



# The Impact of Artificial Intelligence, Ethical Implications and Technologies on the Electoral Process



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## ABSTRACT

The benefits in the use of Artificial Intelligence (AI) in the electoral process are enormous only when AI is used ethically and all stakeholders particularly those vested with the responsibility to conduct elections are ethically upright in their use of AI. The problem this paper seeks to address is how AI can be ethically used to aid the smooth conduct of elections and how can the benefits of AI be harnessed in the electioneering process. The methodology used in both data collection and analysis was expert judgement and systematic review. This paper analysed the various AI tools and techniques that are used to assist in the conduct of credible elections. Also discussed are the various ways that AI can be used negatively to influence voters namely deepfakes, automated bots, data privacy breaches, microtargeting, psychological profiles of voters, voting pattern prediction, and cyberattacks of electronic devices with the intention to rig elections. It is recommended that the ethical use of AI in elections should be advocated, and training of the citizens on the role of AI before, during and after elections and how to handle AI-related threats should be conducted well ahead of elections.

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## INTRODUCTION

Elections are the cornerstone of democracy, providing citizens with the opportunity to choose their leaders and hold them accountable for managing public resources, upholding the rule of law, and representing the people's interests.<sup>1</sup> Generally, elections are meant to be free, fair, transparent and efficient. However, electoral processes are often marred by challenges such as illiteracy, corruption, logical inefficiencies and manipulations, especially in developing regions like in Africa. Thus, such issues undermine public trust in electoral outcomes and weaken democratic governance. In addressing such challenges, there has been a growing interest in the applications of Artificial Intelligence (AI) to improve the electoral process. AI can be explained as the science and engineering of creating intelligent machines and programs that perform human functions using knowledge and reasoning, beyond just mimicking

<sup>1</sup> Chen Yu, "How Will AI Steal Our Elections?," *Center for Open Science*, 2024; AnandKumar Chennupati, "The Threat of Artificial Intelligence to Elections Worldwide: A Review of the 2024 Landscape," *World Journal of Advanced Engineering Technology and Sciences* 12, no. 1 (2024): 29–34.

biological processes.<sup>2</sup> The study conducted by Kane described how Facebook has been used to influence elections through “Facebook to Politics” (FfP) whereby political campaigns leverage the platform's data analytics to create psychological profiles of users.<sup>3</sup> By targeting individuals with personalized advertisements and emotionally charged content, campaigns can subtly manipulate user's opinions and behaviours. Thus, this also leads to the spread of misinformation and divisive content, undermining transparency and fairness in elections.

There are numerous advantages of using AI for electoral processes such as increasing efficiency in voters' registrations and verification through biometric systems, which can help reduce instances of fraud and double voting.<sup>4</sup> AI-driven systems can also improve the accuracy of vote counting by automating the process, which minimize human error, and providing real-time election results, which then lead to the enhancement of transparency and trust in the electoral process. Consequently, many advanced AI tools can assist in securing electoral databases by detecting and preventing cyber threats and ensuring the integrity of voter information and results. Furthermore, AI can analyse vast amounts of data to identify patterns of electoral misconduct, enabling authorities to address irregularities more effectively. As this technology continues to evolve, its role in shaping the future of democracy becomes increasingly important. Therefore, it is essential to understand both the opportunities and challenges AI presents to ensure that it enhances the credibility and fairness of elections rather than eroding democratic principles. Implementing ethical guidelines, robust regulatory frameworks, and public awareness campaigns are crucial for harnessing the full potential of AI while mitigating its risks. While the use of AI in the electioneering process is crucial given technological developments in various sectors, the ethical use of AI is paramount and provides the key to a sustainable application of AI to elections. Ethical use of AI can be viewed as using AI adequately by following the guidelines and principles regarding its fundamental values, adhering to individual and corporate rights, privacy, rules and regulations, non-discrimination, and non-manipulation in all its application to the electioneering processes. AI should not be manipulated either by election officials, or voters and must be applied within the rules guiding the election process. Algorithms controlling the operations of AI must be secured from interference within and outside the domain of its application. The ethical use of AI is the singular factor that can harness the benefits of AI when used for elections otherwise the entire process will be marred by irregularities, cleverly interwoven manipulations of votes and complete overturn of the mandate and will of the electorate because AI can become a vital tool for rigging elections and making the fake becomes the real, the loser becoming the winner. To prevent the will of the people from being stolen in elections, it is important to consider and advocate for the ethical use of AI by providing various data and regulatory frameworks that should be adhered to when using AI for elections.

This paper examines the impact of AI technologies on the electoral process, exploring both its positive contributions and its potential dangers. By drawing on expert judgment and real-world examples, the paper aims to provide a comprehensive analysis of how AI tools can be responsibly deployed in elections. Furthermore, the paper offers recommendations on safeguarding elections from AI-related threats, advocating for ethical practices, regulatory oversight, and public education. The rest of the paper is organized as follows: Section 2 presents the research methodology used in this paper. Section 3 presents the various discussion on AI usage and the ethical application of AI. Section 4 presents the conclusion and future work.

## METHODOLOGY

The method used in developing this paper is the expert judgement method and systematic review which enable the researchers to gather articles from researchers on the elections and AI usage and its impact.<sup>5</sup>

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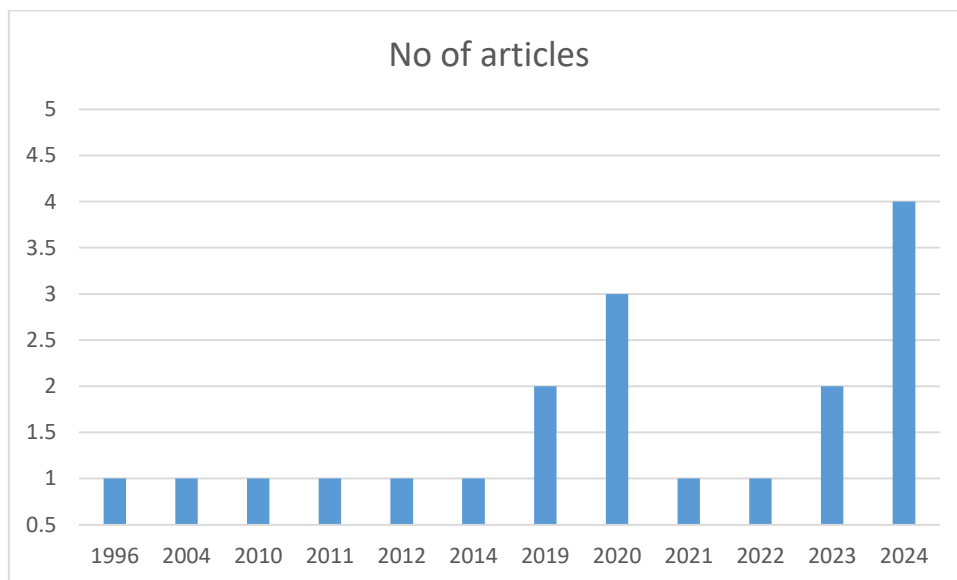
<sup>2</sup> Diego Santos Vieira de Jesus and Adriane Figueirola Buarque de Holanda, “Artificial Intelligence and the 2020 Municipal Elections in Brazil,” *International Journal of Business Administration* 11, no. 5 (2020).

<sup>3</sup> Thomas B Kane, “Artificial Intelligence in Politics: Establishing Ethics,” *IEEE Technology and Society Magazine* 38, no. 1 (2019): 72–80.

<sup>4</sup> Endre Rudi, “Responsiveness to a Digital Age: Voting on Artificial Intelligence in the European Parliament” (The University of Bergen, 2022); Caleb Onah and Chinelo Helen Ogwuche, “Behavioural Manipulation, Regulations and Oversight of Artificial Intelligence (AI) in Political Campaigns and Elections in Nigeria. Poster Paper Presented at Nigerian Psychological Association,” in *National Congress and Scientific Conference. Post-Election Era: Ethnicity, Insecurity and National Development*, 2023, 1–19.

<sup>5</sup> Robert T Hughes, “Expert Judgement as an Estimating Method,” *Information and Software Technology* 38, no. 2 (1996): 67–75.

Expert judgment is used to evaluate the use of AI technologies and how can influence elections. By relying on experts, the study aimed to provide a comprehensive understanding of AI's role in elections, ensuring that the analysis is grounded in practical knowledge and real-world applications. In this case, the researchers define the research goal, the research strategy and terms, keywords, and inclusive and exclusive criteria such as considering studies from at least 2014 and 2024, Applications of AI in the elections process papers written in English, with implementation and results, etc. The following academic databases were scopped for articles published between 2014 and 2024 and were used in this study: ScienceDirect, WJAETS, IEEE Xplore, Google Scholar, ResearchGate, FrontierSin, Taylor & Francis Online, SpringerLink, Scopus and Web of Science. The search terms used were “AI in the electoral process”, “Importance of Democracy & Elections”, “Expert judgement in AI tools”, “AI for verifications of voters”, “Positive/Negative influences of AI in elections”, “Voting and AI”, “Responsible use of AI in elections”, “Deepfakes and elections” combining then with the logical operators “AND” and “OR”. The nature of the search includes conference papers and journal articles, both published in the English language and precisely available in full text. The scoping process generated about 80 papers collected and from those only 19 papers were found very relevant to be considered in this paper after applying various inclusion, exclusion, and quality criteria. As shown in Figure 1, out of 19 papers considered, 6 were Conference proceedings, and others, and 13 were Journal articles.



*Figure 1: Articles distribution according to year of publication*

## DISCUSSION

The integration of Artificial Intelligence (AI) into electoral processes is a quite new perspective but a rapidly growing area of study. It spans various aspects of elections, from improving transparency and security to posing significant ethical and political risks. This literature review will cover the existing technologies used in elections, AI's role across industries, its specific applications in elections, and the ethical and regulatory challenges it presents.

### Importance of Democracy and Elections

Democracy and elections are essential for ensuring that citizens have a voice in government and can influence policies that affect their lives. Through regular elections, citizens can choose their representatives and hold them accountable, thereby fostering a government that is responsive to the needs and desires of the people. This process not only enhances legitimacy but also contributes to political stability by offering a peaceful means to address grievances and prevent conflicts. The study conducted by Adejumbi, critically explores the role and efficacy of elections in African countries, arguing that, despite their theoretical importance in democratic governance, elections in practice often fall short of

democratic ideals.<sup>6</sup> The author contends that while elections are intended to be a key mechanism for leadership succession and political legitimacy, they frequently become marred by issues such as election rigging, violence, and the perpetuation of authoritarian rule under the guise of democratic processes. The article delves into the theoretical framework of democracy and identifies critical gaps in the current electoral systems across Africa.

One major issue is the lack of robust and independent electoral institutions, such as impartial electoral commissions and a non-partisan judiciary, which are necessary for ensuring fair and transparent elections. Additionally, socioeconomic factors like poverty and clientelism undermine the integrity of the electoral process, making elections more about trading votes for material incentives than about genuine political choice. Singh, Karakoç, and Blais, investigated the impact of election outcomes in Germany on individuals' satisfaction with democratic systems, focusing on three main aspects.<sup>7</sup> They explored what constitutes "winning" or "losing" an election, using panel data to assess the influence of election results over time and examining whether satisfaction from regional victories extends to national and supranational levels. Their findings indicated that having one's party in government is crucial for democratic satisfaction, and regional election victories can boost satisfaction beyond the regional level due to the psychological effect of being a "winner". Similarly, a study also investigates how election results impact citizens' satisfaction with democracy at different governance levels.<sup>8</sup>

Analysing data from Canada, Germany, and Spain, the study finds a notable "winner-loser gap" in satisfaction following regional elections, but this gap is less pronounced than that observed in national elections. They highlighted that while regional election outcomes do influence satisfaction, the effect is more significant at the national level. Additionally, they explored how regional governments' influence on daily life affects voters' satisfaction and compared the impact of electoral outcomes across regional and national levels. The study contributes to existing research by providing a systematic comparison of the winner-loser gap in satisfaction with democracy at different electoral levels. It challenges the notion that regional elections are less impactful than national ones, particularly in regions with strong regional identities or significant powers. By using pre- and post-election survey data, the research tests hypotheses about the relative importance of regional versus national electoral outcomes in shaping citizens' satisfaction with their democratic systems. Thus, their findings shows that while both levels generate a winner-loser gap, national elections have a more substantial impact on overall satisfaction with democracy.

### AI Applications in Various Sectors

AI applications span numerous sectors, revolutionizing industries by enhancing efficiency and innovation. A study conducted by Wirtz, Weyerer, and Geyer discusses the growing importance of AI in the public sector, highlighting its potential applications and challenges.<sup>9</sup> It emphasizes the lack of a universally accepted definition of AI and categorizes it into three types: Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI), and Artificial Super Intelligence (ASI). Their study identifies 10 areas where AI can improve public sector efficiency, such as automating processes, predictive analytics, and virtual agents. Despite these benefits, the article points out several challenges, including the difficulty of implementing AI in public systems, the need for legal and regulatory frameworks, ethical concerns like accountability for AI decisions, and the social impact of AI potentially replacing human jobs. In continuation of the application of AI in various public and private sectors, article 12 outlines a platform developed as part of the HosmartAI project to support AI-based applications in smart hospitals, using the Health Level Seven Fast Health Interoperability Resources (HL7 FHIR) standard for semantic interoperability. This platform includes key components like a dashboard for user interaction, a co-creation space for developing AI applications, a marketplace for sharing tools and

<sup>6</sup> Said Adejumbi, "Elections in Africa: A Fading Shadow of Democracy?," *International Political Science Review* 21, no. 1 (2000): 59–73.

<sup>7</sup> Shane Singh, Ekrem Karakoç, and André Blais, "Differentiating Winners: How Elections Affect Satisfaction with Democracy," *Electoral Studies* 31, no. 1 (2012): 201–11.

<sup>8</sup> Jean-François Daoust, Hannah M Ridge, and Philippe Mongrain, "Electoral Outcomes and Satisfaction with Democracy: A Comparison of Regional and National Elections," *Electoral Studies* 84 (2023): 102642.

<sup>9</sup> Bernd W Wirtz, Jan C Weyerer, and Carolin Geyer, "Artificial Intelligence and the Public Sector—Applications and Challenges," *International Journal of Public Administration* 42, no. 7 (2019): 596–615.

datasets, and a benchmarking tool to assess hospital performance. The platform is currently supporting pilots focused on various medical conditions, ensuring that all data is mapped to FHIR resources for consistency and interoperability. The FHIR server is central to managing the data, with a focus on security, user authentication, and compliance with FAIR principles (Findability, Accessibility, Interoperability, Reusability). By employing FHIR, the platform ensures that medical data can be easily integrated, accessed, and reused across different healthcare systems and applications, optimizing the use of AI to enhance medical diagnostics and treatment.

### **Different types of Existing Technologies used for Elections.**

Many technologies are used in elections and other sectors to enhance efficiency, transparency and security.<sup>10</sup> Study 13 addresses the growing threat of deepfake technology, particularly its use in spreading misinformation during elections. Deepfakes leverage advanced AI techniques to create realistic yet fake media, posing significant risks to democratic processes. To combat this, the paper proposes a multi-faceted approach involving platform accountability, community reporting, and government regulation. It emphasizes the need for AI-based detection models like DefakeHop++, alongside policies to educate users, detect fake content, and implement legal frameworks to protect the public from manipulated media during elections. DefakeHop++, a sophisticated deepfake detection model, enhances the identification of manipulated media by expanding feature extraction and employing supervised feature selection. By analyzing more facial landmarks and using advanced pixel interaction techniques, the model improves detection accuracy, helping safeguard elections from misinformation. Their paper emphasizes the importance of this technology in preserving democratic integrity by empowering users and content platforms to recognize and prevent deepfake-driven manipulation. Another study by Moynihan examined the challenges of e-voting systems, particularly Direct Recording Electronic (DRE) machines, through the lens of systems theory.<sup>11</sup> While e-government has successfully leveraged technology for service efficiency, the risks of e-voting systems are far more significant due to the potential for high-impact failures. The article critiques the over-reliance on technology to solve electoral issues, drawing parallels to complex systems theory. The adoption of DRE machines, which gained momentum after the 2000 Florida election controversy, highlights concern about complexity, transparency, and security, which are central to both systems theory and the views of computer security experts.<sup>12</sup> The authors argue that while DREs offer convenience, their complexity introduces risks of unexpected system failures, as outlined by Charles Perrow's natural accident theory. These risks are compounded by the inherent vulnerabilities in software and hardware.

Furthermore, an article written by Smeltzer and Lepawsky<sup>15</sup> focused on exploring the role of information and communication technologies (ICTs) in shaping Malaysia's electoral processes between 1999 and 2008, examining how both mainstream and alternative media framed the political impact of technology.<sup>13</sup> Mainstream outlets like New Straits Times (NST) and Bernama consistently presented ICT usage by the ruling Barisan Nasional (BN) coalition positively, while portraying opposition parties and alternative media's use of technology negatively. On the other hand, alternative media sources such as Malaysiakini and Aliran framed the use of ICTs as empowering tools for democratic engagement, allowing citizens to bypass government-controlled traditional media. Their coverage of the 2008 election emphasized the opposition's skillful use of technology to engage voters, portraying this as a key factor in the BN's unexpected losses. However, the article points out that both mainstream and alternative media often focus on the technological aspect of election outcomes, rather than substantive political alternatives. This technological framing suggests that while ICTs expanded democratic participation, they also narrowed public discourse, shifting attention away from broader political issues toward the use of digital

<sup>10</sup> Emmanouil S Rigas et al., "Semantic Interoperability for an AI-Based Applications Platform for Smart Hospitals Using HL7 FHIR," *Journal of Systems and Software* 215 (2024): 112093; B V Pranay Kumar, Shaheer Ahmed, and Manchala Sadanandam, "Designing a Safe Ecosystem to Prevent Deepfake-Driven Misinformation on Elections," *Digital Society* 3, no. 2 (2024): 1–35.

<sup>11</sup> Donald P Moynihan, "Building Secure Elections: E-voting, Security, and Systems Theory," *Public Administration Review* 64, no. 5 (2004): 515–28.

<sup>12</sup> Moynihan, "Building Secure Elections: E-voting, Security, and Systems Theory."

<sup>13</sup> Sandra Smeltzer and Josh Lepawsky, "Foregrounding Technology over Politics? Media Framings of Federal Elections in Malaysia," *Area* 42, no. 1 (2010): 86–95.

tools in influencing elections. Furthermore, Shayo analyses the use of crowdsourcing and technology in election observation during the 2015 Tanzanian elections.<sup>14</sup>

It focuses on the Coalition on Election Monitoring and Observation in Tanzania (CEMOT), which employed the Magpi application to engage a network of bounded observers. These observers, equipped with smartphones, tablets, and laptops, collected real-time data on electoral incidents, particularly in voter education and campaign rallies. The data was then visually mapped on a crowdsourcing platform. Although this method complemented traditional election observation practices, the crowdsourcing approach was still bound by pre-established networks, which limited its inclusivity. The article suggests that to enhance transparency, unbounded crowdsourcing (inviting the public to participate) should be used, allowing for a broader, more inclusive gathering of election data. The study shows that while bounded crowdsourcing was effective in gathering trustworthy reports, the broader public was not actively engaged in the observation process. This highlights a gap in citizen participation and the potential for unbounded crowdsourcing to capture a more diverse and widespread set of election data, particularly from areas not covered by traditional observers or bounded networks. Additionally, passive crowdsourcing, which involves data mining from social media, was not utilized, suggesting missed opportunities in capturing informal reports shared on platforms like Facebook and Twitter. Further research is needed to explore how unbounded and passive crowdsourcing methods could be integrated into election monitoring frameworks to enhance inclusivity and real-time reporting.

A study conducted by Karya, et.al., proposed the need for a comprehensive big-data integration system for elections in Indonesia, building on the limited use of big data in past elections, such as the 2012 DKI-Jakarta Governor Election and the 2019 Presidential Election<sup>15</sup>. While previous efforts have focused primarily on sentiment analysis and predicting election outcomes via social media data, the authors propose a broader approach that addresses the information and analysis needs of all stakeholders, including election organizers, participants, voters, and observers. The integration of data from various sources in different formats poses a significant challenge, especially in terms of handling large volumes and ensuring accurate analysis and visualization. To meet these challenges, the article proposes a design for big-data integration using a NoSQL database to manage unstructured data and outlines an architecture for analysis, data collection, and processing. The system is intended to streamline the flow of information from sources such as social media, government websites, and news outlets to stakeholders in real time. Moreover, Smith, et.al. 18 focus on advancing paper-based election systems by utilizing digital image analysis and various tools for processing election ballots.<sup>16</sup> The authors present a collection of both real and synthetic ballot images, which are used to examine the challenges of digitizing and analyzing voter marks. They utilize software tools like BallotGen to simulate voter marks on ballots and BallotTool to process real ballots from the 2006 New York election and the 2008 Minnesota election. The experiments cover automated detection of ballot grids, interactive entry of information, and comparison of ground-truth data with automatically extracted parameters. This approach aims to improve the accuracy of ballot reading and voter mark interpretation in paper-based elections. While the article provides valuable insights into the application of technology in paper-based elections, it primarily focuses on the technical aspects and lacks a critical discussion on how these advancements would address real-world electoral challenges. For instance, the reliance on image processing for digitized ballots, though promising, may not fully account for the variability in paper quality, scanning conditions, or human error during ballot marking. Moreover, the article does not sufficiently address potential security concerns or the transparency of automated systems in verifying electoral results. Likewise, Matharu, Mishra, and Chhikara proposed the introduction of a cloud-based Internet Voting (I-Voting) system to enhance India's existing election infrastructure.<sup>17</sup> It outlines how cloud computing can be integrated with current Electronic Voting Machines (EVMs) to create a hybrid voting solution aimed at improving voter

<sup>14</sup> Deodatus Patrick Shayo, "Doing Old Things in a New Way? Technology and Crowdsourced Observation in the 2015 Tanzanian Election," *Scientific African* 11 (2021): e00661.

<sup>15</sup> Gede Karya et al., "Big Data Integration Design for General Election in Indonesia," in *2020 Fifth International Conference on Informatics and Computing (ICIC)* (IEEE, 2020), 1–7.

<sup>16</sup> Elisa H Barney Smith et al., "Towards Improved Paper-Based Election Technology," in *2011 International Conference on Document Analysis and Recognition* (IEEE, 2011), 1255–59.

<sup>17</sup> Gurpreet Singh Matharu, Anju Mishra, and Pallavi Chhikara, "CIEVS: A Cloud-Based Framework to Modernize the Indian Election Voting System," in *2014 IEEE International Conference on Computational Intelligence and Computing Research* (IEEE, 2014), 1–6.

participation. The model, named Cloud-based Integrated Election Voting System (CIEVS), leverages advanced ICT tools, including web services, cloud infrastructure, and mobile technologies, to offer scalability, security, and cost efficiency. It also addresses the need for improved data management and flexibility, providing Indian voters with an online voting option to alleviate issues such as low voter turnout.

While the paper emphasizes the technical advantages of using cloud computing, such as scalability, cost reduction, and enhanced security, it does not deeply explore potential real-world challenges. For example, the security of online voting systems is a critical concern that is not thoroughly addressed. Cybersecurity risks like hacking, data breaches, or voter fraud could undermine trust in their I-Voting system, especially in a large-scale election. Moreover, the system's reliance on internet connectivity might exclude rural or underprivileged voters who lack access to stable internet services.

### **Ethical Considerations and Regulatory Frameworks**

Ethical considerations and regulatory frameworks are pivotal in ensuring the responsible use of AI in electoral processes. The integration of AI in elections presents both opportunities and significant risks, as discussed particularly regarding the potential for manipulation, privacy breaches, and undermining voter trust. One of the primary ethical concerns revolves around the transparency and accountability of AI systems. These tools, such as automated vote counting and voter verification systems, often operate as "black boxes," with limited visibility into how decisions are made. To maintain trust in the electoral process, it is essential that these systems are transparent and explainable. Regulatory frameworks should mandate that AI technologies used in elections be auditable and accountable, allowing both election authorities and the public to scrutinize their decisions. Data privacy and protection represent another major ethical challenge in the use of AI during elections.<sup>18</sup> Many AI systems rely on vast amounts of voter data, including personal information gathered from social media and electoral rolls. This raises concerns about the security and misuse of such data, particularly in the creation of psychological profiles used for targeted political advertising.<sup>19</sup> To prevent misuse, regulatory frameworks must enforce strict data protection standards, ensuring that voter information is handled with care and used ethically. Additionally, voters should have the right to informed consent regarding the use of their data in AI-driven electoral tools. The use of AI to spread disinformation, such as through deepfake videos and AI-powered bots, is another pressing ethical issue. AI can rapidly disseminate false or misleading information, potentially influencing voter behaviour and compromising the integrity of elections. Regulatory frameworks should include provisions to limit the use of AI in the creation and spread of disinformation. At the same time, AI-driven fact-checking tools can play a crucial role in combating false narratives. Ensuring that these tools are widely available and integrated into the electoral process can help mitigate the risks associated with AI-powered disinformation. Fairness and non-discrimination are also key ethical considerations. AI systems used in elections must be designed to avoid bias and ensure that they do not disproportionately affect certain groups of voters. For instance, predictive analytics or voter profiling based on AI could unintentionally reinforce existing societal biases. Regulatory oversight is needed to enforce fairness audits, ensuring that AI systems treat all voter groups equitably and do not perpetuate discrimination.

Finally, effective regulatory oversight and enforcement are essential to ensuring that AI is used ethically in elections. Regulatory bodies must be equipped with the authority to investigate, audit, and penalize any misuse of AI. Clear guidelines on how AI can be deployed and what constitutes unethical practices must be established. A standardized global or regional framework could help harmonize best practices across jurisdictions, safeguarding the integrity of elections worldwide. In addition to regulation, public education on the role and risks of AI in elections is crucial for maintaining voter trust and ensuring that AI enhances, rather than undermines, democratic processes.

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<sup>18</sup> Karya et al., "Big Data Integration Design for General Election in Indonesia."

<sup>19</sup> Karya et al., "Big Data Integration Design for General Election in Indonesia"; Onah and Ogwuche, "Behavioural Manipulation, Regulations and Oversight of Artificial Intelligence (AI) in Political Campaigns and Elections in Nigeria. Poster Paper Presented at Nigerian Psychological Association."

## CONCLUSION

Artificial Intelligence has the potential to revolutionize electoral processes, enhancing efficiency, transparency, and security. From automating voter verification to improving vote counting accuracy, AI tools can significantly contribute to more credible elections. However, these benefits are accompanied by serious ethical risks, such as data privacy violations, disinformation, manipulation of voter behaviour, and potential bias in AI algorithms. To harness the positive potential of AI while mitigating these risks, it is essential to implement robust regulatory frameworks that prioritize transparency, fairness, and accountability. Protecting voter data, combating disinformation, and ensuring that AI systems are free from bias are critical steps toward safeguarding the integrity of elections. By establishing clear ethical guidelines and fostering public education, AI can be responsibly deployed to strengthen democratic processes, rather than undermine them. In this way, AI has the capacity to both improve electoral outcomes and ensure that elections remain free, fair, and transparent in the age of digital transformation. In the future, a trust-based ethical framework for AI applications to elections and the use of blockchain approaches to verify and certify election documents and processes will be developed and implemented.

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