



Preliminary Report on Impact of Integrated Polling Booth Management System and Paperless Booth

Atal Bihari Vajpaee Institute of Good Governance and Policy Analysis (AIGGPA)



Acknowledgement

Atal Bihari Vajpayee Institute of Good Governance & Policy Analysis (AIGGPA) is grateful to the Madhya Pradesh State Election Commission (MPSEC) for co-owning the 'Preliminary Report on the Process Adopted for the Integrated Polling Booth Management System and Paperless Booth Initiative'.

I wish great thank to **Shri Abhishek Singh (IAS)**, Secretary, Madhya Pradesh State Election Commission (MPSEC) for believing AIGGPA to assign this most important task. I express my profound gratitude to **Shri Rajesh Gupta**, Director of AIGGPA, for his compassionate support, and direction as needed to finish this project. I would like to thank **Mr. Rahul Choudhari**, Principal Advisor at the AIGGPA's Centre for Economy, Trade & Innovation, for his advice and resources assistance in making this study successful.

Additionally, I would like to thank **Ms. Sanju Kumari**, Deputy Secretary, Madhya Pradesh State Election Commission (MPSEC) and **Dr. Jaya Kosta**, Advisor, AIGGPA for editing support of the study.

Lastly, I express my gratitude to the all staff of Madhya Pradesh State Election Commission (MPSEC) who spared time from their busy schedules to have conversations and interactions for information and for openly participating in the discussion in understanding the initiative and also giving their valuable suggestions regarding the future.

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Preliminary Report on the Process Adopted for the Integrated Polling Booth Management System and Paperless Booth Initiative

1. Background

The world is increasingly adopting democracy as a political order. India's electoral system, one of the largest globally, faces challenges stemming from its scale, logistical complexities, and dependence on traditional paper-based processes. Only a fair and transparent election process can maintain democracy. Increased consciousness of Election Management Bodies and Electoral Assistance Agencies prompted them to adopt measures to deliver elections better. Measures to improve fairness and transparency have changed with advancement in Information and Communication Technology. Electoral procedures aided by technologies are more effective with re-enforced, systematic, authentic and with timely actions. With this perspective, responsibility of Election Management Bodies in setting up credible electoral processes to make processes transparent and to prevent, reduce and to mitigate risks is supreme. Huge amount of physical, human, financial and technological resources are required to conduct such a large number of elections right from Parliamentary and State Legislative Assemblies elections to the grass root Panchayat Raj Institution's elections in India.

The introduction of Electronic Voting Machines (EVMs) marked a significant shift in ensuring fair elections by preventing booth capturing and bogus voting. Despite this advancement, several aspects of the election process—such as the voting mechanism, formation and transportation of polling parties, completion of the Presiding Officer's diary, and submission of reports—have remained largely unchanged.

After the 73rd and 74th Constitutional Amendments emphasized democratic decentralization, tasking State Election Commissions with conducting free and fair elections for local bodies. Conduct of elections in such a large state for local bodies in Madhya Pradesh is a humongous task. Its success has been made possible with the laying down of a systematic procedures of electoral processes in a clear and unambiguous manner and being followed by all stakeholders. Even after introduction of many electoral reforms in past decades, Madhya Pradesh State Election Commission has been facing the challenges and risks in the electoral processes and providing detailed guidelines and instructions to mitigate those risks to make the electoral system free, fair and transparent. Later, the Commission provided checklists for each level of functionaries and for each aspect of electoral activities to make the system robust but manual working management and human errors always exists everywhere.

Over the period of time, areas of election management have widened and an officer at district level needs to engage in multiple activities involving multiple players with varied objectives while conducting elections. To effectively manage such a complex environment, State Commission has acknowledged the importance of those challenges facing in manual booth management in

conduct of elections. With a view to prevent/ mitigating such challenges in the field, Madhya Pradesh State Election Commission (MPSEC) conceptualize an integrated booth management system for all stakeholders will make use of this system effectively as well as contribute to keep it up to date for future challenges.

Leveraging these above mandates and mitigating the risks and challenges, the Madhya Pradesh State Election Commission introduced the Integrated Polling Booth Management System (IPBMS) and Paperless Booth initiative to modernize electoral practices. IPBMS and Paperless Booth is a comprehensive technological system designed to streamline and enhance the efficiency of election processes, particularly at the polling booth level. This system leverages various technologies, including software, hardware, and network infrastructure, to automate and digitize tasks, thereby reducing human error and improving overall transparency and accountability.

2. Objectives of the Study

The objectives of the initiative are multifaceted: streamlining election processes using digital tools, minimizing human errors, enhancing data accuracy, reducing environmental impact by eliminating paper-based operations, fostering greater transparency and accountability through real-time data sharing, and building voter and stakeholder trust in the electoral system. The key objectives of the current preliminary study are:

- To examine the new system of Integrated Polling Booth Management System (IPBMS) and Paperless Booth in comparison with the ongoing process in promoting procedural trust & ease.
- To analyze the financial and sustainability aspects of operations of Integrated Polling Booth Management System (IPBMS) and Paperless Booth particularly in context of RLBs.
- To identify the possible operational challenges that may be faced by the stakeholders and possible solutions for scaling up the IPBMS in the State.

3. Methodology

The proposed study aims to analyse the current status of Integrated Polling Booth Management System (IPBMS) and Paperless Booth. For this, it will focus on secondary data only. Secondary data was collected from Madhya Pradesh State Election Commission through various reports, guidelines, circulars, policy brief, and handbook for returning officers, recorded videos as live information from piloted polling booths of selected districts in by-elections regarding the entire election process at booth level and testimonials of the stakeholders in pilot polling booths made available by the MPSEC. The study also gathered the information through discussions with the team of MP State Election Commission.

4. Overview of Integrated Polling Booth Management System (IPBMS) and Paperless Booth

Before conceptualizing the IPBMS, many brain storming discussions conducted in-house by MPSEC to identify the real challenges. In an era where technology is transforming various sectors, the MPSEC has begun exploring how it can address these challenges using modern tools.

4.1 Key Issues Identified by MPSEC

The following issues were identified by MPSEC as discussed with team:

- i. **Manual Processes:** All processes apart from those involving EVMs, currently conducted manually, should be digitized to minimize human error.
- ii. **Outdated Information Dissemination:** The existing system for sharing information with political parties and candidates relies on outdated methods. Real-time information should be made accessible through websites and other digital platforms.
- iii. **Workload of Polling Personnel:** The polling process is labor- and time-intensive for polling personnel, necessitating efforts to reduce their workload.
- iv. **Complex Material Distribution:** The distribution of materials is highly complicated, causing significant inconvenience for thousands of polling personnel at the district level. This process needs to be simplified.
- v. **Transportation Challenges:** The transportation of polling personnel requires numerous buses and incurs high costs for tents and other facilities. This strains the district administration, disrupting its regular operations. A more efficient system should be introduced to ease this burden.
- vi. **Digitizing Voter Identification:** The voter identification process should be upgraded to allow real-time verification, ensuring the authenticity of voters and eliminating any doubts.
- vii. **Real-Time Voter Turnout Updates:** Persistent uncertainty among candidates and political parties about voter turnout during polling can be resolved by providing real-time updates.
- viii. **Real-Time Vote Count:** At the close of polling, the actual vote count should be made available to candidates and political parties in real time to prevent disputes.
- ix. **Minimizing Errors in Presiding Officer's Diary:** Errors in the Presiding Officer's diary often lead to numerous court cases. Digitizing this process would minimize mistakes, reducing election-related legal challenges and ensuring their timely resolution.

To resolve these above issues and challenges, concept of IBPMS and paperless booth emerged, conceptualized and piloted successfully with a larger vision and broader perspective by MPSEC.

4.2 About IPBMS & Paperless Booth

The Integrated Polling Booth Management System (IPBMS) integrates multiple election-related operations to ensure efficiency and reliability. Voter presence is verified electronically using biometric thumb impressions and e-signatures, while voter details are displayed on screens to promote transparency. The transition from 26 physical forms to a comprehensive e-booklet enables real-time data entry and submission using laptops and tablets, significantly improving accuracy and efficiency.

Material management has been digitalized, reducing manual effort and errors in the distribution and return of polling materials. Real-time monitoring through live dashboards provides insights into voter turnout, polling percentages, and queue updates. This secure system uses advanced encryption protocols to ensure tamper-proof data transmission. The initiative also optimizes polling personnel requirements, reducing manpower by nearly 50%, and achieves cost optimization by minimizing expenses on logistics, food, tents, and printing.

Key Components of an IPBMS & Paperless Booth

i. Voter Presence & Attendance Verification System:

- **Voter Identification:** identification of voter digitally and capturing of thumb impressions and signatures on signature pad to prevent fraudulent voting and verifying the attendance of the voters.

ii. Real-Time Voter Turnout Monitoring:

- Real-time monitoring through live dashboards provides insights into voter turnout and polling percentages.
- Tracking voter turnout in real-time using digital tools.
- Providing timely updates to election officials and the public.

iii. Queue Management System:

- Implementing efficient queue management strategies to minimize waiting times.
- Utilizing technology to optimize the flow of voters and reduce congestion.

iv. Reporting and Management:

- The transition from 26 physical forms to a comprehensive e-booklet enables real-time data entry and submission using laptops and tablets, significantly improving accuracy and efficiency.

v. Material Management:

- Material management has been digitalized, reducing manual effort and errors in the distribution and return of polling materials.

vi. Security Management:

- This secure system uses advanced encryption protocols to ensure tamper-proof data transmission.

vii. Data Collection and Analysis:

- Capturing and analyzing data related to voter turnout, voting patterns, and other relevant metrics digitally may be used for future analysis.
- Providing valuable insights for future election planning and improvement.

4.3 Pilot Testing of IPBMS & Paperless Booth

Considering all the relevant factors, the MPSEC envisioned the implementation of a paperless election process. On the observation of the recordings in the first half of 2024, during by-elections, this process was successfully conducted as a "pilot project" at one of the three polling booths in the by-election for the post of Sarpanch in Ratua Ratanpur Gram Panchayat, Bairasia Tehsil, Bhopal District. In this pilot, e-attendance was implemented, voter identification was displayed on screens, and 2 out of the total 26 forms were digitized for the election process. More importantly, Form- 15A Part (1) was generated electronically and arrangements were made to share it with the candidates and their agents through online mediums such as WhatsApp and e-mail. Under this pilot experiment, arrangements were made to display real time voting percentage through e-attendance.

This marks the first attempt toward achieving paperless elections in the country. Following the success of the initial attempt, the Commission has chosen to advance in this direction. On October 15, 2024, during the Panchayat By-Election-2024, the second version of the Integrated Polling Booth Management System was implemented across all three polling stations for the by-election for the post of Sarpanch of Atraila-11 Gram Panchayat in Tyonthar, Janpad Panchayat, Rewa district. In this pilot run, all 26 forms in the Presiding Officer's booklet were entered electronically. The new system transformed the Presiding Officer's booklet into an e-booklet, replacing the traditional method of "distribution and deposit of material." Based on the insights gained from the two pilot runs, it is evident that the Integrated Polling Booth Management System designed by the Commission can operate successfully without any legal hindrances. This represents a significant step forward for future reforms in the electoral process.

Based on the above pilot test, study of the referred documents, recorded videos, shared vision of the team MPSEC, key observations are as follows:

4.4 Interventions under Integrated Polling Booth Management System: Paperless Election

4.4.1 Material Management: - In the current election process, polling personnel register their presence at a material distribution center established at the district level one day prior to polling day. Following the randomization of polling parties, materials are distributed to different polling parties based on their assigned polling centers. According to the established protocol, polling parties are transported to their designated polling stations via buses or other means along various transport routes. After the polling concludes, these parties are required to return to the distribution and collection point with the materials using the same transport routes for deposit.

However, this entire process is manual and large-scale, leading to a higher likelihood of errors occurring throughout the procedure.

New System: In IPBMS, other electronic materials will also be used apart from EVM. Important materials include laptop/tablet, thumb impression machine, e-signature pad, printer, CCTV camera, power backup and internet provider device etc. All these devices have been classified into two parts: -

- Materials that use software and internet i.e., laptop/ tablet, thumb impression machine, e-signature pad etc. These materials will be provided by the Commission and will be distributed from the district level or tehsil level and deposited at the same level.
- Electronic materials that can be managed at the district level on a rental basis or in collaboration with other departments will be made available locally. This includes items such as TVs/screens, power backups, and CCTV cameras. These materials will be procured through local rentals and utilized at polling stations, subsequently returned to the local vendors after the polling process concludes. In Panchayat elections, local government employees—such as Patwaris, Secretaries, and Employment Assistants—will oversee the management of these materials. For Municipal elections, the responsibility will fall on employees of the local urban body, who will be tasked with receiving, organizing, and operating these items at the polling station level, ensuring they are returned in good condition post-election. Class-A materials will be procured from the district level by the Sector Management and Supervision Team, which will distribute and receive the specified materials at each polling station within their designated sector.

4.4.2 Integrated Sector Supervision and Management Team

In the new system, it is proposed to establish an integrated management team responsible for overseeing 20 to 30 booths in panchayats and 5 to 10 polling stations in municipalities. A Sector Magistrate will be appointed as the head of this integrated sector supervision and management team. This team will also include reserve polling personnel tasked with material management, as well as one or two engineers who have participated in the First Level Checking (FLC) and Second Level Checking (SLC) of the various equipment used in the polling process. The integrated management team will typically have access to 2 to 3 vehicles, which will be arranged by the District Election Officer based on operational requirements.

This team will have the necessary equipment as per the number prescribed in that sector according to the polling stations, along with reserve equipment. With this integrated sector supervision and management team, 5 percent of the total polling personnel deployed in that sector will be available as reserve.

4.4.3 Polling Party, Formation of Polling Party and Randomization of Polling Parties

In the current process for Panchayat elections (RLBs), the polling personnel typically consist of 4-5 individuals from the P-1 to P-4 categories, in addition to the presiding officer. For Municipal elections (ULBs), there are up to four personnel from the P-1 to P-3 categories, also excluding the presiding officer. These polling personnel are randomized at the district level, and once the polling parties are formed, they proceed to their designated polling centers. Upon completion of the polling process, the polling parties return to the district level, where they deposit all materials and forms before being relieved of their duties.

New System: In the new system, the staffing requirements at polling centers will be streamlined. In addition to the presiding officer, one or two polling employees will be designated as P-1 and P-2, respectively. For Panchayat booths with fewer than 800 voters and urban bodies with fewer than 1,000 voters, only one polling employee (P-1) will be needed alongside the presiding officer. However, in booths with more than 800 voters and municipalities with over 1,000 voters, both P-1 and P-2 will be required, resulting in a total of two polling employees in addition to the presiding officer. Consequently, the overall number of polling personnel needed in the new system will be reduced by half or more compared to the previous system. When both P-1 and P-2 are assigned to the same booth, the presiding officer will allocate responsibilities between them based on the specific requirements of the polling process.

- The polling personnel will be provided technical training. They will have to do e-signature and complete the entire process electronically.
- A new system will be implemented to randomize the polling personnel.
- In the elections of Panchayats and Urban Bodies, the polling personnel will have to report to their polling booth at 5 pm a day before the polling day. After the polling is over, they will be relieved from there after handing over the polling material to the Integrated Supervision and Management Team. The time taken by the polling personnel in the polling process, which was 60 hours on an average, will be reduced to 26 hours in the new system.

4.4.4 Randomization of Polling Personnel

The process of forming polling teams will involve randomizing polling personnel. Once the polling parties have been randomized, they will be grouped into different sectors. A subsequent phase of randomization will allocate specific polling stations to these parties. Polling personnel will receive information regarding their sector assignments two days prior to polling day. Final notifications of their designated polling stations will be communicated to the polling parties the day before polling takes place, following the final randomization.

Polling parties are required to report to their assigned booths at 5:00 PM on the day prior to polling. The Integrated Sector Supervision and Management Team will sequentially distribute

election materials at all booths in the sector after this time. During the distribution process, polling parties will receive all materials and ensure their proper functioning. Each polling party will electronically record their presence on the provided laptop or tablet, which will immediately update online at both the State and District levels based on real-time data. All actions taken by the Presiding Officer until the conclusion of polling will be live streamed on the Commission's website, also using real-time data.

After the polling concludes, the Integrated Sector Supervision and Management Team will collect all materials, including used EVMs (and any EVMs that have been replaced), used laptops or tablets (if any have been replaced), thumb impression machines, e-signature pads, and other equipment.

The Presiding Officer's booklet and all electronically filled forms will be securely stored in electronic format within the laptop or tablet provided as an e-booklet. There is no provision for sending these documents via email or any online platform. The e-booklet will not be publicly displayed; however, after voting concludes, the Presiding Officer will print the e-booklet following e-signature and seal it in the prescribed envelope as previously required. The sealed envelope will then be handed over to the Integrated Sector Supervision and Management Team, who will provide an e-receipt in return. In the future, following amendments to the rules, the requirement for the Presiding Officer to print and deposit the e-booklet in the prescribed envelope may be eliminated.

4.4.5 Transport Arrangement

In the new system, polling parties will report directly to their assigned booths, eliminating the need for transportation by buses. The Integrated Sector Supervision and Management Team will utilize two to three vehicles, either small or large, based on requirements. This team will include a sector magistrate, a reserve polling party, appointed engineers, and materials for distribution, as well as materials to be deposited and reserved. Additionally, security arrangements will be provided for the Integrated Sector Supervision and Management Team as needed.

4.4.6 Arrangements for Food and Tents Etc. To Be Made At District Level

There will be no distribution or deposit of any materials to the polling parties at the district level. Instead, various integrated sector supervision and management teams will be responsible for receiving and depositing materials at this level. Consequently, the arrangements for these teams will be minimized accordingly. As a result, provisions for food, tents, and similar arrangements will be significantly reduced.

4.4.7 Rental Material

In the new system, each polling station will be required to hire a power backup (such as a small generator or inverter), a TV screen for public voter identification, a small printer, and CCTV. A

district-level committee will determine the rates for these items, and they will be rented from vendors specifically for each polling station. These materials will be rented for a period of two days. One day before the polling day, local employees such as the Patwari, Gram Panchayat Secretary, or Employment Assistant will collect the materials from the Panchayat or Urban Body at 10:00 a.m. and install them after verifying their functionality. Once polling is completed, the same local employees will return the materials to the designated vendors and obtain a receipt as proof of return.

4.4.8 E-Presiding Booklet and Online Information System

In the new system, the Presiding Officer will ensure their e-presence at the polling station by 5:00 p.m. a day prior to the polling day. The Integrated Sector Supervision and Management Team will provide the necessary election materials to the officer at the same location. On polling day, once the mock poll process is completed in the morning, the commencement of polling will be electronically confirmed through real-time data and publicly displayed on the Commission's website. Voter presence will be verified electronically using thumb impressions and e-signatures, with the voter's photo and relevant information displayed on a TV screen at the polling station. This system will ensure enhanced transparency as polling agents will be able to see voter information and presence.

The Presiding Officer will fill out all forms sequentially in the form of an e-booklet on a laptop or tablet. Information that can be pre-fed into the system will be entered in advance, while other necessary data will be filled electronically as the process progresses. Information fields such as "Yes/No" answers will be provided through dropdown menus for simplicity. The forms will open sequentially, ensuring that no subsequent form can be completed without first filling the previous one. Once a form is completed, it will be locked and any changes, if necessary, will require justification.

At the conclusion of the polling, the Presiding Officer must electronically display the number of slips distributed if there is a voter queue at the polling station. After the close of the poll, the Presiding Officer will e-sign the Presiding Officer Booklet using a dongle or e-signature. The e-signed booklet will then be printed, sealed in the prescribed envelope, and handed over to the Integrated Sector Supervision and Management Team along with the polling materials, and the Presiding Officer will complete the e-checkout process.

4.4.9 Alternative Arrangements In Case of Internet Failure or Failure of Electronic Equipment

In the event of a failure of any electronic equipment during the polling process, the Integrated Sector Supervision and Management Team will provide alternative equipment to the polling party, like the provision of replacement EVMs. For emergency situations, the team will also have Presiding Officer's booklets and other forms available as backup, which can be used by providing a valid reason. At polling stations where internet connectivity is disrupted, the system will switch

to offline mode and will transmit data when internet access becomes available, ensuring minimal disruption to the process.

4.4.10 Presence of Internet and Electronic Items at Polling Stations

All the above-mentioned electronic resources will be provided at the polling station. No person or any party will be allowed to bring electronic resources as before. In the entire process, EVM will not be connected to the internet or any other electronic equipment at any level. EVM will remain stand alone as before.

4.4.11 Reliability Arising From the Data Available and New Information Generated In the New Process

The new process will not only save labor, time, and money, but will also generate real time data, which will take transparency and reliability to a higher level. This can be understood from the following examples: -

- i. Booth-wise online data of all elections held under the new process will be continuously available not only to the Election Commission, but also to political parties, candidates, their agents, and media personnel on the Commission's website. Such electronic information, once recorded, will never be possible to change in the future.
- ii. Since the voter's presence will be recorded in the form of thumb impression and e-signature, there will be no possibility of any kind of change or alteration in it.
- iii. Form 15A Part-1 to be issued at the time of completion of polling in Panchayat elections and Form 18-A Part-1 to be issued at the time of completion of polling in Municipal elections will be generated electronically and sent to various parties and candidates.
- iv. The Commission, along with candidates, their agents, and media personnel, will have real-time access to the number of voters still waiting at each booth when polling concludes. This ensures transparency and, in addition to the dataset recorded in the EVM, a separate electronic dataset will be generated to further enhance the reliability of the election process. In the event of any legal challenges, the electronic device used can be tested in a laboratory to confirm that no changes or tampering have occurred.

4.4.12 Additional Financial and Human Resource Burden on the Process

The process will require some new electronic resources, which involve a one-time expenditure. However, this cost will be offset by reducing the expenditure on transport systems to about 10%, and significantly lowering costs for tents, food, and other arrangements at the district level. Additionally, manpower needs will be cut by more than half. The total time required by polling personnel will decrease from 60 hours to only 26 hours, resulting in further resource savings. Despite the initial financial investment, the overall election budget will be reduced in the long run.

5. Key Observations

Based on the above it has been preliminary observed that there are many positive aspects of IPBMS & Paperless Booth which are as follows:

- **Modernization of Electoral Process:** Transition from manual to digitized processes reduces human error and streamlines operations.
- **Enhanced Transparency:** Real-time voter turnout, electronic voter identification, and automated data sharing with stakeholders increase trust.
- **Time and Labor Efficiency:** Polling personnel time reduced from 60 hours to 26 hours; fewer polling personnel required (50-60% reduction of manpower).
- **Cost Savings:** Reduction in transport costs and logistics needs (e.g., tents, food).
- **Environmental Impact:** Paperless processes reduce environmental burden.
- **Data Reliability:** Real-time, tamper-proof electronic datasets enhance accuracy and legal defensibility.

Apart from above positive aspects, many challenges also observed which are as follows:

- **Financial Investment:** High initial cost for acquiring electronic equipment (laptops, biometric devices, etc.), though offset long-term.
- **Infrastructure Dependence:** Reliance on internet and electronic systems; contingency plans for failures are critical.
- **Training Needs:** Comprehensive technical training for polling personnel required for smooth implementation.
- **Scalability:** Managing resources for larger-scale elections could present logistical challenges.
- **Security:** Cybersecurity measures must be robust to protect electronic systems and data.

Future Prospects

- **Legal Compliance:** The system operates without legal hindrances, paving the way for future reforms.
- **Scalable Model:** Successful pilots in Gram Panchayats Ratua Ratanpur and Atraila-11 demonstrate potential for broader implementation.
- **Transparency in Results:** Real-time publication of voter data and booth-level results enhances credibility among stakeholders.

The paperless polling booth system is not limited to being paperless. In this process, the polling personnel are directly present at the booth. Now the polling personnel will not be distributed materials at the district level, the polling parties will not have to report at the district level. There will be no need to acquire such a no. of buses for the election, and there will be no need to arrange such a huge tents etc. The number of polling personnel will reduce up to 50 to 60 percent,

the time taken by the polling personnel will be reduced to less than half, and the political parties will be able to get all the information directly from the website on a real-time basis.

Forms 15-1 etc. will be sent in real-time through online means. The apprehensions arising on the voting percentage and other subjects will be zero. The court cases will also remain low and those which remain will be able to be disposed of in the shortest possible time.

One lakh laptops will be purchased for this process in Madhya Pradesh local elections. No additional amount will be demanded from the government for this. These will be purchased from the savings made in this process. After use, these laptops will be handed over to the government to be distributed to meritorious students.

6. Conclusion

The Integrated Polling Booth Management System streamlines election process for efficient management. By digitizing voter identification and providing access to real-time information of voter turnout, polling percentages, and queue updates through dashboards ensures transparency. Material management has been digitalized, reducing manual effort and errors in the distribution and return of polling materials. The electronic submission of 26 forms significantly improves accuracy and efficiency. Thus, by embracing digital interventions, IPBMS ensures smooth operations, may lower costs in long run, and enhances voter experience, making elections more transparent, accessible and reliable. This initiative will bring about a radical change in the election process.

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