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Social Computing in Digital Democracy: Observations, Challenges, and Solutions

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Abstract: ***In this work, the proposed comprehensive study sheds light on social computing in e-democratic systems. The social computing platforms and the need for digital based democratic process are thoroughly explained in this work. The significant contribution of our study is depicted in the three stages such as observations, challenges and solutions. First, the prominent observations are made to emphasize the favorable impact of social computing on e-democracy. Next, the most significant technological challenges are then outlined. In addition, public participation and collaboration issues are also highlighted that commonly arise in society. Finally, pragmatic solutions are presented to address the challenges and issues. Thus, our proposed study has presented a new promising direction toward the implementation of digital based democratic system through the use of social software.***

Key words: Digital Democracy, Public Collaboration, Public Participation, Social Computing,

I. INTRODUCTION

A. Social Computing

Social computing is the convergence of social behavior and computational systems. It gives an emphasis on how people interact and collaborate in digital settings. It refers to a wide range of technologies and platforms that enable social interaction, communication, and cooperation among users. Social computing is important in today's culture because it allows individuals, groups, and organizations to communicate, collaborate, and engage in digital environments. Furthermore, it improves communication, fosters community building, stimulates creativity, and encourages civic engagement.

Social computing systems offer instant connection and involvement beyond geographical borders. It provides real-time texting, video calls, and social networking. Thus, people can stay in touch with friends, family, coworkers, and communities throughout the world. Online communities and social networks enable like-minded people to interact, share interests, and create connections.

Individuals and teams can collaborate more effectively with social computing solutions, which enable collaborative document editing, project management, and brainstorming. Further, it also enables knowledge sharing, expert exchange, and collaborative problem solving across worldwide networks.

E-democracy platforms use social computing tools to involve citizens in political processes, policy debates, and decision-making. In essence, it also promotes information access, ability to express the self thoughts, and participatation in the government decisions.

B. Social Computing Tools

1) Social Media Platforms
- Definition: Social media platforms enable users to create, share, and interact with content and other users.
- Examples: Facebook, Twitter, Instagram, LinkedIn, TikTok, Reddit.

2) Online Communities and Forums
- Definition: Virtual spaces where individuals with shared interests or goals gather to discuss topics, seek advice, and share information.
- Examples: Reddit communities (subreddits), specialized forums (e.g., Stack Overflow for programming).

3) Collaborative Platforms
- Definition: Tools and platforms that enable multiple users to work together on projects, documents, or tasks in real-time or asynchronously.
- Examples: Google Workspace (formerly G Suite), Microsoft Teams, Slack, Trello, GitHub.

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4) Crowdsourcing and Crowdfunding Platforms
- Definition: Platforms that leverage collective intelligence or contributions from a large group of individuals to solve problems or fund projects.
- Examples: Kickstarter, Indiegogo, Wikipedia (for crowdsourcing knowledge).

5) Social Networking and Professional Networking
- Definition: Platforms that facilitate connections and interactions among individuals for social or professional purposes.
- Examples: LinkedIn (for professional networking), Facebook (for personal connections).

6) Virtual Worlds and Online Gaming Communities
- Definition: Interactive digital environments where users can engage in social activities, games, and virtual economies.
- Examples: Second Life, World of Warcraft, Fortnite

C. e-Democracy

In current context, policies are made by the legislative representatives who elected through the democratic procedures. Later, executive system implements the policies by imposing the laws on the people. Country like India has diversity in population, language, culture, food and beliefs etc. Diversity drastically change from state to state, Sometimes from province to its neighbor province. Due to these factors, most of the time the deployed governments take back the policies when the people started opposing it. Because, the perception of a mass need not be the same as the perception of a group of people.

The deployed governments spend lot of time, money and human effort in order to design the policy and implement it. When the governments take back the policies, it leads to the wastage of resources and alsocreates conflicts in the society. In addition to these, it also creates confusion in the people minds. E-democracy encompasses the features of both representative participation and citizen direct participation. In representative participation, law-making, policy formation, and regulation enforcement are done by the elected officials. In citizen participation, peoples also involve in these duties directly. The essence of e-democracy is the citizen participation in the policy making. In the highly populated countries like India, it is not pragmatic to bring the mass of people under the same roof. Technology enabled opinion sharing can help the government to solve the communication problem. Citizen can share their views, thoughts and opinions through the technical platforms. Then, government can do the crowd sourced analysis by reviewing the comments. Later, it can take suitable decision by considering the true facts and practical implications. Since there is no citizen involvement in the law making or policy making, peoples show the lack of interest on policy formation and also many do not observe and understand the parliamentary proceedings. E-democracy not only promotes the citizen participation and also empowers the citizens. E democracy sheds the light on the pulse of the society. But, there are some challenges to incorporate e- democratic procedures. The first major challenge is digital literacy. Hence, a portion of the society may feel difficult to involve in civic interaction based democratic procedures. The second challenge is the lack of knowledge in the laws, policies and legislative matters. The third challenge is the lack of resources (i.e. Internet) in the remote places. The fourth challenge is there may be chances some peoples to be biased in their opinion sharing. The last key challenge is the effective problem solving tool is essential to do the crowd source analysis. In the current era, the internet and social networking platforms are dominating the human daily life. Social media platforms have emerged as tools of interaction, particularly among younger individuals. Consequently, digital democracy motivates the younger community to involve in political processes and policy decisions. Also, it encourages public debate, and boosts participation of younger generations in decision-making processes through websites, emails, and other electronic communication channels. These are all factors stimulates the younger peoples to actively participate in electoral voting processes.

II. RELATED WORK

In the contemporary literature, a few research papers and studies that focus on social computing in e-democracy. The below mentioned research authors have provided the insights into various aspects of social computing in e-democracy. Also, they have contributed that how digital technologies impact democratic processes, civic engagement, and political communication in contemporary societies. Andrew Chadwick et al [1] examine how social media platforms influence political engagement and participation, including implications for e-democracy. David Schlosberg et al [2] explore how social media can facilitate public deliberation and participation in e-rulemaking processes, focusing on environmental issues. José van Dijck et al [3] critically examine the role of social media in contemporary democracy, discussing both opportunities and challenges. Lance Bennett et al [4] explore the transformative potential of digital media, including social computing, for enhancing democratic processes and citizenship. Ines Mergel et al [5] explore how social media can be utilized in public administration to enhance citizen engagement and participatory governance.

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Philip N. Howard et al [6] discusses the impact of social media on democracy, examining issues of transparency, participation, and governance reform. Shannon C. McGregor et al [7] analyzes the role of social media platforms in political communication during the 2020 U.S. presidential election, focusing on user engagement and information dissemination. Joshua A. Tucker et al [8] investigates how digital media, including social computing, shape political behavior, opinion formation, and democratic processes globally.

Todd Davies et al [9] examine the role of online platforms in facilitating deliberative democracy, assessing their impact on decision-making processes and policy outcomes. Philip N. Howard et al [10] explores how social media platforms were used during the Arab Spring uprisings, analyzing their impact on political mobilization and regime change. Andreas Jungherr et al [11] assess the democratizing potential of major social media platforms, examining their influence on political participation and engagement.

III. PROPOSED STUDY

A. Observations

1) Citizen Participation

Social computing has had a substantial impact on citizen engagement by enabling new platforms for participation, collaboration, and information distribution. Social computing platforms like social media, forums, and online communities have made civic involvement more accessible. Citizens can simply express their ideas, provide comments, and participate in debates about issues affecting their communities. Social computing supports online groups focused on civic involvement. Online communities make collaboration, knowledge sharing, and network development easier, allowing people to rally around similar causes and strengthen civic bonds and trust.

Social computing has made public participation more inclusive, transparent, and interactive. Governments and organizations may improve e-democracy by empowering citizens to actively participate in governance and decision-making processes through effective use of technology. Further, social computing crosses geographical barriers, allowing for worldwide solidarity and collaboration on common civic challenges. Citizens all across the world may connect, share best practices, and support one another's efforts to promote social justice, environmental sustainability, and human rights.

2) Access to information, Transparency and Accountability

Social computing enhances transparency and accountability within e-democracy by promoting open communication, enabling citizen monitoring and reporting, supporting open data initiatives, and facilitating public scrutiny of government actions. By utilizing social computing platforms, governments can increase transparency by sharing information about policies, decisions, and governance processes. Citizens can make authorities accountable by accessing and scrutinizing public information.

Social computing promotes open data projects, in which governments make datasets available for public scrutiny and analysis. This technique fosters transparency by allowing researchers, journalists, and people to analyse government data, discover trends, and track performance measures. Further, it enables citizen journalists and activists to discover and publicize topics. Citizens can use social media platforms and online blogs to post investigative reports, videos, and testimony that reveal cases of misconduct or mismanagement. Thus, it promotes the transparency and encouraging corrective action.

Social computing supports live streaming and internet broadcasting of government meetings, legislative sessions, and public hearings. Citizens can participate electronically, observe decision-making processes in real time, and access archived recordings to promote transparency and accountability. Furthermore, it allows advocacy groups, civil society organizations, and grassroots movements to create public accountability campaigns. These campaigns use social media hashtags, online petitions, and viral content to raise awareness of governance issues. Also, these online campaigns mobilize the public support, and put pressure on authorities to resolve concerns in a transparent manner.

3) Policy making, Feedback and Evaluation

Social computing enables crowdsourcing projects, in which governments can focus on collective intelligence of citizens to develop novel policy ideas and solutions. Online platforms enable brainstorming, collaborative problem solving, and policy co-creation to successfully solve complex societal concerns.

In the feedback process, social computing enables immediate feedback loops between policymakers and the general public. The feedback loop promotes the iterative policy formulation that embraces multiple perspectives and responds to public concerns. Thus, Governments can monitor public reaction on proposed policies in real time via online surveys, comments, and conversations.

For the effective evaluation, social computing enables governments to use data analytics and sentiment analysis technologies to efficiently analyse public input and preferences. Policymakers can use big data and social media analytics to make evidence-based decisions based on real-time insights into public opinion and mood. In essence, social computing improves e-democracy by changing policymaking into a collaborative and inclusive process that empowers citizens, promotes transparency, and allows governments to make informed decisions that reflect society's common interests and ambitions.

4) Civic Actions

Social computing helps advocacy groups and civil society organizations to build successful social change initiatives. Organizations can use digital advocacy techniques such as online petitions, viral social media campaigns, and hashtag messaging to increase awareness. Further, it also gathers supporters, and put pressure on legislators to address critical issues.

Social computing platforms, such as social media, online forums, and messaging applications, offer easily accessible and scalable channels for organizing grassroots movements. Thus, citizens may mobilize quickly, boost awareness about civic issues, and coordinate collective activities like online protests, online petitions, and online community initiatives.

5) Digital Inclusiveness

Social computing platforms, such as social media, online forums, online consultations, virtual town halls, and collaborative platforms, offer accessible channels for people with impairments or those living in remote areas to participate in civic activities. These platforms often support features like text-to-speech, speech-to text, screen readers, and alternate text descriptions, which improve accessibility for people with impairments. Furthermore, it also facilitates multilingual communication and caters to a wide range of cultural backgrounds. Translation technologies and multilingual interfaces enable individuals from many linguistic communities to participate in conversations, obtain information, and contribute to e-democracy activities in their native language.

Social computing supports underprivileged people, such as minorities, women, and indigenous groups, by allowing them to express their concerns, fight for their rights, and participate in decision-making. These groups can utilize social media campaigns, online petitions, and digital advocacy tactics to promote awareness and mobilize support for their issues. Also, social computing tools provide spaces for mutual aid, peer support, and collective action, strengthening social cohesion and resilience within diverse populations.

B. Challenges

1) Digital Divide

Generally, digital divide refers to lack of digital infrastructure and digital literacy. The digital divide describes disparities in physical access to ICT infrastructure. It may involve differences in broadband availability, computer ownership, and mobile phone access. Rural places, low-income populations, and newly developed areas often face difficulties in accessing reliable and affordable internet services. Therefore, rural communities, elderly people, and low-income households may have lower representation in e-democracy projects. Disparities in digital infrastructure restricts the governments to execute successful e-democracy measures state-wide.

The people who don’t have digital literacy skills may struggle to access the information and also, may lose the opportunities to voice their opinions public debates. Further, the lack of digital literacy reduces the diversity of perspectives in digital forums and also hinders the participation in democratic processes. In essence, addressing these challenges is crucial for fostering inclusive, equitable, and effective e-democracy initiatives.

2) Bias in Decision-Making

Bias in decision-making refers to the systematic errors or deviations from rationality in judgment or decision processes that result in unfair outcomes. In democratic processes, biases can arise from political agendas, lobbying, or pressure from interest groups, leading to decisions that may not align with the broader public interest.

If e-democracy platforms are not accessible to all citizens, decisions made through these channels may not reflect the interests or concerns of the entire population, leading to biased outcomes. User-generated content on e-democracy platforms may reflect biases of the contributors. Certain voices or perspectives might be overrepresented or underrepresented, influencing the direction of discussions and decisions.

In the context of technology and data-driven decision-making, algorithms can introduce biases if they are trained on biased data sets or programmed with biased assumptions. This can lead to unfair and biased outcomes.

3) Privacy and Security

People are more likely to participate in e-democracy platforms if they have confidence in the privacy of their thoughts, voting choices, and personal information. Participation may be discouraged by worries about privacy violations or illegal access to personal information.

Large volumes of personal data are gathered and processed by e-democracy platforms from their users. To prevent illegal access, misuse, or exploitation of this data, strict privacy policies, regulations and practices are essential. Sensitive information (e.g., personally identifiable details) must be protected to prevent misuse. Secure platforms and procedures are essentially required to keep people's trust. Otherwise, the challenges such as security lapses, hacking attacks, or data leaks lead to reduced participation in e-democracy platforms. Hence, data privacy requires robust security measures and user education.

4) Lack of Awareness and Literacy

Citizens who are not politically aware may be less likely to use e-democracy platforms like online voting, forums, or consultations. They may not feel informed enough to contribute effectively to conversations or decisions. This will result in erroneous depiction of public opinion.

People may ignore critical perspectives or fail to effectively handle difficult issues when they are not politically aware. This can result in decisions that are not representative of the population's larger interests or understanding. Furthermore, citizens who have lack of political understanding may be more vulnerable to misinformation or disinformation efforts. Sometime, people may unintentionally propagate false and misleading narratives when they are lacking of ability to critically analyze material or grasp political settings.

C. Solutions

1) Digital Infrastructure and Investment

Digital divide must be addressed to ensure that all citizens have equal opportunities to participate meaningfully. To address the digital divide, substantial investment in infrastructure is essentially required and also significant contribution is much needed for digital literacy programs.

Here are some ideas which can be implemented by the government to mobilize the resources.

1) Partner with NGOs, and other civic organizations to create the digital infrastructure
2) Collaborate with CSR (i.e. corporate social responsibility) to build the necessary digital infrastructure.
3) Use the crowd funding strategy to mobilize the financial support
4) To maximize the benefits of social computing in e-democracy, policymakers must prioritize technological innovation, regulatory frameworks, and educational initiatives. These efforts should aim to enhance platform usability, strengthen digital literacy, and cultivate a culture of responsible online citizenship.

2) Educate, Engage, and Empower

Here are some key aspects which gives more focus on EEE (i.e. Educate, Engage, and Empower) by leveraging digital platforms and technologies in order to mitigate the challenges.

1) Provide education to users and offer digital literacy training programs to enhance digital literacy and encourage meaningful participation in e-democracy.
2) Conduct the political literacy and civic education programs which can empower citizens to understand political processes, issues, and their rights and responsibilities in democratic participation.
3) Provide workshops on media literacy, fact-checking techniques, and online privacy to empower individuals to distinguish credible sources from misinformation.
4) Government agencies can work with NGOs, academic institutions, and community organizations to create initiatives that promote political awareness and civic engagement.
5) Launch targeted social media campaigns to raise awareness about specific political issues, campaigns, or initiatives.
6) Governments can collaborate with educators, experts, and civic organizations to create accessible and engaging educational materials, such as videos, infographics, and interactive quizzes. Then, disseminate the informative content about political systems, processes, and current issues through social media, websites, blogs, and online forums.

3) Algorithmic Model and Review

1) Create easily accessible and inclusive e-democracy platforms by leveraging the effective social computing tools.
2) Build the decision model by incorporating the robust algorithms which can achieve transparency, accountability, minimum bias and fairness in decision-making processes.
3) An e-democracy platform requires robust algorithms to manage and analyze data, recommend content, or prioritize issues.
4) The algorithmic model must be user friendly and insensitive to privacy violations or illegal access
5) Sometime, an algorithm unintentionally reflects biases present in the data if it is trained on biased dataset. Hence, we have to implement the mechanisms for regular review, evaluation, and accountability in decision-making processes to detect and address biases.

4) Privacy and Security

Safeguarding privacy and data security is crucial to maintain trust in e-democracy platforms. Here are some key solutions in order to combat the privacy and security challenges in the real time.

1) Implementing strong security measures (e.g., encryption, secure authentication methods) is essential to safeguard personal data against hacking attempts or data breaches.
2) Implementing ethical guidelines and best practices in cybersecurity ensures responsible handling of user data and minimizes risks of harm from security breaches.
3) To prevent illegal access, misuse, or exploitation of data, strict privacy policies, regulations and practices are essential.
4) Secure platforms and procedures are essentially required to keep people's trust.
5) Data privacy requires robust security measures and user education.

IV. COMPARATIVE DISCUSSION

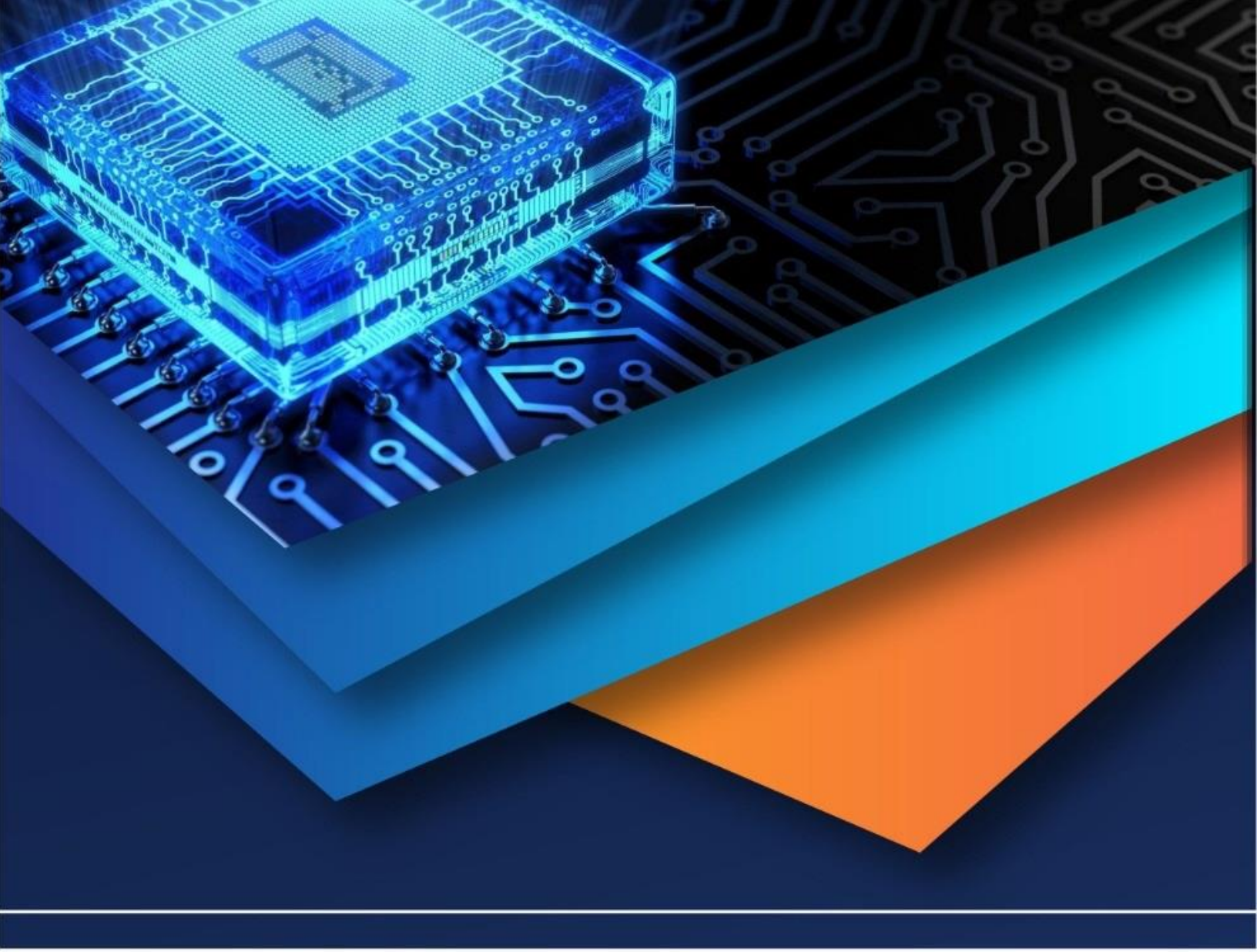
In this paper, we have considerably contributed toward the impacts of social computing in e-democracy. With the backdrop our literature study, we found that there is lack of information on pragmatic solutions that are significantly needed to address the challenges and issues. Hence, we have outlined the prominent solutions in this work. Furthermore, the significant observations, key challenges and solutions are well presented in this work as compared to the contemporary studies.

V. CONCLUSION

In conclusion, social computing plays a pivotal role in transforming traditional democratic practices by fostering a more inclusive and accessible e-democracy. To fully harness its benefits, policymakers and stakeholders must work collaboratively to address its challenges and ensure that e-democracy platforms are equitable, secure, and conducive to informed civic engagement. Social computing in e-democracy presents immense promise for fostering a more participatory and responsive governance model, its success ultimately depends on collaborative efforts to mitigate risks and maximize its democratic potential for all citizens.

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