Journal of
INDONESIAN
LEGAL STUDIES

The Constitutionality of E-Voting in the Transformation of Digital Democracy: A Normative Analysis and Implications for Electoral Legitimacy

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Abstract

Digital technology has changed many parts of life, including how democracies and elections work. Electronic voting, or E-Voting, is a new idea that could make elections better and more open for everyone. But Indonesia still has big problems with putting it into practice. These problems involve legal issues, technical difficulties, and whether people trust elections that use technology. This study looks at if E-Voting fits Indonesia's constitution, what the main problems are, and what other countries do that Indonesia could use. This research uses legal analysis, comparing different systems, and looking at ideas about democratic rules. The results show that Indonesia does not have clear rules for digital elections. This causes problems with legal certainty and could lead to arguments about election results. Also, online security risks and

differences in how well people understand technology are important things that could affect how well E-Voting works. The study also found that countries like Estonia, Switzerland, and Brazil have used E-Voting well. They did this by using strong digital checks, strict rules, and independent groups to watch over the process. This study suggests that E-Voting could make Indonesia's democracy more modern. However, it must be put in place slowly, with good rules, and with programs to teach people about digital technology. So, changing laws, making online security better, and teaching voters are important steps. These steps will help make sure that changing to digital elections supports democratic ideas, fair elections, and the power of the people.

KEYWORDS *Electronic Voting, Constitutionality, Digital Elections, Digital Democracy, Electoral Regulation*

Introduction

Digital technology changed many parts of human life, including democratic systems and elections.[1] Digitalization changed how societies interact, get information, and take part in political and government matters. In democracy, technology led to new methods. These include using big data in political campaigns, social media plans based on algorithms, and electronic voting (E-Voting). E-voting offers another choice to traditional ballot systems. Nations with much digitalization started using E-voting to make elections better. This includes improving how well they work, how open they are, and how easy they are to access. For example, Estonia leads in digital elections. It

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[1] Mansoor Ahmed Jumani, Du Yujie, and Muhammad Owais Khan, "The Future of Democracy: Exploring the Potential of Block Chain-Based Digital Voting Systems," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, December 16, 2023, 221–31, https://doi.org/10.32628/CSEIT2390633. *See also* Utang Rosidin, "Penguatan Dewan Kehormatan Penyelenggara Pemilu dalam Penegakan Hukum Kode Etik Penyelenggara Pemilu." *Litigasi* 25, no. 2 (2024): 384-406; Andi Tenri Sapada, and Mohammad Arif. "Use of Artificial Intelligence in General Elections: Comparison of Indonesian and German Regulations." *Contemporary Issues on Indonesian Social Justice and Legal Reform* 1, no. 1 (2025): 21-40.

lets its citizens vote online with security from special codes.[2] This model shows how much digitalization can help make representative democracy stronger.[3]

E-Voting technology has many benefits. However, people still debate its use, especially about security, legal standing, and how it affects election fairness. Digital voting systems bring new problems. These include dangers to computer security, risks of data changes, and losing public control in an election that relies completely on digital tools.[4] In developing nations like Indonesia, moving to digital elections faces technical problems. It also has concerns about whether it fits the constitution and democratic rules in national laws.[5] So, studying if E-Voting is constitutional in a digital democracy is important. This helps decide how much technology can be part of elections. It does this without harming basic democratic ideas like openness, fairness, and the people's power.[6]

E-Voting is a major part of election system changes worldwide. It improves democratic processes, making them simpler and clearer. As technology advances, digital voting methods are often seen as solutions for old election system problems. These problems include slow vote counts, high costs, and human errors in counting ballots. Countries use E-Voting in different ways.

[2]   Fahri Bachmid and Hardianto Djanggih, "The Future of E-Voting Implementation in Indonesian General Election Process: Constitutionality, Benefits and Challenges," *Varia Justicia* 18, no. 1 (April 29, 2022): 34–51, https://doi.org/10.31603/variajusticia.v18i1.6359. *See also* Ayon Diniyanto, "Indonesian's Pillars Democracy: How This Country Survives." *Journal of Indonesian Legal Studies* 1, no. 1 (2017): 105-114.

[3]   A Madhuri et al., "Blockchain Ballotbox: Empowering Democracy Through Tamper-Proof E-Voting," in *3rd International Conference on Innovative Mechanisms for Industry Applications (ICIMIA)*, (Bengaluru, India: IEEE, 2023), 232–39, https://doi.org/10.1109/ICIMIA60377.2023.10425872.

[4]   Husni Abed et al., "Towards Maintaining Confidentiality and Anonymity in Secure Blockchain-Based e-Voting," *Cluster Computing* 27, no. 4 (July 2024): 4635–57, https://doi.org/10.1007/s10586-023-04194-5.

[5]   Bayu Sujadmiko et al., "The Concept of E-Voting Mechanism Based on Law of General Election and Information Security," *Jambe Law Journal* 3, no. 1 (November 29, 2020): 19–36, https://doi.org/10.22437/jlj.3.1.19-36.

[6]   Mohammad Mahrus Ali and Alia Harumdani Widjaja, "Electronic Voting: Towards Indonesian Democratic Constitutional Election," in *Proceedings of the 2nd International Conference of Law, Government and Social Justice (ICOLGAS 2020)* (The 2nd International Conference of Law, Government and Social Justice (ICOLGAS 2020), Purwokerto, Indonesia: Atlantis Press, 2020), https://doi.org/10.2991/assehr.k.201209.280.

Some use electronic voting machines at polling places.[7] Others use internet voting, letting people vote remotely. Estonia and Switzerland have used these systems successfully. They use special codes and digital checks to keep elections safe and honest.[8]

E-Voting has benefits. But it also presents challenges and debates. These issues are technical, legal, and concern political acceptance. Cybersecurity is a primary concern. Digital voting systems face threats such as hacking, data alteration, and outside interference.[9] These could make election results seem unreliable. In developing countries, good technology and people's digital skills are important for E-Voting to succeed. Legally, people still question if E-Voting follows constitutional rules. This is because voting systems must be open, fair, and responsible.[10] Therefore, studying E-Voting rules helps us understand its legal and policy aspects. It also shows how digital voting can build more trust in democracy.

Indonesia is the world's third-largest democracy. It faces many challenges in using an E-Voting system. These challenges relate to its constitution, rules, and election fairness. Indonesia has many voters and different regions. Digital elections could make voting better and easier to reach, especially in far-off areas. These areas often have problems with regular elections. However, using E-Voting brings up basic questions that need answers before it can be used everywhere. The 1945 Constitution and current election rules do not clearly cover electronic voting. This causes arguments about whether it fits with the democratic ideas in the Constitution. Also, protecting citizens' voting rights is

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[7] Namrata Jaiswar et al., "E -Voting System Using Blockchain," *International Journal for Research in Applied Science and Engineering Technology* 11, no. 4 (April 30, 2023): 2090–95, https://doi.org/10.22214/ijraset.2023.50618.

[8] I. Borucki and F. Hartleb, "Debating E-Voting throughout Europe: Constitutional Structures, Parties' Concepts and Europeans' Perceptions," *Frontiers in Political Science* 5 (2023), https://doi.org/10.3389/fpos.2023.982558.

[9] Nils Reimann, *Foreign Electoral Interference: Normative Implications in Light of International Law, Human Rights, and Democratic Theory* (Sui Generis Verlag, 2023), https://doi.org/10.38107/037.

[10] A.B. Fuadi, "Legal Policy for Simultaneous Election Regulations," *Jurnal Konstitusi* 18, no. 3 (2021): 702–23, https://doi.org/10.31078/jk18310. For further cases and context, *see also* Anita Indah Widiastuti, "Multi-Party in Presidential System in Indonesia: What Does Democracy Mean?." *The Indonesian Journal of International Clinical Legal Education* 2, no. 4 (2020): 517-526; Pipih Ludia Karsa, and Ade Marpudin. "Shaping Political Awareness: Legal Politics for First-Time Voters in Banten's Simultaneous Elections." *Probono and Community Service Journal* 3, no. 2 (2024); Kurniawan Akbar, Suartini Suartini, and Suparji Suparji. "Strengthening Dewan Kehormatan Penyelenggara Pemilu RI Institutions in the Indonesian Constitutional System." *Sultan Jurisprudence: Jurnal Riset Ilmu Hukum* 4, no. 2 (2024): 229-246.

important. Digital elections must make sure each vote counts the same and can be checked openly.

E-voting in Indonesia has legal and rule problems. Its acceptance also depends on public trust in the digital election system. Data breaches, low digital understanding, and possible cyber threats cause worry about election security. These problems could change election results if Indonesia uses E-voting without good technology and strict rules. Also, for E-voting to work, the country needs good infrastructure. This includes steady, widespread internet and a safe way to confirm voters. This setup would help stop election fraud.[11] Therefore, a full review of E-voting's legality in Indonesia is needed. This will make sure that digital changes in elections fit democratic ideas, fair elections, and the people's power.

Changing elections to digital systems is more than a technical change. It affects democratic ideas, voting rights, and the power of the people. Digital election systems, like e-voting, make things work better, clearer, and easier to access. This increases how much people take part in politics and makes counting votes faster. However, this big change needs careful thought to see if it fits with the democratic ideas that make elections fair. In a democracy with a constitution, elections are not just office tasks. They are a main way for the people to show their power.[12] So, digital elections must keep things honest, responsible, and fair. They must do this without taking away citizens' political rights.

E-Voting faces many problems, especially in protecting voting rights in a digital system. This system has technical issues and cyber threats. System security matters greatly because data changes or outside interference make election results seem false. This also lowers public trust in democracy.[13] Digital elections need to be clear. Every step of voting and counting must be checked by all involved. In countries like Indonesia, good infrastructure, proper rules, and how well people understand digital tools are big parts of successful digital

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[11] K. S. Evsikov, "On the Issue of Legal Regulation of I-Voting," *Courier of Kutafin Moscow State Law University* (MSAL)), no. 2 (April 28, 2023): 120–28, https://doi.org/10.17803/2311-5998.2023.102.2.120-128.

[12] Marco Deseriis, "Rethinking the Digital Democratic Affordance and Its Impact on Political Representation: Toward a New Framework," *New Media & Society* 23, no. 8 (August 2021): 2452–73, https://doi.org/10.1177/1461444820929678.

[13] Mr. Prashanth Kumar N and Mrs. Renuka Malge, "E-Voting Maintained by Privacy and Transparency with Public Block Chain," *International Journal for Research in Applied Science and Engineering Technology* 10, no. 7 (July 31, 2022): 1463–67, https://doi.org/10.22214/ijraset.2022.45466.

elections.[14] So, a close look at how E-Voting affects rules is needed. This makes sure the new technology does more than update procedures. It helps make democracy stronger and protects every citizen's rights.

E-voting technology offers many ways to improve how elections run and how clear they are. However, it still faces basic problems with its legal, technical, and political acceptance. A main problem with using E-voting is that Indonesia's laws do not clearly state how it fits into the constitution. The current Election Law still uses paper ballots. There are no specific laws for digital elections yet. This lack of clear rules brings up important questions about if E-voting is legal in a democracy. This is especially true for protecting citizens' right to vote and making sure each vote counts equally and can be checked openly.

E-Voting implementation brings technical debates, especially about cybersecurity and election result manipulation. Digital voting systems face hacking, technical failures, and counting errors. These problems directly affect election outcomes. Public trust in digital voting systems also determines election legitimacy. This is true given past data breaches and worries about Indonesia's information technology infrastructure.[15] These issues cause concerns about voter privacy and data security. A full study is needed to assess the challenges of E-Voting implementation. This includes legal, technical, and political parts. Without good regulations, proper infrastructure, and strict oversight, E-Voting could weaken democratic principles in Indonesia.

This study checks if electronic voting fits Indonesia's election system under the constitution. It reviews rules about democracy, voting rights, and public power. In Indonesia, elections do more than pick leaders. They show the public's power, as promised by the constitution. Therefore, any new election method, such as using digital tools, must align with basic democratic ideas and have legal support. This research also examines how electronic voting impacts Indonesia's democracy. It focuses on making election results clear, responsible, and trusted.

This study also considers how electronic voting affects the perceived fairness of elections in Indonesia. Using technology in elections speeds up voting and counting. It also reduces human error that leads to fraud. However, without clear rules and good oversight, digital elections could be manipulated. This could decrease public trust in election results. So, this study points out the

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[14] Sujadmiko et al., "The Concept of E-Voting Mechanism Based on Law of General Election and Information Security."

[15] H. O. Natalina, "Political Legitimacy in the Context o Digital Communication Transformation," *Vasyl Stus Donetsk National University*, no. 3 (2021): 31–35, https://doi.org/10.31558/2519-2949.2021.3.5.

main problems with electronic voting. It then provides policy advice. This advice could help create election rules that fit Indonesia's democratic constitution.[16] The study's results should add to academic knowledge. They should also help policymakers create a technology-based election system that works, follows the law, and gains public acceptance.

Research on E-Voting has made much progress in many fields. However, some areas still need more study. This is true for its constitutionality and effects on Indonesia's election system. Most current studies look at technical parts like cybersecurity, how well it works, and how reliable systems are at stopping election fraud. Some countries have used E-Voting successfully. They use cryptographic security and blockchain technology to make elections more honest. Indonesia cannot use these methods directly. The country must consider its own rules and laws.

There has been little academic talk about if digital elections are lawful in developing countries. Most research looks at developed nations. These nations have good digital systems and people understand technology well. In Indonesia, election digitalization is still in early stages. Full studies are necessary to check if rules are ready. They also need to find out how to use this system. It must not harm openness, election fairness, or voter rights. This study fills a research gap. It gives a legal and rule-based view on E-Voting in Indonesia. It also looks at how digital changes in elections can fit with the constitution. This can help create a democracy that includes more people and is more honest.

Research on E-Voting changes as there is a greater need for election systems that work better, are open, and are easy to use. In Indonesia, studies on if digital elections are constitutional and lawful are few. This calls for research that gives a broader legal view. This study is new because it uses a rule-based approach. It looks closely at how to use the E-Voting system without breaking constitutional democratic rules. Past studies mostly looked at technical and cybersecurity parts. This research focuses on legal analysis. It covers openness, responsibility, and protecting voting rights in a digital election system.

This study is important for academics and public policy. For academics, it adds to studies on constitutional law and digital democracy. It explores legal discussions about E-Voting rules in Indonesia's election system. For practical use, its findings intend to help policymakers. They can use them to create digital election rules. These rules should focus on technical updates, legal clarity, and election lawfulness. This research is not just ideas. It also offers real suggestions

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[16] Bachmid and Djanggih, "The Future of E-Voting Implementation in Indonesian General Election Process."

for building a technology-based election system. This system would fit with democratic rules of fairness, inclusion, and constitutional power.

The Theory of Digital Democracy and the Concept of Electronic Voting in the Context of Modern Elections

In the era of digital transformation, the concept of digital democracy has evolved in response to advancements in information technology that have influenced political participation and governance. Digital democracy refers to the integration of technology into political processes, including elections, in order to enhance accessibility, transparency, and citizen engagement.[17] One of the most significant innovations in this context is E-Voting, which offers a technology-based voting method to replace or complement conventional electoral systems.[18] In modern democratic systems, the use of technology in elections is expected to address various challenges associated with manual voting, such as human errors, logistical inefficiencies, and potential fraud in vote tabulation. [19]

Countries use different ways to do electronic voting. Some have machines at voting places. Others have internet systems where people vote from far away. Estonia was one of the first countries to use internet voting a lot. This happened because it has good digital systems and clear rules for checking voters and keeping data safe. Switzerland uses electronic voting with special security to make sure election results are correct.

However, countries like Indonesia face harder problems with electronic voting. These include unclear laws, a lack of technology, and people not knowing how to use digital tools. So, when studying digital democracy and electronic voting, we need to look at more than just the technical side. We also need to consider the laws and rules. This helps make sure the technology works

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[17] Joshua C. Yang et al., "Designing Digital Voting Systems for Citizens: Achieving Fairness and Legitimacy in Participatory Budgeting," *Digital Government: Research and Practice* 5, no. 3 (September 30, 2024): 1–30, https://doi.org/10.1145/3665332.

[18] Abhishek Subhash Yadav, "E-Voting Using Blockchain Technology," International *Journal of Engineering Research and MIT College of Engineering,* Pune V9, no. 07 (July 14, 2020): IJERTV9IS070183, https://doi.org/10.17577/IJERTV9IS070183.

[19] Wisam Ali Mahmood et al., "Intelligent Gesture-Enhanced Blockchain Voting: A New Era of Secure and Accessible E-Voting," *IEEE Access* 12 (2024): 144055–68, https://doi.org/10.1109/ACCESS.2024.3468338.

without harming openness, responsibility, and the people's power, which are important for a good democracy.

Constitutional democracy principles guide free, fair, and open elections. For technology-based elections, we must keep these principles. This makes sure that digital methods do not harm the core of democracy. This core includes the people's power, fairness in elections, and safeguarding citizens' voting rights.[20] A main idea is equality. This makes sure each vote counts the same, with no unfair treatment. This applies whether the voting system is traditional or digital. Also, openness and transparency are basic to E-Voting systems. Voters must clearly understand how to vote. The system must also allow outside checks and result verification to stop tampering.[21]

Accountability and public trust are central to fair technology-based elections. Without strong oversight and clear rules, digital elections risk system weaknesses and less public trust in results. Countries like Estonia and Switzerland use E-Voting well. They use encryption and blockchain to protect voter data and keep votes safe from change. Indonesia faces problems with E-Voting because it lacks full rules and its digital systems have gaps. These gaps could affect who can vote. So, new election systems must follow democratic rules. This makes the voting process better and builds public trust.

The Implementation of E-Voting in Developing Countries: Regulatory Aspects, Cybersecurity, and Public Trust

Developing countries face many challenges when using E-Voting. These include rules, cybersecurity, and public trust in election systems that use technology.[22] Developed nations have digital systems and clear rules. Many developing countries, however, struggle with legal questions about E-Voting's place in their democracy. Most election rules in these countries still rely on paper voting. Adopting new technology needs big legal changes. This makes

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[20] Simone Chambers, "Deliberative Democracy and the Digital Public Sphere: Asymmetrical Fragmentation as a Political Not a Technological Problem," *Constellations* 30, no. 1 (March 2023): 61–68, https://doi.org/10.1111/1467-8675.12662.

[21] Sunoo Park et al., "Going from Bad to Worse: From Internet Voting to Blockchain Voting," *Journal of Cybersecurity* 7, no. 1 (February 16, 2021): tyaa025, https://doi.org/10.1093/cybsec/tyaa025.

[22] Sunoo Park et al., "Going from Bad to Worse: From Internet Voting to Blockchain Voting," *Journal of Cybersecurity* 7, no. 1 (February 16, 2021): tyaa025, https://doi.org/10.1093/cybsec/tyaa025.

sure the technology fits democratic ideas and protects voting rights. No clear rules can cause legal confusion. This creates chances for election rigging or wrong use of digital voting.[23]

Cybersecurity is also important for E-Voting to succeed. Developing nations often have weaker digital security systems. This makes them more open to cyberattacks, hacking, and data changes. These problems could harm election fairness.[24] Without strong ways to hide information and independent checks, E-Voting could bring more risk of election fraud than traditional voting. Studies show that how well digital election systems work depends on the government's ability to build a safe technology system. This includes strong voter data protection and ways to check voter identity to stop fraud.[25]

Apart from technical and rule issues, public trust matters for E-Voting systems to last. People often doubt technology-based elections. This comes from a lack of openness in voting and counting, and little public knowledge of how digital voting works.[26] Developing nations are still building strong democratic practices. They often hesitate more to use E-Voting. This is especially true if there is not enough public teaching and open oversight.[27] For E-Voting to be adopted well, a full approach is needed. This means changing rules, improving cybersecurity, and using good communication. These steps will help improve digital understanding and build public faith in technology-driven elections.

Indonesia's election system faces big legal and technical problems with E-Voting. Legally, Indonesia's election rules still use a paper-based voting system. This is stated in Law No. 7 of 2017 on General Elections. Digital methods are used for counting votes. But there are no clear laws for electronic voting. No specific rules on E-Voting cause legal arguments about whether technology-

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[23] Sumit Shevtekar and Varad Kalambarkar, "Blockchain Based E-Voting and Electoral Fraud Detection," *International Journal for Research in Applied Science and Engineering Technology* 11, no. 10 (October 31, 2023): 2019–23, https://doi.org/10.22214/ijraset.2023.56370.

[24] Svetlana Morozova, "Features of the Digital Democracy Development in Russian Cities (on the Example of ST Petersburg)," *Political Expertise: POLITEX* 18, no. 4 (2022): 456–69, https://doi.org/10.21638/spbu23.2022.407.

[25] Kelmend Nezha and Nertil Bërdufi, "Exploring the Implications of Social Media and Web 2.0 on Democracy: A Comprehensive Analysis," *Interdisciplinary Journal of Research and Development* 10, no. 2 (July 23, 2023): 60, https://doi.org/10.56345/ijrdv10n208.

[26] Supriyadi Supriyadi, Ronal Ronal, and Yuliana Yuliana, "Studi Perbandingan Skema Enkripsi Homomorfik Dalam Voting System E-Suara," *JSR: Jaringan Sistem Informasi Robotik* 7, no. 1 (April 10, 2023): 61–65, https://doi.org/10.58486/jsr.v7i1.215.

[27] Reydho Trihandika Putra and Kevin Junaedi H Sagala, "E-Voting System for Election with Mobile Based Apps," *International Journal of Research and Applied Technology* 3, no. 1 (June 15, 2023): 69–78, https://doi.org/10.34010/injuratech.v3i1.9953.

based elections are valid. This is especially true for making sure they are open, accountable, and protect voters. Also, Indonesia's election management is split. Different groups like the General Elections Commission (KPU) and the Election Supervisory Body (*Bawaslu*) have separate jobs for watching elections. This complex setup adds more problems to creating a single, legal E-Voting system.

Technically, Indonesia's digital system readiness is a big factor in whether E-Voting is possible. The government has started several digital public service programs. Examples include Digital Identity Cards (IKD) and the Single Identity Number (SIN) system. However, there are still differences in internet access and network stability, especially in far-off areas. Also, cybersecurity is a big problem. Indonesia has had data breaches and cyberattacks on government groups. Without strong ways to hide information and check voter identity, E-Voting could bring risks of data changes and election fraud. These are hard to find, which would hurt election results.[28]

Besides legal and technical problems, social and political factors also affect if E-Voting can be used in the country. Different levels of digital understanding among people could leave some voters out, especially those not familiar with technology. Also, political opposition from important groups, like political parties and community organizations, may stop digital election systems from being used. Public doubt about digital elections could get worse if there is not enough openness in making and testing E-Voting systems. So, before this process can be used well, Indonesia must make strategic changes to election rules, strengthen its digital system, and improve political understanding and public trust. This will make sure that election digitalization is not just a modern step, but a way to strengthen democratic fairness and election honesty.

Analysis of the Constitutionality of E-Voting Based on the Indonesian Legal System and the Principle of Popular Sovereignty

Analyzing E-Voting in Indonesia's legal system requires looking at the principle of popular sovereignty. This principle forms the basis of election rules, as stated in Article 1(2) of the 1945 Constitution. It means the people hold power, and they must use it through democratic processes the Constitution protects. Consequently, any modifications to the electoral system, including the

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28 Bachmid and Djanggih, "The Future of E-Voting Implementation in Indonesian General Election Process."

digitalization of voting, must ensure that citizens' voting rights are upheld in a manner that remains free, direct, general, secret, honest, and fair (*luber dan jurdil*). In this context, the implementation of E-Voting must be assessed against these principles to ensure that digital transformation does not diminish the democratic essence of political participation.

The 1945 Constitution does not directly mention technology-based voting. However, its democratic election rules in Article 22E (1) and (2) require that all voting systems be open, responsible, and protect voting rights. Indonesia's laws lack clear rules for E-Voting. This makes it hard for lawmakers to make sure digital elections follow constitutional standards. For example, the Constitutional Court has often stressed that voting methods must be clear and fair. This makes sure election results truly show what the people want. So, if E-Voting is used, its rules must include strict checks to stop election rigging or wrong use.[29]

E-Voting must also be considered for fairness in elections. This includes access for all voters without unfair treatment. A technology-based election system risks leaving out parts of society. This happens if they have limited access to technology or do not understand online voting. This could go against Article 28D (1) of the UUD 1945. This article gives every citizen the right to fair treatment under law and government. Therefore, before Indonesia uses E-Voting widely, thorough legal changes are needed. These changes would create legal certainty. They would also make sure digital elections follow constitutional principles and democratic values.

A main problem for E-Voting in Indonesia is the lack of rules for digital election processes. Law No. 7 of 2017 on General Elections provides the legal basis for election administration. However, it focuses on manual voting with paper ballots. It does not cover making the voting process digital. Now, technology in Indonesia's elections only handles voter list management and vote counting. KPU Regulation No. 9 of 2018 states this. But, no clear legal framework for E-Voting causes legal uncertainty. This could impact the validity and fairness of technology-based elections if they happen without full regulations.

This lack of rules stops Indonesia from being ready to develop a digital election system. Such a system must align with constitutional democratic principles. Under the nation's legal framework, any new election process must follow Article 22E (1) of the 1945 Constitution. This article says elections must be direct, general, free, secret, honest, and fair. Without clear legal rules, the E-

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[29] Bachmid and Djanggih, "The Future of E-Voting Implementation in Indonesian General Election Process."

Voting system may not provide transparency and accountability. This could cause election disagreements. Also, Constitutional Court decisions in various election cases stress the importance of valid voting methods. These methods keep elections fair. So, stronger legal frameworks are necessary to add E-Voting to the national election system. This prevents conflicts with current legal norms.

For legal changes, existing rules need revision, or new laws must be written. These laws should fully cover the technical and legal parts of digital elections. Such rules should include voter identification methods, data protection for security, and independent checks for transparency and election honesty. Also, matching national rules with international standards is important. Countries that use E-Voting well, like Estonia and Switzerland, have strict legal frameworks. These frameworks cover voter data protection and integrated oversight systems. So, changing election rules for digital elections is not just a technical need. It is a basic requirement to make sure of legal certainty, protect citizens' constitutional rights, and strengthen democratic legitimacy in Indonesia.

Comparative Analysis of the Implementation of the E-Voting Concept: Regulatory Aspects, Infrastructure, and Its Impact on the Legitimacy of the Digital Electoral System

E-voting has been adopted in many countries. Its success depends on clear rules, good technology, and public belief in digital voting. Countries using this system show it works well with solid laws, dependable technology, and high public trust in fair and secure elections. Estonia and Switzerland are good examples of technology-based elections. They have complete rules, strict security, and slowly built public trust. Estonia, a leader in internet voting, built a digital system that lets people vote using national electronic ID cards. Switzerland moved more carefully, bringing in electronic voting slowly at the local level before considering it for the whole country.[30]

However, countries like India and Brazil show that even with good technology, rules and public trust are big problems. India has used Electronic Voting Machines (EVMs) since the early 2000s. Still, people worry about

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[30] Madhuri et al., "Blockchain Ballotbox."

openness and no independent checks on election results. Brazil also started an electronic voting system in 1996. But groups there still doubt the system's reliability and the lack of a clear way to find and stop digital cheating.

This comparison shows how important clear rules, ready technology, and public trust are for digital elections to be seen as fair. Indonesia can learn from these countries. It can create an election system that is quick and safe, follows democratic rules, and is accepted by most people. The table below compares the main things that affect E-voting in these countries.[31]

TABLE 1. Comparison of E-Voting Implementation: Regulation, Infrastructure, and Public Trust

Factor	Country				
	Estonia	Switzerland	India	Brazil	Indonesia (Potential & Challenges)
Regulation	Dedicated legal framework for internet voting, full government support	Strict regulations with gradual trials at the canton level	No explicit regulation, only policies supporting electronic elections	National regulation, but concerns over transparency	No specific regulation for E-Voting, still reliant on manual voting systems
Technological Infrastructure	National electronic ID cards (e-ID), cryptographic security network	Encrypted security system with independent verification	Electronic Voting Machines (EVMs), but lacks blockchain or modern encryption	Fully electronic voting since 1996, but lacks strong independent oversight	Growing digital infrastructure, but lacks voter digital authentication system

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[31] Larin, I. G. "Problem of Election Validity in Remote Electronic Voting." *Juridical Journal of Samara University* 8, no. 1 (June 5, 2022): 104–9. https://doi.org/10.18287/2542-047X-2022-8-1-104-109.

Factor	Country				
	Estonia	Switzerland	India	Brazil	Indonesia (Potential & Challenges)
Security and Transparency	High security, blockchain system, independent audits	High transparency, public monitoring, and audit mechanisms	Vulnerable to manipulation, lacks transparency	Closed system with minimal independent auditing	High data security risks, lacks clear audit mechanisms
Public Trust	High, as the system has been tested in multiple national elections	Mixed, varies by canton, but improving with better auditing	Frequently debated, some political parties reject the electronic system	Skepticism remains among civil society groups due to transparency concerns	Low, distrust in digital voting and concerns over cyber threats
Key Challenges	Potential cyber threats, voter data security	Political resistance from some groups, need for additional regulations	Criticism regarding possible manipulation, limited auditability	Lack of transparency, weak independent auditing mechanisms	No existing regulation, uneven infrastructure readiness, and low public trust

The comparison shows that countries with good rules, strong digital systems, and clear ways of working usually have more public trust in E-Voting. However, countries where election systems do not have independent checks and rules often face public doubt.

For Indonesia, the main problems with using E-Voting are creating full legal rules, improving digital security, and building public trust through openness and independent checks. So, if Indonesia plans to use E-Voting, it needs to start slowly with clear test programs and a solid set of rules. This will make sure digital elections are fair and believable.

Putting E-Voting in place in Indonesia faces basic problems that could stop technology-based election systems from working well and being seen as fair. Three main problems to deal with when using E-Voting are a lack of clear legal protection, cybersecurity dangers, and differences in digital understanding. Right now, the country's election rules do not directly allow electronic voting. This creates legal questions about if such a system is valid under its democracy. Without a clear legal base, using E-Voting could lead to legal fights and make elections seem less fair if there are no complete policies to support it.

Besides legal worries, cybersecurity is a very important part of keeping digital elections honest. Recent data leaks in different government areas show that Indonesia's digital systems are open to cyberattacks. Without good encryption, safe ways to check identity, and independent checks, technology-based elections could be changed. This could make election results seem less real. Also, cyber dangers to election systems could greatly affect how steady democracy is and how much the public trusts elections.

Another big problem is the difference in digital understanding, which is a lasting issue in Indonesian society. Not all voters know enough about digital technology. This creates unequal access for some groups of people, especially those in far-off areas. This goes against the idea of fair elections, which says all citizens must have the same chance to vote. So, before E-Voting can be used widely, election rules need to change. Cybersecurity must get better, and public digital understanding must grow. This will make sure technology-based elections include everyone, are clear, and fit with democratic ideas.

TABLE 2. Comparison Table: Key Challenges in E-Voting Implementation in Indonesia

Challenges	Description	Potential Impact	Required Solutions
Lack of Legal Protection	No specific regulations on E-Voting within Indonesia's legal framework	Legal uncertainty, potential electoral disputes, reduced legitimacy of digital elections	Comprehensive regulatory development, revision of election laws, enhanced legal protection for voter data
Cybersecurity Threats	Vulnerability of digital infrastructure to hacking and voter data manipulation	Risk of cyberattacks affecting election results and public trust	Implementation of strong encryption systems, periodic security audits, and independent oversight mechanisms
Digital Literacy Gap	Variability in public understanding of digital technology, particularly in rural areas	Risk of digital exclusion for certain communities, decreased political participation	Public education programs on digital elections, improved internet access in remote regions

Indonesia has structural challenges. These challenges need many approaches to make a technology-based election system last, be correct, and work well. Indonesia can slowly adopt E-Voting. This requires full regulatory changes, strong cybersecurity, and better digital skills. By fixing these main problems, digital elections can happen in a way that fits democratic rules. This

will make Indonesia's election system more trusted and believable in the digital age.

This study's results are important for how fair and open technology-based elections are. This is especially true for making sure election digitalization follows democratic rules. For election law, E-Voting is seen as fair only if it has clear rules and a voting process that people can check. Without full legal rules, digital election results may not have a solid legal basis. This could cause election arguments and make the elected government seem less fair. So, before E-Voting is used widely, legal changes must happen. These changes will make sure votes made through digital systems are as legally correct as those in normal voting systems.

Beyond legal fairness, clear digital election systems are very important for public trust in election results. In manual voting, observers and representatives can watch directly. E-Voting creates new problems for public access to voting and vote-counting. Without independent checks, systems to track votes that people can verify, and open voter data management, public trust in technology-based elections could drop. Countries like Estonia and Switzerland fixed these problems. They used high-level encryption, blockchain for identity checks, and open monitoring systems for electronic elections.

For Indonesia, this study shows that technology-based elections can only be used if they meet strict legal correctness standards. They also must be fully open, allowing the public to check them. To do this, election management groups, academics, and civil society must actively help. They need to watch the development of E-Voting systems. This will make sure digital elections are not just a technical update. They must also be a democratic tool that makes elections more honest and accountable. So, stronger rules, independent oversight, and public involvement are needed. These steps will make sure digital changes in elections support democratic fairness and public trust in Indonesia's election processes.

Adding to Digital Democracy Theory by Discussing if Electronic Elections are Constitutional

This study adds to the theory of digital democracy. It enriches the discussion about if E-Voting is constitutional in modern legal systems. Digital democracy started because of changes in technology. It uses information and communication technology in elections to make democratic governance more effective, accessible, and clear. A main debate in digital democracy theory is how technology-based election systems can follow constitutional democratic

principles. This means making sure voting rights, clear procedures, and fair election results are protected. This research shows the importance of looking at E-Voting not just for how well it works. But also through a constitutional view. This makes sure digital elections support the people's power and citizens' constitutional rights.

This study also strengthens the discussion on E-Voting's constitutionality. It looks at how digital election rules can fit with basic democratic principles in national laws. Countries like Estonia and Switzerland show that E-Voting works well when there are clear rules, independent checks, and high public trust in digital elections. However, this research also points out that developing countries, like Indonesia, still have legal and technical problems. These problems could affect how fair digital elections are if not handled with good policies. So, this article adds to the theory of digital democracy by stressing that digital elections need good technology, stronger rules, and more political understanding among citizens. This helps keep elections fair and clear.

Also, this study gives a critical view on digital democracy. It suggests a multi-sided way to use E-Voting. This way combines legal, political, and technical analysis. It makes sure that technology-based elections are not just for administrative upgrades. They are also a way to make democracy more open, clear, and accountable. By giving this analysis, the study hopes to improve academic discussion on digital democracy. It addresses problems with legal validity, access, and protecting political rights in the digital age.

The findings of this research matter a lot for constitutional law. They provide an academic basis for making digital election rules that follow constitutional principles. In Indonesia's legal system, elections are the main way to achieve the people's power. This is stated in Article 1(2) of the 1945 Constitution. It says that power belongs to the people and is used through democratic ways. So, any new idea in the election system, like E-Voting, must have a clear legal basis. It must also fit with constitutional principles. This makes sure elections are direct, general, free, secret, honest, and fair.

One main problem in making digital election rules is that Indonesia's legal system has no specific laws for E-Voting. Currently, Law No. 7 of 2017 on General Elections uses a traditional voting system with paper ballots. It does not have rules for digital voting. This research shows the urgent need to change election rules. It stresses the importance of clear ways for checking voters, securing votes with encryption, and independent checks. This ensures clarity and accountability in technology-based elections. Countries like Estonia and Switzerland show that digital elections work well with clear legal rules and strong security systems. These stop manipulation and election fraud. So,

Indonesia should do the same. It needs to make rules that combine new technology with constitutional legal principles.

Also, this study highlights the importance of making national rules fit with international standards for digital elections. In countries that use E-Voting well, digital election rules follow global democratic principles. These are recognized by groups like International IDEA and the election rules set by UNEAD. So, when Indonesia makes digital election rules, it must consider both national constitutional principles and international standards. These standards guarantee clarity, security, and voter protection in technology-based elections. In summary, this study helps constitutional law. It gives an academic framework for designing digital election rules that are democratic, open, and uphold election fairness.[32]

The findings of this study lead to several policy suggestions. They focus on strengthening rules, improving cybersecurity, and increasing voters' digital understanding. This helps keep technology-based elections in Indonesia going and fair. To follow the rule of law and constitutional democracy, clear and complete rules are a basic need for E-Voting. Right now, Indonesia's legal system has no specific rules for this process. This creates legal uncertainty. It could make election results invalid if digital voting happens without a strong legal basis. So, changes in election laws are needed. These changes must set clear rules for voter checks, encrypted vote security, independent audit standards, and how E-Voting systems are managed. These must fit with democratic principles and the rule of law. Also, these rules should match international standards. Examples are the democratic election principles from the International Institute for Democracy and Electoral Assistance (International IDEA) and the United Nations Electoral Assistance Division (UNEAD). This makes sure the nation's digital election system is seen as fair and trustworthy worldwide.

Besides rules, cybersecurity is very important for keeping technology-based elections fair. Cyberattacks on election systems put voter data, public trust, and political stability at risk. So, a full cybersecurity plan must be put in place. This includes advanced encryption, blockchain-based ways to make votes clear, and security checks by independent groups. Countries like Estonia and Switzerland have used these measures well. They make sure votes cast through digital systems stay safe from tampering and can be checked. Indonesia can do something similar. It can encourage cooperation between the government, academics, and private companies. This will develop a strong and flexible cybersecurity framework. It can effectively fight new digital threats.

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[32] Fuadi, A.B. "Legal Policy for Simultaneous Election Regulations." Jurnal Konstitusi 18, no. 3 (2021): 702–23. https://doi.org/10.31078/jk18310.

Also, improving voters' digital understanding is key for technology-based elections to work. Different levels of digital understanding across communities may cause unequal access to voting rights. This is especially true for groups like rural voters and the elderly. To fix this, organized public education programs must be started. These can use various platforms, including digital literacy campaigns, electronic voting simulations, and training for election officials and voters. These efforts will not only make the public familiar with E-Voting systems. They will also let citizens actively help monitor digital election processes. This builds more public trust in the clarity and fairness of technology-based elections. In conclusion, E-Voting will work well in Indonesia if there are good rules, better cybersecurity, and improved digital understanding. These must work together to make sure digital elections have strong fairness, high clarity, and fully follow constitutional democratic principles.

Technical Implementation of E-Voting in the Administration of General Elections in Indonesia

E-Voting in Indonesia greatly affects election bodies. It defines the roles of the General Elections Commission (KPU), the Election Supervisory Body (*Bawaslu*), and other groups. This helps make sure the system works with accountability, openness, and trust. The KPU plans, manages, and runs the E-Voting system. It makes sure voters can use their rights safely and fairly. The KPU must create a dependable way to check voters, an open system for counting votes, and ways to lower risks from cyber and technical threats. The KPU must also work with government groups, schools, and tech companies. This makes sure the digital tools used meet security and democratic rules.

The Bawaslu watches the E-Voting system. It makes sure the system follows rules and stays free from fraud. For digital elections, oversight needs strengthening with forensic tech checks, independent monitoring of voting and counting, and public access to vote checks. Bawaslu must also make sure clear legal rules are in place for solving digital election problems. This way, any issues in the E-Voting process can be handled openly and with accountability.

Other groups, like the Ministry of Communication and Information Technology (Kominfo) and the National Cyber and Encryption Agency (BSSN), also help with tech-based elections. Kominfo provides dependable digital tools and fair internet access, especially in far-off areas. This prevents differences in who can take part in digital elections. BSSN helps with

cybersecurity, protects voter data, and stops cyberattacks on election systems.[33] So, E-Voting in Indonesia depends on groups working together. They must build a system that is both good and accountable by law and democracy. A clear set of rules, a planned way to work together, and better technical and legal skills for election bodies are needed. This makes sure digital elections are more than just a modern process. They also make democracy stronger and increase public trust in the nation's elections.

To handle E-Voting problems in Indonesia, looking at how other countries use tech-based elections helps. Countries like Estonia, Switzerland, and Brazil have used E-Voting well. They offer good ideas Indonesia can use for its election system and rules. Each country has a different way of doing things. These can help Indonesia create a digital voting system that fits its democratic rules.

Estonia's good practice is using digital identity (e-ID) and blockchain to make elections safer and more open. Estonia has put E-Voting into its larger digital government system. This lets voters cast ballots online with high security and checkability. Indonesia could use this model by building a national digital identity system that works with elections. This would make sure each vote is checked safely and protected from changes.

Indonesia can learn from Switzerland about slowly putting in electronic elections and checking risks. Switzerland started E-Voting in steps, doing test projects in different areas before thinking about using it everywhere. This slow approach let the Swiss government and people test the system, find security flaws, and build trust in digital elections. Indonesia could do something similar. It could run controlled test projects in chosen areas before using E-Voting across the country. It would also need independent oversight for openness and accountability.[34]

Brazil offers lessons for managing election tools and tech readiness for digital elections. Brazil was one of the first countries to use a fully electronic voting system since 1996. It has voting machines with good encryption and independent checks. However, Brazil has also had trouble building public trust because it is hard to check votes. If Indonesia uses voting machines for polling place electronic voting, it must make sure the system has open check methods and a way to record votes that can be checked. This will increase public trust in election fairness. Looking at these good practices shows that E-Voting success

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[33] Sujadmiko et al., "The Concept of E-Voting Mechanism Based on Law of General Election and Information Security."

[34] Bachmid and Djanggih, "The Future of E-Voting Implementation in Indonesian General Election Process."

depends on rules, tech security, and public trust in digital elections. By using Estonia's digital identity check, Switzerland's step-by-step plan, and Brazil's secure election tools, Indonesia can build an E-Voting system. This system can be good and modern, as well as legal, open, and accepted by many people. Going forward, Indonesia must focus on a plan that includes everyone. This plan should be based on facts and consider how ready the tools are and how well people understand digital things. This makes sure tech-based elections support democratic rules and the law.

This study finds important parts of E-Voting in Indonesia. It also shows limits that need more study in the future. Digital elections offer good things like being good, easy to use, and open. But big problems with legal rules, cybersecurity, and public trust still stop it from being used widely and for a long time. So, more study is needed to see how digital election systems can be used without harming democratic rules. It also needs to make sure every citizen's voting rights are fully safe.

A main topic for future study is making a more specific and full set of rules for E-Voting. Right now, Indonesia's law does not have clear rules for tech-based elections. So, more studies are needed to create rules for checking voters, safe vote encryption, and independent checks. This will make digital election results more open and fair. Also, comparing countries that have used E-Voting well could give more ideas. It could show how digital election rules can be used while thinking about Indonesia's special legal and social situations.

Besides rules, future study should also look at how to make cybersecurity systems stronger in tech-based elections. Cyber threats to election systems are a serious risk to how fair digital elections are. So, deep studies are needed on using good encryption tech, using blockchain for vote openness, and ways to lower cyber threats that could stop electronic voting. More study could also look at how election security systems could work with independent oversight. This would make sure outside meddling does not change election results.

Also, making voters more digitally skilled is another important area for more study. In a democracy that includes everyone, all citizens must know enough about tech-based elections. This makes sure they can freely use their voting rights without problems. So, future studies could focus on creating digital education plans for voters. This would involve groups like government bodies, schools, and community groups. This makes sure E-Voting works and is accepted by many people.

Future study on E-Voting should use many different approaches. It should include legal, technical, and social parts. This makes sure digital elections support democratic values, election fairness, and the power of the people. By doing more study in this area, Indonesia can build a tech-based election system.

This system can be modern and good, legally strong, very open, and trusted by many people.

This study's findings have wide effects on legal, social, and ethical parts of E-Voting in Indonesia. From a legal view, digital elections need changes to rules. This makes sure legal certainty, the safety of voting rights, and openness in tech-based election processes. Without clear and full legal rules, the E-Voting system could cause legal confusion and election fights. This is especially true for vote truth, voter check methods, and checkable vote-counting rules.[35] So, from a legal view, E-Voting needs strong rules, open oversight, and legal steps that protect citizens' political rights.

From a social view, E-Voting could create differences in who can vote. This is especially true for groups with little access to technology and low digital skills. Digital elections may help city people with easy tech access take part more. But it could also make election differences worse for groups in far-off areas or groups with low digital skills. So, digital education plans and better tech tools must be part of E-Voting rules. This makes sure every citizen can take part in elections fairly, with everyone included, and without tech problems.

Also, from an ethical view, E-Voting brings new problems. These are about secret ballots, protecting voter data, and possible changes to tech-based election systems. A main rule of democracy is making sure voters' choices stay private and free from outside influences. But in digital election systems, there are risks of outside watching, using voter data, and cyber threats. These could harm election fairness. So, E-Voting must have strong security methods. These include vote encryption, independent and open checks, and checking systems. These make sure each vote is counted correctly and fairly.

Overall, using E-Voting in Indonesia needs tech readiness and good rules. It also needs careful thought about its social and ethical effects. This makes sure tech-based elections stay inclusive, democratic, and trustworthy. To do this, a whole and multi-part approach is needed. In this, legal, social, and ethical thoughts are balanced when making digital election rules. By doing this, E-Voting can be more than just a way to update administration. It can also make democracy stronger, increase openness, and keep election fairness in the digital age.

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[35] D. M. Khudoley and Perm State University, "Electronic Voting In Russia And Abroad," Вестник Пермского Университета. Юридические Науки, no. 57 (2022): 476–503, https://doi.org/10.17072/1995-4190-2022-57-476-503.

[35] Abed et al., "Towards Maintaining Confidentiality and Anonymity in Secure Blockchain-Based e-Voting."

Conclusion

This study has examined the implementation of electronic voting (e-voting) in Indonesia, highlighting the legal, technical, and social dimensions that both challenge and support its adoption. Legally, Indonesia currently lacks a comprehensive and coherent regulatory framework that ensures the validity, accountability, and transparency of technology-based elections. From a constitutional perspective, any digital electoral system must adhere to the principles of public authority, openness, and voter protection as enshrined in the 1945 Constitution. The study also emphasizes that cybersecurity is a critical factor in preserving electoral integrity. Threats such as cyberattacks can compromise vote confidentiality, fairness, and procedural transparency. Socially, disparities in digital literacy and technological infrastructure across regions pose significant obstacles, potentially leading to unequal access and voter disenfranchisement. An inclusive implementation strategy—incorporating digital education, infrastructure development, and mechanisms for public trust and oversight—is therefore essential.

Drawing on international experiences from countries such as Estonia, Switzerland, and Brazil, the study underscores that successful e-voting systems require a phased and adaptive approach. These models demonstrate the importance of secure digital identity verification, blockchain-based safeguards, and independent auditing to ensure electoral transparency and public confidence. For Indonesia, a holistic strategy that goes beyond technological solutions is necessary. Regulatory clarity, cybersecurity resilience, and informed voter participation must be integrated within a democratic governance framework. Institutions such as the General Elections Commission (KPU), the Election Supervisory Body (*Bawaslu*), and the Ministry of Communication and Information Technology (*Kominfo*) should collaborate to design a robust legal and operational structure. Future research should explore the feasibility of pilot e-voting programs in controlled environments, assess public attitudes towards digital voting, and examine the scalability of secure technologies in diverse socio-political contexts. Ultimately, e-voting in Indonesia should be viewed not merely as a tool for administrative modernization, but as a transformative opportunity to strengthen democratic participation, transparency, and institutional trust.

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Acknowledgment

Funding Information

Conflicting Interest Statement

The author(s) declare that there are no conflicts of interest related to the subject matter of this article. This research was conducted solely for academic purposes and to contribute to the development of legal knowledge. As a legal researcher, my analysis and conclusions are based on an objective and scholarly examination of the topic, without any personal, financial, or professional interests that could influence the findings presented in this study.

Generative AI Statement

None

Notification

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