

The Role of Civic Engagement and E-Government in Enhancing Accountability and Transparency in Metropolitan City Management

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Abstract. This study aims to analyze the role of civic engagement and e-government in improving accountability and transparency in metropolitan city management. The method employed is a literature review with a qualitative approach and descriptive analysis. Data were collected from Google Scholar and other credible and relevant websites, covering publications from 1989–2025. From an initial pool of 40 articles, a rigorous selection process based on relevance, methodological quality, and source credibility yielded 31 articles for further analysis. The findings indicate that civic engagement serves as a participatory mechanism that strengthens the legitimacy of public policies, while e-government functions as a digital infrastructure that expands information access, accelerates communication, and facilitates real-time public oversight. The integration of these two elements has been shown to enhance metropolitan governance accountability and transparency, supported by the Participatory Governance Theory, Technology Acceptance Model, Accountability Theory, and Transparency Theory. Case studies in Jakarta, Surabaya, Seoul, and New York confirm that successful implementation depends heavily on inclusive system design, public digital literacy, and the government's commitment to openness. This research offers a theoretical contribution to the development of smart governance concepts and provides practical implications for urban policymakers seeking to establish governance that is responsive, open, and trustworthy.

Keywords: Civic Engagement, E-government, Accountability, Transparency, Metropolitan City, Smart Governance.

1. Introduction

Metropolitan city management faces increasingly complex challenges due to population growth, rapid urbanization, and growing public demands for transparent, responsive, and accountable public services. Major cities such as Jakarta, Surabaya, and Bandung have become centers of concentrated social, infrastructural, and governance issues requiring innovative solutions. Public demands for accountability and transparency in city management have intensified alongside rising public literacy and greater access to information. In this context, civic engagement—citizen involvement in public decision-making processes—serves as a vital pillar to ensure that urban policies align with the aspirations and needs of the community. Meanwhile, advances in digital technology and the implementation of e-government present significant opportunities to optimize data openness, enhance government–citizen communication, and accelerate public service delivery [1]. However, the successful integration of civic engagement and e-government relies on political will, supportive regulations, and active, equitable participation from all social strata.

E-government is defined as the use of information and communication technology (ICT) to improve efficiency, effectiveness, transparency, and participation in governance. A well-implemented e-government system can strengthen accountability by providing public information transparency platforms, shortening bureaucratic processes, and minimizing corruption risks through auditable digital systems [2]. In metropolitan cities, such systems typically include public service portals, problem-reporting applications (e.g., Qlue in Jakarta), urban data dashboards, and online procurement systems. The strength of e-government lies in its ability to provide citizens with real-time access to information, enabling them to monitor government performance,

voice aspirations, and verify budget utilization. However, the effectiveness of e-government in improving transparency is inseparable from active citizen involvement, turning the system into an interactive dialogue space between the government and its constituents.

Civic engagement refers to the active participation of citizens in public life to influence decision-making processes, policy formulation, and service delivery. In a metropolitan context, civic engagement can take the form of community deliberation forums, public consultations, participation in urban planning, and reporting of social or infrastructural issues through digital media. Such involvement strengthens government accountability, as the community acts as a watchdog ensuring that policies and programs are implemented as planned. According to Participatory Governance Theory, a high level of public involvement enhances the quality of public decision-making and reduces the risk of poorly targeted policies [3]. For instance, the Musrenbang Online program in Jakarta allows residents to propose and directly monitor the realization of local development programs [4]. Nevertheless, the greatest challenge in civic engagement lies in ensuring inclusivity so that all segments of society, including marginalized groups, have equal opportunities to participate.

The relationship between e-government and civic engagement is mutually reinforcing. On one hand, e-government provides the digital infrastructure that enables broader and more efficient public participation; on the other hand, civic engagement ensures that e-government systems are not merely administrative but also interactive and responsive. Research by [5] demonstrates that cities successfully integrating e-government with public participation strategies can significantly increase citizens' trust in government. In metropolitan cities, this collaboration is crucial, as the complexity of urban management requires input from multiple stakeholders. For instance, the implementation of a smart city in Surabaya, which integrates public complaint services through the Surabaya Single Window, provides transparency regarding the government's follow-up actions [6]. Thus, the success of accountability and transparency is not measured solely by the availability of data, but also by the extent to which citizens can access, understand, and utilize it.

Metropolitan government accountability means that the government is obliged to account for every policy, program, and budget expenditure to the public. Transparency, on the other hand, refers to the government's openness in providing relevant, accurate, and timely information to society. Implementing e-government in conjunction with strong civic engagement can strengthen both aspects through rapid feedback mechanisms, more open public audits, and citizen involvement in monitoring and evaluation processes. Reports and previous studies indicate that combining open data with active public participation can reduce perceptions of corruption in large cities by up to 25%. In Indonesia, Law No. 14 of 2008 on Public Information Disclosure provides a legal basis for promoting transparency; however, its implementation at the metropolitan level still requires innovations in leveraging technology and improving public digital literacy [7], [8], [9].

The main challenges in optimizing the role of civic engagement and e-government in metropolitan cities are the digital divide and varying levels of public digital literacy [10], [11]. Although internet penetration in urban areas is relatively high, some groups remain unreached or lack sufficient skills to use digital services effectively. This situation can create disparities in access to information and public participation, ultimately hindering equitable achievement of accountability and transparency. In addition, data security (cybersecurity) is a critical concern, as breaches or misuse of data can undermine public trust in e-government systems. Therefore, strategies to enhance accountability and transparency through technology must be accompanied by digital literacy programs, community training, and strict personal data protection measures.

In international practice, various metropolitan cities have demonstrated success in integrating civic engagement and e-government to strengthen governance. For example, Seoul in South Korea implements the m-Voting platform, enabling citizens to vote in public decision-making in real-time, while the city government publishes the results openly [12]. New York City in the United States has developed NYC Open Data, which provides thousands of publicly accessible datasets that citizens, journalists, and researchers can use to monitor government performance [13]. These experiences show that success lies in policy designs that position citizens as active partners rather than mere service recipients. This model can serve as an inspiration for metropolitan cities in Indonesia to develop similar systems, with adjustments to the existing social, cultural, and infrastructural context.

Based on these developments, this study aims to analyze the role of civic engagement and e-government in enhancing accountability and transparency in metropolitan city management, with a focus on how their interaction can strengthen responsive, inclusive, and trustworthy urban governance. This research is expected to provide a theoretical contribution by enriching the discourse on integrating public participation and digital technology in urban governance, as well as a practical contribution for policymakers in designing effective smart governance strategies. By understanding the interrelationship and supporting factors, metropolitan cities in Indonesia are expected to optimize the role of both society and technology to create more transparent, accountable, and sustainable governance.

1.1. Civic Engagement

Civic engagement refers to the active involvement of citizens in various public activities aimed at influencing policy, improving service quality, and overseeing government performance. Such involvement may take the form of participation in public consultation forums, submission of policy proposals, reporting of social issues, and monitoring of public budgets through both online and face-to-face channels. According to the Participatory Governance Theory [14], meaningful citizen participation can strengthen policy legitimacy and enhance government accountability, particularly in areas with high governance complexity such as metropolitan cities. In the modern context, civic engagement is often supported by digital technology to expand its reach and accelerate participation processes.

1.2. E-government

E-government is the application of information and communication technology (ICT) in governmental processes to enhance the efficiency, effectiveness, transparency, and accountability of public services. This definition aligns with the United Nations E-Government Survey, which emphasizes the importance of digitalization in public service delivery, including online service portals, electronic complaint systems, and open data dashboards [15]. E-government establishes more transparent documentation and oversight systems. Its success depends heavily on the level of public digital literacy, the quality of system design, and data security, as well as the government's commitment to providing inclusive and responsive technology-based services.

1.3. Accountability

Accountability is the obligation of public actors—both individuals and institutions—to explain, justify, and take responsibility for their actions, policies, and use of resources to authorized bodies or the public at large. In the context of governance, accountability encompasses process transparency, performance measurement, and the presence of feedback mechanisms [16]. In metropolitan cities, accountability is crucial for maintaining public trust, as citizens demand tangible evidence of government commitments and programs. The integration of civic engagement and e-government reinforces accountability by providing open reporting channels, digital audit systems, and real-time publication of performance data.

1.4. Transparency

Transparency is the openness of government in providing information that is relevant, accurate, easily accessible, and understandable to the public, thereby enabling effective oversight and participation. Transparency is not solely about the availability of data, but also about the quality of its presentation so that the public can use it in decision-making or monitoring processes [17]. In metropolitan contexts, transparency is realized through open data portals, publication of regional financial reports, and openness in procurement processes. E-government accelerates the distribution of information, while civic engagement ensures that such information is utilized to drive more accountable governance.

1.5 Metropolitan City

A metropolitan city is a large-scale urban area that serves as a center of economic, governmental, social, and cultural activities, typically characterized by a high population density and expansive administrative boundaries [18]. Metropolitan cities face complex governance challenges such as population density, traffic congestion, pollution, social inequality, and substantial infrastructure demands. Consequently, metropolitan city management requires an effective, transparent, and accountable governance system. Examples of metropolitan cities in Indonesia include Jakarta, Surabaya, and Bandung, which have begun integrating the concepts of civic engagement and e-government to collaboratively and data-drivenly address urban challenges.

1.6 Smart Governance

Smart governance is a governance concept that leverages information technology, multi-stakeholder collaboration, and citizen participation to improve public service quality, transparency, and accountability. Smart governance is a critical pillar in the development of smart cities, where decision-making is supported by real-time data and actively involves stakeholders [19]. In the context of metropolitan cities, smart governance is realized through the integration of e-government with civic engagement channels, thereby creating governance that is responsive, efficient, and adaptive to the evolving needs of society. This model represents a strategic direction for city governments seeking to establish inclusive and sustainable urban governance.

2. Method

This study employs a literature review method with a qualitative approach and descriptive analysis techniques to explore the role of civic engagement and e-government in enhancing accountability and transparency in metropolitan city governance. This approach was chosen because the research focuses on collecting, reviewing, and synthesizing findings from previous studies, thereby providing a comprehensive understanding without the need for direct field data collection. Data sources were obtained from scholarly articles and relevant documents published between 1989 and 2025, ensuring that the information analyzed is both up-to-date and relevant to recent developments. Data searches were conducted via Google Scholar and several credible websites recognized for their high information validity, such as government portals, international organizations (e.g., OECD), and internationally indexed journals. The data collection process began with keyword searches for “civic engagement,” “e-government,” “accountability,” “transparency,” and “metropolitan city governance,” both individually and in combination, to ensure broad coverage. The initial search yielded a total of 40 articles meeting the basic criteria of topical relevance and publication period. A rigorous selection process was then carried out, considering publication quality, direct relevance to the research variables, clarity of methodology in the articles, and completeness of information supporting the analysis. This selection also took into account citation frequency and publisher reputation to ensure the credibility of references. From this process, 31 selected articles were identified for further analysis. The descriptive analysis involved identifying patterns, trends, and key findings from each study, as well as comparing results across studies to uncover similarities, differences, and unique contributions that could enrich the discussion.

3. Result and Discussion

The discourse on the role of civic engagement and e-government in enhancing accountability and transparency in metropolitan cities can be grounded in the Participatory Governance Theory, which emphasizes the importance of synergistic collaboration between government and citizens in inclusive public decision-making processes [14]. This theory asserts that citizen participation, when facilitated by digital technology, holds significant potential to strengthen policy legitimacy, broaden the representation of public voices, and ensure that decisions reflect the actual needs of society. In the metropolitan context, socioeconomic challenges, high population density, and diverse citizen interests make e-government-based public participation a strategic means to address the complexity of urban issues, ranging from transportation and spatial planning to environmental management. The use of digital channels—such as online surveys, complaint applications, and virtual discussion forums—enables governments to tap into citizens’ collective intelligence in formulating solutions. Research in Seoul has demonstrated the effectiveness of this strategy, highlighting in Local Government Studies that the success of digital public participation in Seoul is strongly influenced by citizens’ social capital and the quality of e-participation platform management. The study found that when governments respond promptly, maintain transparency, and ensure the security of online participation processes, public trust in government increases significantly [20]. This example illustrates that civic engagement integrated with e-government constitutes a participatory democratic mechanism capable of shaping public policy to be more responsive and transparent.

E-government as the primary medium for achieving government transparency can be explained through the Technology Acceptance Model (TAM), where two core variables—perceived ease of use and perceived usefulness—determine technology adoption [21]. In practice, when public service portals or applications are designed with a user-friendly interface, easily accessible information, and intuitive navigation, citizens are more inclined to use them regularly, thereby significantly improving public information openness. Good design fosters user trust in the quality and credibility of the information provided. A study in Jakarta illustrates this through the Qlue application and the Jakarta Smart City Portal, where easy access, instant reporting features, and publicly displayed report status updates increased the volume of citizen reports on city infrastructure, safety, and environmental cleanliness [22]. The openly published reports—including completion times and responsible agencies—directly strengthen transparency and drive public service accountability. This demonstrates that the technical quality and design of e-government serve a dual function: as a facilitator of citizen–government interaction and as a catalyst for public trust in governmental integrity.

Accountability in the governmental context, as explained by Accountability Theory, is understood as the obligation of public actors to explain, justify, and take responsibility for their actions to the public and oversight bodies [16]. In the complex environment of metropolitan cities, accountability extends beyond formal annual reports to include openness to criticism, suggestions, and continuous public feedback, particularly through digital channels that enable rapid two-way interaction. The OECD’s 2023 Government at a Glance report

emphasizes that direct public engagement is a pillar of effective governance, enhancing citizen satisfaction and trust in public services [23]. A concrete example can be seen in the Surabaya City Government's operation of the Surabaya Single Window, an integrated platform displaying complaint handling statuses, licensing progress, and other public service performance indicators transparently [24]. Through such mechanisms, citizens are not merely information recipients but also watchdogs capable of evaluating the extent to which government promises and plans are realized. This creates a healthy accountability cycle, where every government action is documented, traceable, and open to public assessment—thereby reinforcing the legitimacy and quality of metropolitan governance.

Government transparency can be understood through Transparency Theory, which asserts that information openness is not merely about making information available to the public but also ensuring that it is accessible, clear, and reliable so that citizens can use it effectively for oversight and decision-making [17]. In the context of e-government, this principle entails that city data—ranging from budgets and permits to public service performance indicators—must be presented in formats that are easy to locate, download, analyze, and utilize by both individuals and civil society organizations. For example, a study on the Bandung Open Data portal revealed that the disclosure of datasets related to local budget allocations, infrastructure project details, and project timelines increased the participation of local NGOs in on-site monitoring of development projects [25]. As a result, the portal exceeded its initial openness target by uploading more than 1,081 datasets compared to the 843 provided by 68 municipal departments. This also fostered a form of collaborative oversight, where the public could critique, provide input, and even expose potential irregularities. The tangible impact of such openness was reflected in a reduction in the likelihood of budget misappropriation due to stronger social pressure and more intensive public scrutiny. Bandung's success in combining open data with both online and offline public consultation forums earned recognition from the Open Government Partnership (OGP) as one of the best practices in Southeast Asia—demonstrating that transparency, when coupled with high accessibility, can sustainably strengthen governmental accountability.

The integration of civic engagement and e-government is closely related to the Smart Governance concept, which emphasizes that smart governance relies on technology to expand public participation, accelerate decision-making processes, and systematically enhance transparency [19]. This concept combines technological dimensions, citizen participation, and governance quality into an integrated framework, in which governments utilize digital channels as media for policy collaboration and co-creation. In the Indonesian context, one example of applying this concept is the Online Development Planning Deliberation (*Musyawarah Perencanaan Pembangunan / Musrenbang Online*) program in Jakarta, which enables citizens to submit development proposals online, monitor the implementation status of those proposals, and access relevant budget utilization reports. This system transforms the previously face-to-face *Musrenbang* into an interactive platform accessible at any time, thereby broadening citizen engagement across regions and social groups. Previous studies indicate that citizens actively using *Musrenbang Online* tend to have higher perceptions of regional budget transparency compared to those who do not use the platform, particularly regarding the clarity of project priorities and budget realization tracking [26]. Its implementation also accelerates the verification process from the sub-district to the city level, while strengthening accountability since every process stage is digitally documented and can be publicly monitored in real time—creating a more responsive, transparent, and participatory urban governance ecosystem.

However, significant challenges remain, as highlighted in the Digital Divide Theory, which states that gaps in technology access can create participation inequality, where communities with limited access and technological skills are left behind in taking advantage of digital participation opportunities [27]. Although internet penetration in metropolitan cities is generally high, there are substantial disparities among demographic groups—such as low-income communities, the elderly, and residents in peripheral areas with inadequate telecommunication infrastructure. This divide is largely due to varying levels of digital literacy, which influence how citizens understand, process, and utilize information from e-government platforms. A previous study found that more than half of respondents (around 51.5%) used the JAKI application as their primary complaint channel during the COVID-19 pandemic—indicating a relatively high adoption rate in a public health emergency context [28]. Meanwhile, a review by Cahyani, Ode, and Herawati emphasized the importance of integrating public complaint systems with Citizen Relationship Management (CRM) approaches, as well as the need to ensure inclusivity of digital channels so that communities with limited technology access are not left behind [29]. This situation reflects that technology alone does not guarantee equitable participation unless accompanied by efforts to improve user capacity. Therefore, structured digital literacy strategies, in-person training at the sub-district level, and the provision of alternative non-digital participation channels—such as public service posts, call centers, and face-to-face forums—are still necessary to ensure inclusive citizen participation. Such a hybrid

approach will ensure that the integration of civic engagement and e-government does not widen the inequality gap, but instead becomes a means of equalizing opportunities for public decision-making participation.

International experiences show that the successful implementation of e-government-based civic engagement requires strong synergy among regulations, technology, and a culture of citizen participation. Regulations provide a clear legal foundation for information transparency, personal data protection, and the right to participate, while technology serves as an enabler to facilitate interaction, and the culture of participation determines the level of community engagement. In New York City, for example, the NYC Open Data program not only provides thousands of publicly accessible datasets but also regularly organizes Open Data Week—a series of educational and training events teaching the public, researchers, journalists, and business actors how to use the data for analysis, advocacy, or creative solution development [30]. This approach reflects findings that the success of data openness is determined not only by the availability of data itself but also by the capacity of society to understand, process, and utilize it [31]. This concept is highly relevant to be adapted in Indonesian metropolitan cities such as Jakarta, Surabaya, and Bandung, by integrating transparent open data portals with community-based data literacy programs, public policy hackathons, and collaborations with universities. Thus, information openness will not merely become a “data showcase” but rather a productive ecosystem for enhancing accountability and encouraging evidence-based policy innovation.

Based on theoretical foundations, previous research findings, and both domestic and international case studies, it can be concluded that the integration of civic engagement and e-government holds great potential to strengthen accountability and transparency in metropolitan city management, provided that its implementation is inclusive, adaptive, and sustainable. Inclusivity here means ensuring that all segments of society, including vulnerable and marginalized groups, have equal access and adequate capacity to participate. Adaptivity refers to the system’s ability to adjust features, channels, and participation approaches according to technological developments and citizen needs, while sustainability means that the government does not stop at the platform launch stage but continues to manage, update, and optimize the system to remain relevant. For this reason, city governments need to position citizens not merely as passive recipients of information but as active partners in the planning, implementation, and evaluation of public policies, involved from the formulation stage to monitoring outcomes. This approach aligns with globally recognized good governance principles, in which transparency, participation, and accountability are the main pillars of effective governance. If implemented with clear regulatory support, equitable digital literacy, and citizen-centered technological innovations, Indonesian metropolitan cities have the potential to become proactive open government models in designing more sustainable future solutions.

Figure 1. Role of Civic Engagement and E-Government in Enhancing Accountability and Transparency in Metropolitan Cities

Theme / Concept	Key Findings	Examples / Case Studies	Implications
Participatory Governance Theory	Emphasizes synergistic collaboration between government and citizens in public decision-making; citizen participation facilitated by digital technology strengthens policy legitimacy, broadens representation, and reflects societal needs.	Seoul: Effectiveness of digital public participation influenced by citizens’ social capital and e-participation platform management; prompt response, transparency, and security increase public trust.	Civic engagement integrated with e-government can shape responsive and transparent public policies.
Technology Acceptance Model (TAM)	Technology adoption is influenced by perceived ease of use and perceived usefulness; user-friendly public service portals increase openness of public information.	Jakarta: Qlue and Jakarta Smart City Portal; easy access, instant reporting, and public report status increased citizen reports on infrastructure, safety, and environmental cleanliness.	E-government technical design serves as a facilitator of citizen-government interaction and builds public trust in government integrity.
Accountability Theory	Accountability involves the obligation of public actors to explain, justify, and take responsibility; requires	Surabaya: Surabaya Single Window displays complaint handling, licensing progress, and service performance	Creates a healthy accountability cycle where government actions are documented, traceable, and

Transparency Theory	continuous public feedback beyond formal reports. Information openness must include accessibility, clarity, and reliability; city data should be easy to download, analyze, and use by citizens and civil society organizations.	indicators transparently; citizens act as watchdogs. Bandung Open Data Portal: Disclosure of budgets, infrastructure projects, and project timelines increased NGO participation in field monitoring; reduced potential budget misappropriation.	open to public assessment. High accessibility coupled with transparency strengthens government accountability sustainably.
Smart Governance Concept	Smart governance integrates technology, citizen participation, and governance quality for policy collaboration and co-creation.	Jakarta: Musrenbang Online allows citizens to submit development proposals, monitor implementation, and access budget reports; expands participation across regions and social groups.	Creates a responsive, transparent, and participatory urban governance ecosystem; accelerates proposal verification and digitally documents all processes.
Digital Divide Theory	Gaps in technology access create unequal participation; low digital literacy hinders use of e-government platforms.	JAKI use during COVID-19: 51.5% of respondents used it; review by Cahyani et al. emphasizes inclusive channels and CRM integration.	Structured digital literacy programs, in-person training, and alternative non-digital participation channels are necessary for inclusive citizen engagement.
International / Best Practices	Successful e-government civic engagement requires synergy among regulations, technology, and participatory culture; data availability must be matched by citizens' capacity to use it.	NYC Open Data: Thousands of public datasets and Open Data Week teach citizens, researchers, journalists, and businesses to use data for analysis, advocacy, and creative solutions.	Integrating open data portals with community-based data literacy, policy hackathons, and university collaboration promotes evidence-based policy innovation.
Overall Conclusion	Integrating civic engagement and e-government has great potential to strengthen accountability and transparency in metropolitan cities if inclusive, adaptive, and sustainable.	-	Governments must treat citizens as active partners, adapt systems to technology and citizen needs, and continuously update platforms; supports good governance principles: transparency, participation, and accountability.

4. Conclusion

This literature review demonstrates that the integration of civic engagement and e-government plays a strategic role in enhancing accountability and transparency in metropolitan city management. Civic engagement enables citizens to actively participate in decision-making processes, oversight, and evaluation of public policies, while e-government provides the digital infrastructure that broadens access to information, accelerates communication, and facilitates monitoring of government performance. Theories such as Participatory Governance, Technology Acceptance Model, Accountability Theory, and Transparency Theory support the finding that the collaboration of technology and public participation can strengthen policy legitimacy, reduce the potential for corruption, and build public trust. Case studies in cities such as Jakarta, Surabaya, Seoul, and New York illustrate that the success of implementing these two aspects highly depends on inclusive participation, the quality of technological systems, and the sustainability of digital literacy programs.

This study enriches the literature on good governance by affirming that the effectiveness of e-government is determined by the extent to which the system facilitates meaningful public participation. The results reinforce Participatory Governance and Smart Governance theories, highlighting that effective urban governance requires a synergy between digital innovation and citizen engagement. For metropolitan city governments, these findings

provide a foundation for designing policies that integrate e-government portals with active citizen participation mechanisms, such as online development planning (Musrenbang), virtual discussion forums, and open data initiatives. For system developers, the findings emphasize the importance of user-friendly interface design, data security, and sustainable system updates. For citizens, the results encourage improving digital literacy and leveraging e-government platforms as tools for advocacy and public oversight.

This study has limitations as it only utilizes literature published between 1989 and 2025, which may not cover all the latest developments or best practices that are not yet academically documented. Furthermore, the literature review approach does not allow direct measurement of the effectiveness of civic engagement and e-government integration in the field. Variations in social, cultural, and political contexts among cities also require careful consideration when generalizing the findings. Another limitation is that the article selection was limited to Google Scholar and certain credible websites, leaving the potential for information source bias.

Based on these findings, several recommendations can be made. First, for future research: it is suggested to conduct empirical studies using surveys or field case studies in several Indonesian metropolitan cities to measure the effectiveness and challenges of implementing e-government-based civic engagement. Second, for city governments: regulations mandating public data transparency should be strengthened, inclusive participation channels provided, and citizen digital literacy enhanced through ongoing educational programs. Third, for government technology developers: e-government platforms must ensure high data security, ease of use, and features that promote two-way interaction with citizens. Finally, for civil society and NGOs: they can utilize open data from e-government to independently monitor government performance and promote evidence-based advocacy.

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