



Push Buttons and Paper

Comparing manual and automated elections

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As countries seek to increase election participation, credibility, transparency and voter access, technology continues to be the most valuable tool for success. Technology is literally responsible for improvements in governing, banking, transportation, entertainment and healthcare. But the election process – casting and counting ballots – remains an outlier.

Over the last 30-plus years the use of election technology has grown in fits and starts. Of the 3.1 billion voters worldwide in 2018, approximately 1.1 billion (35.5%) voted on automated systems. But the body of evidence shows hesitancy about adopting election technology – particularly voting machines – is unwarranted. Election automation has proven itself faster, more accurate, more convenient, more auditable and, yes, more secure than manual elections. The claims against electronic voting systems and voting machines are typically either misperceptions based on old or inaccurate information, or disinformation funded by losing candidates or by rogue nations for political gain.

The Problem with Paper

Elections using only paper ballots have a well-documented history of problems. Voters commonly mismatch or incompletely mark choices, use the wrong mark (a checkmark instead of an X, for example), make stray marks, or smear their choices. Paper ballots can also be folded or accidentally torn. If the marks are unclear, election officials must make subjective decisions about the voter's intent. The decision could be wrong or otherwise spoil the ballot.

From ballot printing, to delivery, to transporting votes to counting facilities, there are countless opportunities for criminal tampering with paper ballots. Paper is easy to alter by marking or misplacing at any stage of the election. Paper ballots can be “hacked” with nothing more than a pen or pencil by marking an extra choice in a race that only allows a single selection.

The 2019 general election in Malawi – a manual election – was nullified by the Constitutional Court because many results were changed using simple correction fluid. Duplicate, unverified, and unsigned results forms were also found.^{1 2}

An OSCE report on Armenia's 1998 presidential election said, “there were widespread occurrences of ballot and coupon box stuffing in both rounds of the election.” In addition to stuffing the report cited problems such as coupons without signatures and/or numbers, forged signatures on coupons, and discrepancies in the number of ballots received and signatures on voter lists.³

¹ "Malawi anxiously awaits verdict on alleged presidential election fraud". Radio France Internationale. 3 February 2020. Archived from the original on 3 February 2020.

² "Malawi top court annuls presidential election results". Al Jazeera. Archived from the original on 4 February 2020.

³ OSCE Final Report, Republic of Armenia Presidential Election, March 16 and 30, 1998, issued on 9 April 1998.

The Benefits of Election Technology

There are several incentives for election officials to adopt election automation, including accuracy, auditability (to guarantee authenticity), speed and accessibility. Ultimately all these benefits ensure the franchise reaches as many citizens as possible and ensures the results reflect the will of the voters. An additional benefit – cost efficiency – helps EMBs and their governments meet budget constraints. It allows them to direct financial resources to other critical parts of the election, such as staffing, voter education, and polling place accessibility.

Accuracy, auditability & fraud prevention

Accurate vote counts are the core of democratic systems. Tally accuracy goes hand-in-hand with auditability and fraud prevention in guaranteeing citizens that their will is expressed in election outcomes.

Automated voting systems eradicate human error – the single leading cause of inaccurate vote counts. Studies have shown manual counts typically vary by approximately 2%. On the other hand, test after test and audit after audit have shown that automated counting is consistent and accurate.

A 2018 study by Ansolabehere, Burden, Mayer and Stewart III compared two statewide recounts from Wisconsin – the 2011 Supreme Court election and the 2016 presidential election. Each recount was done both manually and with optical scanners. The study found an error rate of 0.21% in 2011 and 0.59% in 2016. (However, the 2016 error rate dropped to 0.17% when write-in votes were removed from the analysis. This is likely a truer result.) The researchers also found that Election Day counts performed with optical scanners were more accurate than manual counts.

A well-designed automated election is also highly auditable, offering officials and voters evidence of its integrity, before and after the election. This instills confidence in the EMB, the results, and the winning candidate's ability to govern. Automated systems produce multiple copies of every data point both on paper and electronically, creating multiple, rich audit trails. Manual voting, on the other hand, generates few audit trails, with little or no data redundancy.

Speed boosts confidence

Delays in publishing results breed suspicion and mistrust and have historically contributed to public skepticism. Tallying, canvassing, consolidation, results transmission and publication are all faster with technology. Speedier results boost voter confidence and enhances acceptance of electoral outcomes.

Historical evidence shows that delayed results commonly correlate to high numbers of candidate challenges and the likelihood of civil unrest. After voting technology was adopted in the Philippines, results reporting went from weeks or months to just hours. They saw a corresponding drop in civil unrest and candidate challenges.

A corollary benefit is an increase voter satisfaction. Following the 2010 introduction of voting automation to the Philippines, trust in elections climbed from less than 30% (2004) to well over 80% in 2022. Further, a survey by Pulse Asia Research following the 2022 general election found that 90% of Filipinos want to continue using their automated election system in future elections.

Accessibility enhances inclusion

A 2019 survey of voters with disabilities by Southpaw Insights found that 92% want to be able to vote privately and independently, and 89% want to be able to vote in the same way as voters without disabilities.

Electronic voting machines can adapt to the needs of the visually impaired, providing higher contrast, brighter display and larger typefaces. The capacity for built-in functionality such as audio headsets and options for enlarged print on screens facilitates voting for growing populations of disabled and elderly voters.

These machines can be programmed to multiple languages, allowing voters to cast ballots in their native tongue. The VSAP voting machines used in Los Angeles County (USA), for example, offer 13 language options. This not only makes suffrage more widely available, it reduces the likelihood of voter errors and spoiled ballots.

Costs

Election automation can potentially save money by reducing labor costs associated with elections. In the future, online systems may reduce costs associated with setting up and staffing polling locations.

It has, however, proven nearly impossible to determine a comprehensive cost model for executing an election from beginning to end. There are countless variables within each state, province and country, and election implementation varies widely from country to country. There are also “hidden” costs that exist in plain sight. For example, Colombia printed 102 million ballot papers to serve its 32 million voters in 2014. Why? To accommodate voters’ language needs and for regional differences in races and referendums. In France, 40% of the cost to stage the 2012 presidential election was sealing envelopes and transporting election materials.

That said, a study⁴ by Mohr et al found that across 26 US states the average cost per elector was \$9.33 in 2016. But the authors themselves warn that the data collection is far from complete and thus the results should be considered a rough estimate. Canada estimates that the cost of its 2019 federal election was \$500.8 million or approximately \$18.30 for each registered elector.

⁴ “Election Administration Spending in Local Election Jurisdictions,” Mohr, Kropf, Pope, Shepherd, Esterle; July 26, 2018.

There are even fewer studies that breakdown the costs of individual voting channels. However, one study⁵ of local elections in Estonia in 2017 found country's internet voting to be the least costly channel, ranging from €2.17 to 2.26 (US \$2.21 to 2.30). Early voting at polling stations was far-and-away the most expensive: €16.24 to 17.36 (US \$16.54 to 17.69).

Summary

Election technology delivers many benefits to election administrators and voters compared to paper-only voting:

- Accuracy of the count;
- Speed of ballot tabulation;
- Auditability and, thus, transparency;
- Ballot security;
- Voter convenience; and
- Accessibility for all voters, including those away from the region, those with disabilities, and those with language considerations

Introducing election technologies incrementally builds trust and familiarity and enhances opportunities for success and acceptance. By including political parties, civil society, and nongovernmental organizations in the decision-making process, governments can build a wide base of support, knowledge, and familiarity with the proposed technology. Launching a robust public education and awareness campaign is an essential component to inuring support for successfully transitioning to automated elections.