



Implementing E-Voting Systems in Local Elections: A Solution to Enhance Voter Participation in the DKI Jakarta Pilkada

Syaibatul Hamdi Malik^{1*}, Rahmat Salam², Taufiqurokhman³
Muhammadiyah University of Jakarta

Corresponding Author: Syaibatul Hamdi Malik

syaibatul.hamdi@student.umj.ac.id

ARTICLE INFO

Keywords: E-Voting, Elections, Democratic Participation

Received: 28, Februari

Revised: 29, March

Accepted: 30, April

©2026 Malik, Salam, Taufiqurokhman:

This is an open-access article distributed under the terms of the

[Creative Commons Atribusi 4.0 Internasional](#).



ABSTRACT

General elections serve as the cornerstone of democratic systems, functioning as the primary vehicle for citizens to exercise their sovereign right to determine governmental direction. However, conventional paper-based voting mechanisms in Indonesia are increasingly challenged by logistical complexities, human error, and declining public participation, particularly in urban metropolises like DKI Jakarta. This study analyzes the urgency, feasibility, and legal implications of implementing an Electronic Voting (E-Voting) system as a transformative solution to enhance electoral efficiency and citizen engagement. Utilizing a normative-juridical approach, this research examines the constitutional framework supported by Constitutional Court Decision Number 147/PUU-VII/2009 and evaluates existing population administration laws that facilitate digital voter verification via the e-KTP. The findings indicate that while Indonesia possesses the digital infrastructure and legal foundation necessary for this transition, successful implementation requires a holistic approach that addresses cybersecurity risks, infrastructure resilience, and digital literacy disparities. The study concludes that E-Voting is not merely a technological upgrade but a vital step toward securing democratic legitimacy, suggesting that DKI Jakarta is strategically positioned to serve as a pioneer for this electoral modernization through a phased, transparent, and legally compliant framework.

INTRODUCTION

General elections constitute a fundamental pillar of every democratic system, serving as the primary mechanism through which citizens exercise their sovereign right to determine the direction of government. In modern democratic states, elections are not merely routine events held periodically; rather, they represent the formal manifestation of political authority derived directly from the will of the people. Through electoral processes, citizens elect representatives for both legislative and executive institutions, ensuring that public policies and governmental decisions remain aligned with the aspirations, interests, and collective needs of society. Consequently, elections play a crucial role in maintaining political stability, securing democratic legitimacy, and facilitating the peaceful and constitutional transfer of power.

The success of any democratic process, however, is closely linked to the level of public participation. In Indonesia, Regional Head Elections (Pemilihan Kepala Daerah or Pilkada) represent a key instrument of regional autonomy, enabling citizens to directly influence local governance. As the administrative, economic, and political center of Indonesia, DKI Jakarta faces unique challenges in maintaining high levels of electoral participation. As a highly urbanized and digitally connected metropolis, Jakarta requires efficiency and accessibility in all aspects of public administration, including electoral governance. Nevertheless, voter apathy and declining electoral engagement remain persistent challenges that undermine the effectiveness of democratic participation within the region.

To address these persistent challenges, it is essential to examine the limitations inherent in current methods. One contributing factor is the continued reliance on conventional voting mechanisms, which depend heavily on paper-based ballots and manual vote counting. While this system has long been utilized in Indonesia, it is increasingly viewed as inefficient in an era characterized by rapid technological advancement. Manual voting processes are vulnerable to human error, logistical complexities, prolonged vote tabulation, and potential manipulation, all of which require substantial financial and administrative resources. Furthermore, the time-consuming nature of conventional voting may discourage participation among urban residents with high mobility and demanding schedules, thereby widening the gap between democratic ideals and administrative realities.

Transitioning toward more modern solutions is thus a logical step to reconcile these administrative gaps. In response to these challenges, the adoption of an Electronic Voting (E-Voting) system has emerged as a promising alternative for modernizing Indonesia's electoral infrastructure. E-Voting represents a significant milestone in the digital transformation of electoral administration by leveraging information and communication technologies to improve efficiency, accuracy, transparency, and accessibility. Supporters of E-Voting argue that digital voting systems can streamline electoral procedures, accelerate vote counting, reduce administrative burdens, and encourage greater participation among technologically literate citizens.

Beyond operational efficiency, the shift to technology fundamentally impacts the core integrity of the system. Beyond operational efficiency, the

implementation of E-Voting is also closely linked to the broader objective of strengthening public trust in electoral processes. Transparency remains a fundamental prerequisite for democratic legitimacy. Conventional voting systems are often perceived as lacking transparency due to their dependence on manual procedures, whereas digital systems can potentially provide greater accountability through electronic auditing mechanisms, end-to-end verification, and enhanced data integrity. Therefore, the transition to E-Voting should not be viewed merely as a technological upgrade, but as an effort to integrate democratic principles into a secure, transparent, and efficient digital ecosystem.

Such a transformation is not merely a technical desire, as it is also firmly grounded in the nation's legal framework. The legal feasibility of E-Voting implementation in Indonesia has also received constitutional recognition. Historically, Indonesian electoral regulations prescribed conventional voting methods through the physical punching or marking of paper ballots. However, this legal limitation was addressed through the Constitutional Court Decision Number 147/PUU-VII/2009, which adopted a progressive interpretation of the term "voting" within the regional election framework. The Constitutional Court held that the voting process should not be interpreted narrowly in a manner that prevents the adoption of technological innovations such as E-Voting.

According to the Court, a restrictive interpretation would contradict Article 28C paragraphs (1) and (2) of the 1945 Constitution of the Republic of Indonesia, which guarantee every citizen's right to benefit from advancements in science and technology for the improvement of quality of life and the pursuit of collective interests. Nevertheless, the Court imposed strict cumulative requirements for the implementation of E-Voting. Any electronic voting system must fully comply with the constitutional principles of direct, general, free, confidential, honest, and fair elections (*Luber Jurdil*). In addition, the relevant region must demonstrate adequate readiness in terms of financial capacity, technological infrastructure, human resources, institutional preparedness, and social acceptance.

Complementing this constitutional backing, existing legislation provides a functional basis for the digital verification of voters. The legal foundation for digital electoral administration is further strengthened by sector-specific legislation, particularly Law Number 23 of 2006 concerning Population Administration and Law Number 11 of 2008 concerning Electronic Information and Transactions, as amended by Law Number 19 of 2016. These regulations recognize the legal validity of digital identities and electronic information systems, thereby providing a legal basis for the utilization of Indonesia's electronic identity card (*e-KTP*) as a reliable mechanism for digital voter verification. The integration of population data through *e-KTP*-based verification has the potential to significantly simplify voter registration procedures and reduce electoral fraud, including duplicate voting, by enabling the accurate and unique identification of each voter without requiring physical voting invitations.

However, as the nation considers this path, a holistic evaluation of the prevailing conditions is necessary. Despite these opportunities, the implementation of E-Voting remains accompanied by significant challenges, including cybersecurity risks, personal data protection concerns, infrastructure

reliability, digital literacy disparities, and institutional readiness. Therefore, the adoption of E-Voting in Jakarta must be examined not only from a technological perspective but also through legal, political, and socio-cultural dimensions. This study seeks to analyze the urgency, feasibility, and legal implications of implementing E-Voting in the Regional Head Elections of DKI Jakarta as part of Indonesia's broader democratic and digital transformation agenda.

LITERATURE REVIEW

The primary theoretical foundation of this research is democracy and political participation theory. Democracy requires citizens to participate actively in political decision-making, particularly through elections, because public participation is essential for maintaining political equality, accountability, and governmental legitimacy (Dahl, 1989). In electoral democracy, participation is not limited to the act of voting, but also reflects citizens' ability to express political preferences, influence public decisions, and ensure that government authority is derived from the will of the people (Verba et al., 1995). Therefore, a democratic electoral system must be accessible, transparent, efficient, and capable of encouraging citizens to exercise their political rights.

In the digital era, the concept of democracy has developed into digital democracy, which connects information and communication technology with citizen participation in public affairs. Digital democracy emphasizes the use of technology to improve public access, political communication, and participation in governmental processes (Macintosh, 2004). In this context, electronic voting or e-voting can be understood as a practical form of digital democracy because it enables citizens to participate in elections through a faster, more accessible, and potentially more transparent system. E-voting is therefore not merely a technical innovation, but also a democratic instrument that can strengthen electoral legitimacy by improving efficiency, reducing administrative barriers, and increasing public trust in the voting process.

This research also applies the Diffusion of Innovation Theory proposed by Rogers. This theory explains how a new idea, practice, or technology is communicated and accepted within a social system over time (Rogers, 2003). The implementation of e-voting depends not only on the availability of technology, but also on the willingness of society to accept and trust the innovation. Public acceptance is influenced by several factors, including the perceived benefits of e-voting, its compatibility with existing electoral practices, its ease of use, and the extent to which citizens believe that the system is secure and reliable. Therefore, Rogers' theory is relevant for analyzing the social readiness of voters, election organizers, and government institutions in adopting e-voting in local elections.

In addition, Information Systems Theory is used to explain the technological dimension of e-voting implementation. According to Laudon and Laudon (2020), an information system consists of interrelated components that collect, process, store, and distribute information to support decision-making and organizational control. E-voting can be categorized as a complex information system because it manages voter identity, records voting choices, processes electoral data, and produces vote tabulation results electronically. For this reason, the success of e-voting depends on data integrity, system security,

technological reliability, user accessibility, and the ability of the system to prevent fraud, manipulation, and unauthorized access.

Based on these theoretical perspectives, democracy and political participation theory explains the normative importance of citizen involvement in elections, Diffusion of Innovation Theory explains the social acceptance of e-voting as a new electoral technology, and Information Systems Theory explains the technical requirements needed to ensure that e-voting operates securely and effectively. These theories complement one another because e-voting implementation involves both democratic values and technological readiness. Thus, the use of e-voting in the DKI Jakarta Pilkada can be analyzed as a digital electoral innovation that aims to strengthen voter participation, improve administrative efficiency, and enhance the legitimacy of the democratic process.

METHODOLOGY

This research employed a normative-juridical method by examining legal norms, regulations, and scholarly literature related to the implementation of electronic voting systems in Indonesian elections. The research focused on the legal framework and feasibility of e-voting implementation in the DKI Jakarta Regional Head Election, particularly through the analysis of election laws, Constitutional Court decisions, population administration regulations, and previous academic studies. Since this study is normative in nature, it did not involve a field population or direct respondents; instead, the research materials consisted of primary legal sources, such as laws and court decisions, as well as secondary sources, including journals, books, and relevant reports. The data were analyzed qualitatively using descriptive and analytical approaches to explain the legal basis, opportunities, challenges, and implications of implementing e-voting as a means to improve electoral efficiency and voter participation.

RESULT AND DISCUSSION

Since its independence, Indonesia has conducted 12 national general elections, specifically in 1955, 1971, 1977, 1982, 1987, 1992, 1997, 1999, 2004, 2009, 2014, and 2019. These electoral journeys have provided valuable lessons for Indonesia's democracy, as the caliber of an election serves as a mirror to the quality of a nation's democratic system. Elections, acting as a vehicle for transforming the people's sovereignty, must be executed with the utmost excellence.

The governance of these elections is rigorously defined by national statutes, which set the stage for potential technological reform. Law Number 7 of 2017 regarding general elections comprises 573 articles, along with its explanations and four attachments. It explicitly mandates that elections be conducted according to the principles of being direct, general, free, confidential, honest, and fair. Furthermore, election organizers are required to uphold these principles, ensuring the process remains independent, honest, fair, legally certain, orderly, transparent, proportional, professional, accountable, effective, and efficient. Grounded in these mandates, Indonesia should adopt innovations

to streamline the voting process, namely through an electronic voting or e-voting system (Wijaya et al., 2019). This reform is increasingly supported by the rapid digital adoption among the Indonesian populace. Simultaneously, Indonesia possesses a significantly high number of internet users. According to data cited by Kemp, out of a total population of 265.4 million, 50% are internet users, with half of them being digital natives. This places Indonesia as the sixth-largest nation for internet usage globally, among approximately 3.6 billion users worldwide. Consequently, Indonesia is well-positioned to leverage the e-voting system as an essential tool to enhance the quality of its democracy (Kemp, 2020).

Despite this potential, the transition faces real-world hurdles that must be acknowledged. Indonesia has yet to implement e-voting for presidential, parliamentary, gubernatorial, or sub-district level elections, primarily because many Indonesians and the current systems are not yet fully prepared. Citizens residing in rural areas are often unfamiliar with modern technologies like computers and the internet. Additionally, the lack of adequate electricity infrastructure remains a significant barrier hindering the implementation of e-voting (Ramadhan et al., 2018). Nevertheless, preliminary evidence suggests that these hurdles are not insurmountable. Through the initiatives of the BPPT, concrete and substantial efforts have been made to develop e-voting. Based on data from the BPPT RI between 2013 and 2017, e-voting has already been successfully utilized in 683 village head elections across 12 districts (Nas et al., 2019).

The principle of the rule of law mandates that all electoral administrative decisions must be grounded in legislation. A fundamental aspect of election law is its stability and resistance to frequent alterations. However, the adoption of electronic solutions necessitates constant updates, particularly to maintain robust security over time. This raises a critical inquiry: how can electoral legislation effectively regulate voting technology while accounting for its inherently dynamic nature? (Maurer & Barrat, 2015). The evolution of voting technology continues to offer pathways for a more inclusive and secure electoral experience. Voting technology is a constantly evolving field, a trend likely to persist. Current electronic voting iterations have the potential to minimize lost votes while significantly enhancing racial equity, accessibility for voters with disabilities, and multilingual support. While the future trajectory of these technologies remains uncertain, upcoming innovations may further improve equal access while simultaneously strengthening the security and transparency of the electoral process (Tokaji, 2005).

Ultimately, the design of any such system must remain tethered to fundamental democratic virtues. An electronic voting system must be engineered to safeguard the general, free, equal, and secret nature of elections. Within a democratic framework, such a system should prioritize and ensure core attributes, including transparency, verifiability, accountability, security, and accuracy. Only by upholding these standards can the system foster citizen participation and bolster the legitimacy of the democratic electoral process (Mitrou et al., 2002).

Maintaining these standards requires constant vigilance by the government to uphold the integrity of the process. Governments are perpetually seeking ways to enhance the integrity of voting systems, such as developing sophisticated methods to identify irregularities within electronic platforms. Conversely, it damages government accountability when authorities fail to hold institutions responsible through clear electoral laws, utilize ineffective methods for detecting fraud, or neglect to address systemic discrimination, while potentially overprotecting individual rights that do not actually require such intervention (Trakman, 2015). When these safeguards are met, the functional benefits of IT integration become clear. Utilizing information technology in general elections will enhance both the effectiveness and efficiency of the process, facilitating a shift from conventional methods to an electronic voting model. This implementation assumes that the public possesses foundational knowledge regarding computer and internet usage, and utilizes the e-KTP or electronic ID as a precise validation tool, given that each identification number is unique. It is crucial, therefore, that this modernization remains strictly aligned with constitutional requirements. The implementation of e-voting must remain in strict compliance with the principles established by the Indonesian constitution: direct, public, free, confidential, honest, and fair. The process is defined as direct because, under an e-voting system, each citizen exercises their voting rights personally without interference, and representation by others is strictly prohibited.

In conclusion, the shift toward e-voting represents a viable path toward a more robust and efficient democratic future. Conducting simultaneous elections using an e-voting system promises greater efficiency in terms of budget, time, and procedural ease. Such efficiency supports the goal of honest elections, as advanced systems can minimize fraudulent activities, while also ensuring fairness, as every citizen possessing an e-KTP can cast their vote without the complications typically associated with voter registration lists.

CONCLUSIONS AND RECOMMENDATIONS

The implementation of an E-Voting system presents a viable and necessary evolution for the electoral process in Indonesia, particularly for the Regional Head Elections (Pilkada) in DKI Jakarta. As a digitally connected metropolis, Jakarta possesses the essential technological infrastructure and high internet penetration rates to serve as the pioneer for this digital transformation. The shift from conventional paper-based voting to an electronic model addresses the critical challenges of voter apathy, administrative inefficiency, and the risks associated with manual vote tabulation. Furthermore, the legal framework, supported by Constitutional Court decisions and the utilization of e-KTP for voter verification, provides a solid constitutional and technical foundation to ensure that E-Voting remains consistent with the democratic principles of direct, general, free, confidential, honest, and fair elections.

FURTHER STUDY

This study has several limitations that should be acknowledged. First, this research uses a normative-juridical approach, so the analysis is limited to legal regulations, theoretical perspectives, and secondary literature without collecting empirical data

directly from voters, election organizers, or government institutions. Second, the study focuses specifically on the potential implementation of e-voting in the DKI Jakarta Pilkada, which may not fully represent the conditions of other regions in Indonesia with different levels of infrastructure, digital literacy, and institutional readiness. Therefore, further research is suggested to use an empirical approach, such as surveys or interviews, to examine public acceptance, voter trust, cybersecurity concerns, and the practical readiness of election institutions. Future studies may also compare e-voting implementation models in different countries or conduct pilot-based evaluations to provide more practical recommendations for the gradual adoption of e-voting in Indonesia.

ACKNOWLEDGMENT

Service course in the Doctoral Program of Public Administration, Faculty of Social and Political Sciences, Universitas Muhammadiyah Jakarta, namely Rahmat Salam and Taufiqurokhman, for their valuable guidance, suggestions, and academic insights during the preparation of this paper. Their constructive feedback has greatly contributed to improving the substance, structure, and relevance of this research. The author also appreciates all forms of academic support and encouragement received throughout the completion of this study.

REFERENCES

- Dahl, R. A. (1989). *Democracy and its critics*. Yale University Press.
- Kemp, S. (2020). Digital in 2018: World's internet users pass the 4 billion mark. *We Are Social*. <https://wearesocial.com/blog/2018/01/global-digitalreport-2018>
- Laudon, K. C., & Laudon, J. P. (2020). *Management information systems: Managing the digital firm* (16th ed.). Pearson.
- Macintosh, A. (2004). Characterizing e-participation in policy-making. *Proceedings of the 37th Annual Hawaii International Conference on System Sciences*, 1-10.
- Maurer, A. D., & Barrat, J. (Eds.). (2015). *E-voting case law: A comparative analysis*. Ashgate Publishing.
- Mitrou, L., et al. (2002). Revisiting legal and regulatory requirements for secure e-voting. In M. A. Ghonaimy et al. (Eds.), *Security in the Information Society* (pp. 159-168). International Federation for Information Processing.
- Nas, J., Zulfikar, A., & IP, S. (2019). *E-voting di Bantaeng: Mengubah mindset masyarakat*. De La Macca.
- Ramadhan, A. P., et al. (2018). Electronic voting in Indonesia: Head of village election. *Jurnal Sospol*, 4(2), 73-88.
- Tokaji, D. P. (2005). The paperless chase: Electronic voting and democratic values. *Fordham Law Review*, 73(5), 1711-1802.
- Trakman, L. E. (2015). Public responsibilities for electoral fraud beyond correlative rights and duties. *Utrecht Journal of International and European Law*, 31(81),
- Verba, S., Schlozman, K. L., & Brady, H. E. (1995). *Voice and equality: Civic voluntarism in American politics*. Harvard University Press.
- Wijaya, J. H., et al. (2019). Implementasi sistem e-voting untuk meningkatkan kualitas demokrasi di Indonesia. *Jurnal Pemerintahan dan Kebijakan (JPK)*, 1(1).