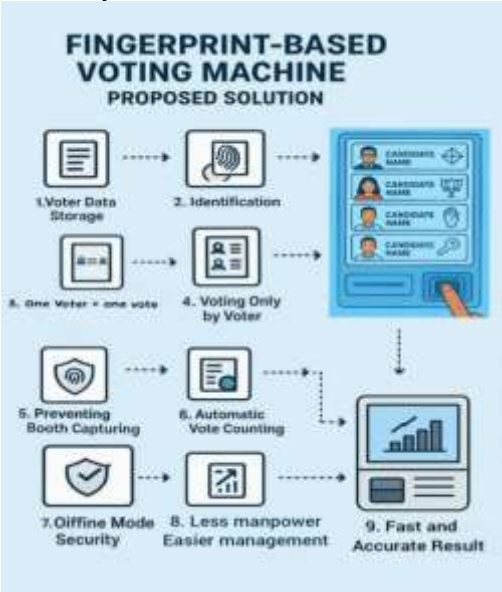


Figure 2. System of Fingerprint-based voting machines

How to Ensure Free and Fair Elections

Independence of the Election Commission

The Election Commission will have to create an environment to work keeping it completely free from political influence. It is important to ensure that the decision of the commission is not influenced by pressure from any party or group. A strong and independent commission is the basis of a fair election.

Neutrality of the administration

The role of field administration and law enforcement agencies is very important during the election. Officials will ensure equal opportunities for all without favouring any political party or candidate. This action will increase voter trust while also reducing allegations of election bias.

Safety of Voters

It is necessary to ensure a safe environment for every voter. Special attention should be paid so that there is no intimidation, riot or violence in the polling centres. Measures such as presence of security forces, CCTV surveillance and quick action will help boost voters' confidence.

Increase voter awareness

Informed voters are essential for transparent elections. Voters should be informed about their rights, responsibilities and the importance of voting. If voters are properly made aware through campaigning, mass media and social media, they will not fall into the trap of misinformation and will be able to cast their votes without fear.

Use of Technology

The use of modern technology is essential to prevent fake votes and rigging. A voter will not be able to vote more than once if fingerprint-based voting machine or biometric system is applied. This will prevent the entry of fake voters and make the election more transparent. In order to sustain democracy, these steps must be implemented effectively not only on paper but also in reality. Only then will people's confidence be restored and a truly fair and neutral election will be possible.

Fingerprint-based voting machines

A modern solution to ensure fair and impartial elections: Corruption, irregularities, violence and fake votes in elections in Bangladesh have been long-standing problems. It is possible to solve these problems using current technology. A fingerprint-based voting machine is easy to implement and can play an effective role in making the election process fair, impartial, and secure. Brazil is a pioneer in using technology in elections. The country first introduced electronic voting and later introduced fingerprint-based voter verification. As a result, fake votes become almost impossible and the transparency of the elections increases significantly (Pesquisa Fapesp, 2021). These two countries use ten-finger fingerprints and photos for voter verification in elections. As a result, voter identity can be verified correctly and fraud and irregularities have been significantly reduced. That is why many African countries are following their experience (Eze, 2022). This resulted in faster and more accurate voter identification and increased both the speed and transparency of voting. Brazil's experience is most relevant in the context of Bangladesh. They were the first to introduce the use of technology in elections and have been successful. Their political and social context is very similar to Bangladesh, and they have been able to reduce irregularities by using biometric technology.

Steps of the Fingerprint-Based Voting Machines

1. Voter data storage: The voter list of each centre and their fingerprints will be stored in the machine in advance. Voters will be able to vote through an easy verification process after coming to the centre.
2. Fingerprint identification: When the voter comes to vote, the fingerprint will be scanned first. The machine will immediately confirm the voter's identity and display the pictures, names and election symbols of the candidates on the screen. This will prevent fake voters from entering.
3. One voter = one vote: Each voter can vote only once. The fingerprint verification system will prevent multiple voting.
4. Voting only by the voter: No official or anyone else will be able to vote on behalf of the voter. The vote can only be cast with the voter's own fingerprint.
5. Prevention of centre capture and fake vote: Voting cannot be done without fingerprint verification, as a result, centre capture or widespread fake voting will become practically impossible.
6. Less manpower, easy operation: The machine will complete the voting process itself; as a result, fewer personnel will be required to conduct the election. This will reduce time, cost and errors.
7. Security in offline mode: The machine will work in offline mode, which will eliminate the risk of hacking or data theft and increase security.
8. Automatic and accurate vote counting: After the voting, the machine will automatically calculate the results and display them immediately. This will make the vote counting accurate, pure and impartial and there will be no chance of mistakes or errors.
9. Fast and accurate results: The results of the vote will be available in an instant, which will save time and inform the people quickly.

It is not possible to solve all kinds of problems in elections using technology alone. (See [Figure 2](#)). Technology is certainly an effective tool, but in addition to this, there must be independence of the Election Commission, transparent process and goodwill of political parties. The main goal of elections is to restore public trust, and technology can be a step towards building that trust, but it is never the only solution. Currently, no country in the world has directly used a fully fingerprint-based voting machine. However, biometric methods are being used in elections in various countries including Brazil, Ghana, Nigeria and Albania. In these countries, the identity of voters is verified through fingerprints, facial recognition or other technological means, so that there is no opportunity to cast fake votes. The biggest advantage of fingerprint-based voting machines is its accuracy and security. It is practically impossible to cast fake votes, because the identity of each voter is verified biometrically. Moreover, if for some reason a voter cannot vote with fingerprints, facial recognition or iris scan can be used as an alternative. As a result, no voter will be deprived of the right to vote. If Bangladesh wants, the interim government can quickly take the initiative to make such machines.

The important thing is that this technology can be made in the country, as a result of which there will be no risk of people's personal information being leaked to foreign companies. Using domestically produced machines will also reduce costs and increase trust among the people. Fingerprint-based voting machines can create a great potential for Bangladesh, but only if they are implemented properly will truly fair and impartial elections be possible.

Conclusion

Ensuring fairness and justice in Bangladesh's electoral process remains a major institutional challenge. The findings of this study indicate that, regardless of whether paper ballots or electronic voting machines (EVMs) are used, both systems present opportunities for irregularities, fraudulent voting, administrative bias, and lack of procedural transparency. Consequently, public trust in the electoral process continues to decline.

The analysis underscores that technological interventions alone cannot guarantee electoral integrity. While fingerprint-based biometric voting machines offer potential advantages—such as the ability to verify voter identity through pre-stored biometric data, prevent multiple voting, and enhance procedural accountability—their effectiveness depends on the broader institutional and political ecosystem. Comparative evidence from countries such as Brazil, Ghana, Nigeria, and Albania demonstrates that biometric systems can reduce instances of fraud and duplication, but only when accompanied by robust governance frameworks and independent oversight.

Therefore, the successful implementation of fingerprint-based voting technology in Bangladesh requires more than technical readiness. It demands a credible and autonomous election commission, impartial administrative structures, political commitment to transparency, and public awareness to ensure civic participation. In this context, technology should be viewed as an enabler rather than a substitute for institutional integrity.

By integrating biometric verification within a transparent and accountable governance structure, Bangladesh can strengthen electoral credibility and restore citizens' trust in democratic institutions. Future research should examine the socio-technical challenges of large-scale biometric deployment, including data privacy, cost implications, and

interoperability across administrative systems. Such inquiry will contribute to developing a more sustainable and contextually grounded model for digital electoral governance in emerging democracies.

Author contributions

Rajib Chandra Das: The author conceived & designed the paper, analyzed the data, contributed reagents, materials, analysis tools, and wrote the paper.

Abdullah Al Mamun Abir: He played a supportive role by providing reagents, materials, interpreted the data, as well as contributed to the writing of the paper.

Funding

The researchers did not receive financial support from any organization, whether public, private, or non-profit. This means the study was conducted without external funding.

Conflict of interest

We hereby confirm that the manuscript has no conflict of interest with any parties, including any financial, personal, or other relationships with other people or organizations. We confirm that the paper has not been published previously, it is not under consideration for publication elsewhere, and the manuscript is not being simultaneously submitted elsewhere.

References

- Akhter, M. (2017). *Electoral Corruption in Bangladesh*. Routledge. <https://doi.org/10.4324/9781315201597>
- Akram, S. M., & Das, S. K. (2006). *Bangladesh Election Commission: A Diagnostic Study*. <http://www.ti-bangladesh.org/>
- Akter, N. (2023). The Crisis of Independence and Impartiality of the Election Commission of Bangladesh: A Study on the Eleventh National Parliamentary Election. *International Journal of Research and Innovation in Social Science*, 7(3), 328–344. <https://www.rsisinternational.org/journals/ijriss/>
- Almamun, Z. (2020). *Political Violence in Bangladesh: Explaining the Role of State* [Illinois State University]. <https://www.proquest.com/openview/5f5a9b9531293d0f857230948f593cf2/1?pq-origsite=gscholar&cbl=44156>
- Breedon, K., & Bryant, A. C. (2018). Counting the Votes: Electronic Voting Irregularities, Election Integrity, and Public Corruption. *University of Memphis Law Review*, 49, 979. <https://heinonline.org/HOL/LandingPage?handle=hein.journals/ume49&div=39&id=8&page=>
- Coles, K. A. (2004). Election Day: The Construction of Democracy through Technique. *Cultural Anthropology*, 19(4), 551–580. <https://doi.org/10.1525/can.2004.19.4.551>
- Delavande, A., & Manski, C. F. (2012). Candidate Preferences and Expectations of Election Outcomes. *Proceedings of the National Academy of Sciences*, 109(10), 3711–3715. <https://doi.org/10.1073/pnas.1200861109>
- Dhaka Tribune. (2025). *Voting Cancelled in Seven Centres, Held till 3pm in 15*. <https://www.dhakatribune.com/bangladesh/election/336065/ec-irregularities-found-in-37-centres-6-detained>
- Eze, P. I. (2022). Biometric Technology Based Elections in Africa: The Way Forward. *International Journal of Innovative Science and Research Technology*. <https://d1wqtxts1xzle7.cloudfront.net/113971509/IJISRT22JUN1220-libre.pdf>
- Haque, S. T. M., & Mohammad, S. N. (2016). Administrative Culture and Incidence of Corruption in Bangladesh: A Search for the Potential Linkage. In *Administrative Culture in Developing and Transitional Countries* (pp. 100–110). Routledge.
- <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315746104-11/>
- Hoque, R. (2018). Eternal Provisions in the Constitution of Bangladesh: A Constitution Once and for All? In *An Unamendable Constitution? Unamendability in Constitutional Democracies* (pp. 195–229). Springer International Publishing. https://doi.org/10.1007/978-3-319-95141-6_8
- Hossain, A., & Habib, A. (2021). Decentralisation and Democratisation in Local Government Focusing Key Development Programs in Bangladesh. *CenRaPS Journal of Social Sciences*, 3(1), 33–48. <https://doi.org/10.46291/cenraps.v3i1.58>
- Hossain, A. R. M. T. (2015). *People's Voice in between Elections: Democratic Public Sphere and Accountability of Elected Representatives in Bangladesh* [University of Rajshahi]. <http://rulrepository.ru.ac.bd/handle/123456789/359>
- Human Rights Support Society (HRSS). (n.d.). *HRSS Report*. Retrieved https://hrssbd.org/report_details/44
- Jahan, R. (2018). *Political Parties Movements, Elections and Democracy in Bangladesh*.
- Khan, M. Z. H. (2024). *Transparency International Bangladesh (TIB)*. <https://ti-bangladesh.org/public/articles/story/6903>
- Mamun, M. A., & Aminuzzaman, S. M. (2017). *Office of the Deputy Commissioner in Bangladesh: Overview of the Shift in Development Paradigm*. <http://rulrepository.ru.ac.bd/handle/123456789/359>
- New Age. (2025). *Many Polling Officers Violate Orders: CEC*. <https://www.newagebd.net/article/183554/many-polling-officers-violate-orders-cec>
- Pesquisa Fapesp. (2021). *Brazil's Electronic Voting Machine Comes of Age*. <https://revistapesquisa.fapesp.br/en/brazils-electronic-voting-machine-comes-of-age/>
- Prothomalo. (2019). *Ballot Stuffing at Night, No Voting during Day*. <https://en.prothomalo.com/bangladesh/Ballot-stuffing-at-night-no-voting-during-day>
- Quddus, S. A. (2014). Election, Political Instability and Fragile Democracy in Bangladesh. *Bangladesh Journal of Integrated Thoughts*, 10(14). <https://doi.org/10.52805/bjit.v10i14.125>
- Rahman, A. T. (1974). *Administration and Its Political Environment in*

- Bangladesh. *Pacific Affairs*, 47(2), 171–191.
<https://doi.org/10.2307/2755606>
- Rahman, M. A. (2006). *Elections in Bangladesh: Role of the Election Commission* [University of Rajshahi].
<http://rulrepository.ru.ac.bd/handle/123456789/552>
- Siddiqi, D. M. (1996). The Festival of Democracy: Media and Elections in Bangladesh. *Asian Journal of Communication*, 6(2), 30–42.
<https://doi.org/10.1080/01292989609364742>
- Sulung, U., & Muspawi, M. (2024). Memahami Sumber Data Penelitian: Primer, Sekunder, Dan Tersier. *Edu Research*, 5(3), 110–116.
<http://www.iicls.org/index.php/jer/article/view/238>
- The Business Standard. (2024). *How Political Influence, Corruption Tainted Police Image*. <https://www.tbsnews.net/bangladesh/how-political-influence-corruption-tainted-police-image-1009481>
- The Daily Star. (2025). *51pc Seats Saw Vote Rigging, TIB Says Based on Survey in 50 Constituencies*.
<https://www.thedailystar.net/news/bangladesh/news/51pc-seats-saw-vote-rigging-tib-says-based-survey-50-constituencies-3521901>
- The Financial Express. (2024). *9 Jailed for Casting Fake Votes in Brahmanbaria*. <https://today.thefinancialexpress.com.bd/politics-policies/9-jailed-for-casting-fake-votes-in-brahmanbaria-1704646137>
- Wilkinson, S. I. (2000). Democratic Consolidation and Failure: Lessons from Bangladesh and Pakistan. *Democratization*, 7(3), 203–226.
<https://doi.org/10.1080/13510340008403678>