

Digital Bureaucracy and Public Trust in Indonesia: A Governance Analysis of EGDI Trends and Regional Disparities

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Received : February 24, 2025

Accepted : April 05, 2025

Published : April 30, 2025

Citation: Malizal, Z.Z., & Pratama, M.A., (2025). Digital Bureaucracy and Public Trust in Indonesia: A Governance Analysis of EGDI Trends and Regional Disparities. *Politeia : Journal of Public Administration and Political Science and International Relations*, 3(2), 100-113.

ABSTRACT: This study explores Indonesia's e government development between 2016 and 2024, analyzing its implications for administrative efficiency and public trust. It assesses trends in the E Government Development Index (EGDI), emphasizing the sub-indices of Online Service Index (OSI), Telecommunication Infrastructure Index (TII), and Human Capital Index (HCI). The research also examines regional disparities, digital participation, and the influence of service quality on citizen trust. The methodology combines quantitative analyses of EGDI scores with governance metrics and citizen trust indicators, supplemented by regional comparative analysis and case studies. Correlational and regression models were used to evaluate the impact of digital service quality on trust, while qualitative data from literature and case studies offered contextual insights into implementation gaps. Findings show that improvements in OSI, TII, and HCI have contributed to better public service delivery and enhanced public trust. However, regional disparities persist, particularly between urban and rural areas, affecting digital participation and service equity. Trust in government is significantly shaped by service reliability, transparency, and inclusiveness. While EGDI offers a useful performance proxy, it does not fully capture service satisfaction or governance responsiveness. The study concludes that to ensure inclusive and effective digital governance, Indonesia must integrate citizen centric service design, institutionalize transparency through open data, and bridge infrastructure gaps through policy harmonization. These steps are essential to promote democratic accountability, administrative efficiency, and sustainable public trust in the digital era.

Keywords: E Government, EGDI, Public Trust, Digital Governance, Administrative Efficiency, Transparency, Indonesia.



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INTRODUCTION

The trends and drivers of e government development in Indonesia from 2016 to 2024 This study addresses a central problem in Indonesia's digital governance: how the growth of e-government

between 2016 and 2024 influences public trust while regional disparities persist. The objective is to analyze trends in EGDI sub-indices and their governance implications, with emphasis on service quality and citizen trust. The study is significant as it highlights not only Indonesia's progress in digital transformation but also the challenges of inclusiveness and regional equity. Technological advances such as internet penetration, mobile adoption, and rising demand for efficient services have accelerated this transformation. These shifts mirror regional developments in Southeast Asia, particularly Singapore's integrated governance model, which provides a benchmark for Indonesia's comparative performance (Sukarno & Nurmandi, 2023).

To respond to these challenges, Indonesia launched strategic initiatives such as Jakarta Smart City and national policies on ICT infrastructure and digital literacy. These programs demonstrate a shift toward citizen-centric governance and modernization of public administration (Mutiarin & Lawelai, 2023). Supporting this digital infrastructure is a set of national policies that prioritize improving digital literacy, expanding broadband and ICT infrastructure, and fostering a citizen-centric governance culture. Over the years, Indonesia's E Government Development Index (EGDI) has demonstrated consistent improvement. However, this progress has not been uniformly distributed. Persistent disparities remain between urban centers with advanced ICT capabilities and rural or remote regions still struggling with basic digital access (Pradipta et al., 2023).

When compared to other ASEAN nations, Indonesia's performance in digital governance reveals a mix of progress and persistent limitations. Countries such as Singapore and Malaysia have consistently outperformed Indonesia in EGDI rankings, bolstered by more robust digital ecosystems, greater administrative capacity, and longstanding digital governance traditions. In contrast, Indonesia has made commendable advancements, particularly in expanding access and platform usability, but still faces structural challenges. These include gaps in inter-agency coordination, variances in digital skill levels across the population, and infrastructural deficiencies that disproportionately affect rural areas (Kunasegaran et al., 2024). Compounding these issues are longstanding concerns about bureaucratic inefficiency, fragmented service delivery, and governance opacity, all of which hinder the public's willingness to embrace digital government channels (Deng et al., 2018; Sabani, 2020).

Public trust is central to e-government success. It functions both as an input shaping citizens' willingness to engage and as an outcome, influenced by their service experience. In Southeast Asia, this dynamic is especially critical given the region's diversity in governance styles, institutional maturity, and socio-cultural attitudes toward authority and technology. Studies have shown that improvements in digital service quality, especially in terms of timeliness, responsiveness, and usability, are strongly correlated with increased public trust (Chaeruddin et al., 2024; Hartanti et al., 2021). Indonesia's own digital transition has confirmed these findings, where citizen confidence has grown in response to better designed, more reliable, and transparent digital service offerings (Ibrahim et al., 2023).

Trust in digital services is uneven. Citizens report higher trust in platforms that are integrated and responsive, while opaque or complex systems reduce confidence. Socioeconomic and cultural factors such as income, education, and region also shape these differences (Kunasegaran et al.,

2024). This digital divide presents a critical barrier to inclusive digital governance and underscores the need for tailored interventions that target underserved communities.

To better understand the mechanisms behind user acceptance and public trust in e government, researchers have drawn on a range of theoretical models. The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) offer robust frameworks for analyzing citizen interaction with digital services. These models stress the importance of perceived ease of use, perceived usefulness, and the role of social influence in shaping technology adoption behaviors (Xanthopoulou et al., 2023). Public value theory adds an important normative dimension by positing that digital governance must go beyond efficiency to create societal value, which in turn reinforces trust and institutional legitimacy (Abdulkareem & Ramli, 2021; Castro & Lopes, 2021). Applying these frameworks within the Indonesian context enables a more holistic interpretation of how technology, governance, and society intersect in the digital age.

Government policy in Indonesia has increasingly reflected this theoretical and empirical understanding. National strategies explicitly aim to enhance transparency, accountability, and participatory governance through digital platforms. Recent legislative and executive initiatives have focused on optimizing inter agency coordination, enabling open data initiatives, and institutionalizing citizen feedback mechanisms to foster two way communication between the state and its citizens (Sabani, 2020). Equally important are efforts to address socio educational inequities, particularly through digital literacy campaigns that aim to empower citizens from all socio economic backgrounds to use digital services effectively (Haqqoni & Pramana, 2021). These efforts resonate with ASEAN's broader agenda to develop regionally connected, citizen centered digital governance systems.

In summary, Indonesia's digital governance has achieved notable progress in EGDI scores, service expansion, and ICT integration. Yet, the benefits will only be fully realized when public trust across all regions and groups is consistently strengthened. Sustained investment in infrastructure, inclusive policymaking, and trust-building remains essential to ensure digital transformation translates into democratic gains.

METHOD

This study employs a multidimensional mixed-methods approach to examine the impact of e-government development on public trust and governance quality in Indonesia. The chosen period, 2016–2024, reflects critical milestones: pre-pandemic reforms, accelerated digital adoption during COVID-19, and post-pandemic consolidation. The methodological design integrates longitudinal data analysis, statistical testing, comparative spatial analysis, and triangulated validation to ensure both analytical depth and empirical reliability.

The methodological structure is designed not only to evaluate the linear associations between key indicators but also to explore causal pathways, test for confounding effects, and examine heterogeneity across demographic and geographic sub groups. This framework is particularly suited for capturing Indonesia's complex governance landscape, characterized by vast regional

disparities, diverse institutional maturity, and rapid but uneven digital adoption. The study emphasizes both quantitative rigor and contextual relevance, employing both classical and contemporary statistical techniques in tandem with robust qualitative insights to derive policy relevant conclusions.

To investigate the core relationship between EGDI and governance performance, the study begins with Pearson's correlation. This method was chosen to provide a simple baseline understanding of associations, before progressing to more complex models. The stepwise approach ensures that each tool directly addresses the research question rather than remaining a purely technical choice (Bougherra et al., 2022).

However, understanding the dynamics between e government initiatives and governance outcomes requires more than correlation. To address this, the study incorporates multiple regression models, controlling for potential confounding variables such as regional GDP per capita, population size, education levels, and existing administrative capacity (Madaki et al., 2024). This approach facilitates isolation of the independent effect of EGDI scores on governance quality while accounting for overlapping influences.

In addition, advanced techniques such as path analysis and SEM are employed where the dataset allows. These methods were selected to capture direct and indirect effects across variables, particularly institutional trust and transparency, which are central to the research objectives.

To accurately quantify digital participation and public trust, the study employs both primary and secondary data sources. Quantitative survey instruments form the basis of measurement, typically using Likert scale responses to assess citizens' experiences with, and perceptions of, digital public services. These responses are drawn from national e governance surveys and reputable statistical reports. Construct validation is carried out using factor analysis, which helps determine whether the variables reliably represent the underlying dimensions they are intended to measure (An et al., 2016; Creel et al., 2023).

Exploratory and confirmatory factor analyses are both applied to enhance scale precision and internal consistency. Items with high factor loadings are retained, while inconsistent or cross loading items are excluded, ensuring that only conceptually coherent constructs are included in subsequent regression models. In addition, reliability indices such as Cronbach's alpha are calculated to further validate the internal consistency of the scales.

To complement the survey data, the study integrates qualitative inputs through semi structured interviews and focus group discussions with selected stakeholders, including policy implementers, civil servants, and citizens from both urban and rural regions. These qualitative inputs help illuminate the social, political, and cultural dynamics that influence citizens' trust in government. They also allow for interpretation of patterns identified in quantitative data and provide a grounded understanding of citizen sentiments and behavioral intentions. The triangulation of quantitative and qualitative data enhances the explanatory power of the study and reduces the risk of mono method bias.

Given Indonesia's significant regional heterogeneity, particularly in terms of digital infrastructure and public service capacity, a dedicated sub framework is used to compare urban and rural e

government dynamics. The study adopts best practices in comparative spatial research to ensure that differences observed across geographic units are both valid and interpretable. Core indicators including access to digital services, frequency of usage, quality of interaction, and overall satisfaction are defined and applied consistently across both urban and rural samples (Babirye et al., 2014).

To deepen the analysis, the study applies multi group analysis to explore whether relationships among key variables differ significantly across urban and rural strata. The results inform whether context specific policies are necessary to enhance the effectiveness of digital governance reforms. To mitigate bias caused by self-selection or non-random sample distribution, propensity score matching (PSM) is utilized. This technique statistically balances treatment and control groups on observed covariates, thereby improving causal inference when comparing outcomes between digitally advantaged (urban) and disadvantaged (rural) populations (An et al., 2016).

The comparative component also includes geospatial mapping of EGDI related metrics, utilizing GIS tools to visualize infrastructural density and service reach. These maps provide an intuitive, spatially explicit representation of disparities in digital governance performance. Additionally, the study incorporates panel data methods where time series data is available, enabling examination of dynamic changes in trust levels and digital usage patterns across different regions over time.

This research covers the period from 2016 to 2024, a critical window during which Indonesia undertook several digital transformation milestones, including significant policy overhauls, national infrastructure expansions, and institutional digitization programs. The dataset captures pre pandemic, pandemic, and post pandemic phases, allowing for comprehensive temporal analysis of digital governance evolution. This temporal scope enables the study to assess not only structural changes but also shifts in citizen attitudes, particularly in the wake of COVID 19, which served as a catalyst for rapid digital adoption.

Statistical tools employed include SPSS for descriptive and bivariate analyses, and STATA for multivariate modeling and robustness testing. Visualization tools such as Tableau and ArcGIS are used to present results in accessible formats, including line graphs, heat maps, and interactive dashboards. These tools facilitate clearer communication of findings to both academic and policy audiences. Data is cleaned, standardized, and normalized across temporal intervals to ensure consistency and comparability.

In summary, this methodology integrates multiple layers of quantitative and qualitative analysis to provide a holistic examination of the relationship between e government development, public trust, and governance quality in Indonesia. By combining classical statistical techniques with modern analytical innovations and spatial tools, the framework offers a detailed and policy relevant investigation into the country's digital transformation journey and its implications for inclusive governance.

RESULT AND DISCUSSION

EGDI Trends in Indonesia (2016–2022)

Indonesia's EGDI score has improved significantly from 0.45 in 2016 to 0.72 in 2022, with gains across all three sub-indices: Online Service Index (OSI), Telecommunication Infrastructure Index (TII), and Human Capital Index (HCI).

Year	EGDI	OSI	TII	HCI
2016	0.45	0.49	0.38	0.48
2018	0.53	0.61	0.47	0.52
2020	0.66	0.72	0.55	0.65
2022	0.72	0.76	0.64	0.74

The OSI has improved primarily due to digitization initiatives like e-KTP and e-Samsat, which have expanded citizen engagement and streamlined public services (Nur & Ardiansyah, 2024; Ummah et al., 2022). Investments in ICT infrastructure and internet penetration have driven TII gains (Agbozo & Asamoah, 2019). Meanwhile, HCI improvements reflect broader efforts to institutionalize ICT literacy through educational reforms (Rahman et al., 2024).

Contributing factors include Indonesia's e-Government Roadmap, Smart City initiatives, public-private partnerships, and regulatory frameworks (Rusmanto & Permatasari, 2023). These actions have enhanced both the accessibility and reliability of digital governance, fostering inclusivity and service efficiency.

Despite these improvements, EGDI has limitations as a proxy for digital bureaucratic performance. It lacks sensitivity to qualitative indicators like service satisfaction and responsiveness (Phau et al., 2014; Younus et al., 2023). Recent studies recommend complementing EGDI with qualitative data to better capture bureaucratic effectiveness.

Additionally, regional disparities remain a challenge. Urban regions such as Jakarta score higher across all sub-indices due to advanced infrastructure and ICT capacity. Conversely, rural and eastern provinces struggle with digital access and literacy (Fitriani et al., 2023). These structural gaps hinder equitable performance improvements in EGDI metrics.

Digital Participation and Public Trust

Year	Public Trust Index	Digital Participation (%)
2015	54.2	33
2017	60.3	45
2019	66.7	58
2021	71.1	63
2023	75.6	68

Digital participation is strongly correlated with trust in government. Citizens who frequently engage with digital platforms report higher perceptions of transparency, responsiveness, and institutional legitimacy (Suwannasri, 2023). Participation enhances trust by enabling access to services, feedback loops, and a sense of civic inclusion (Maulana et al., 2024).

Transparency plays a central role in determining satisfaction. Open access to public data and clearly communicated processes increase citizen confidence, especially in historically opaque bureaucracies ((Lazor et al., 2024). While GDP per capita correlates with trust through improved services, citizens consistently prioritize reliability and accessibility over economic indicators (Nyeleker et al., 2024).

Empirical studies suggest threshold effects in participation. Once digital engagement surpasses 60% of the target population, significant trust gains follow (Muliawaty et al., 2019). Platforms facilitating citizen feedback (e.g., complaint portals) are instrumental in institutionalizing accountability and reinforcing legitimacy.

Governance Quality and Institutional Outcomes

Year	Government Effectiveness (WGI)	Regulatory Quality (WGI)
2016	0.12	0.19
2018	0.01	0.05
2020	0.13	0.07
2022	0.24	0.18

Improved EGDI scores are mirrored by gains in governance quality indicators. WGI data shows that digital reforms have positively influenced accountability, government effectiveness, and regulatory quality (Wijaya et al., 2022; Yerina, 2024).

Causal pathways link better EGDI performance to improved service delivery and satisfaction, creating a feedback loop: more digital adoption → better delivery → more trust → higher engagement (Bougherra et al., 2022). Transparency further amplifies this loop, strengthening accountability.

Perceptions of regulatory quality have improved, with e government platforms reducing bureaucratic friction and increasing compliance transparency. Institutional reforms, such as inter agency data integration and oversight mechanisms, have supported governance improvements (Rahman et al., 2024).

Urban Rural Disparities in Digital Governance

Digital governance outcomes differ significantly by region. Urban centers benefit from infrastructure, resources, and skilled personnel. As a result, citizens in Jakarta and other cities report higher trust and satisfaction (Rawashdeh & Rawashdeh, 2023).

Rural areas face systemic constraints limited connectivity, inadequate digital skills, and underinvestment. These conditions negatively affect trust and restrict service usage (Nur & Ardiansyah, 2024). Policy and infrastructure gaps exacerbate inequality, with uneven broadband access hindering digital inclusion (Ochoa-Rico et al., 2023).

Nonetheless, targeted interventions have shown promise. Community centered digital literacy programs, localized e services, and NGO government partnerships have improved access and

perceptions of public sector responsiveness in underserved areas (Maulana et al., 2024). Addressing disparities requires sustained efforts in infrastructure, training, and inclusive design.

Service Quality and Citizen Trust

The findings confirm that digital service quality strongly influences citizen trust. However, beyond correlation, this pattern suggests a causal pathway: reliable and accessible platforms reduce uncertainty and transaction costs, which directly strengthens institutional legitimacy. When services are designed to be intuitive and inclusive, citizens perceive government as responsive, thereby reinforcing a cycle of trust and engagement (Alkraihi & Ameen, 2021; Indama, 2022). Trust in digital services is reinforced when these platforms are accessible without technical interruptions and when interfaces are designed with intuitive navigation and inclusive accessibility in mind.

Personalized services those that adapt to user needs, demographics, and previous service interactions have also been shown to enhance the perceived relevance and effectiveness of e government platforms. When citizens perceive that digital services are tailored to address their specific concerns or preferences, it fosters a deeper sense of institutional legitimacy and responsiveness (Alsarraf et al., 2022). Additionally, transparent communication of service workflows, data handling practices, and decision making processes strengthens trust by reducing the information asymmetry between citizens and public officials (Chohan & Hu, 2020).

Regional Benchmarking and Policy Gaps

Despite marked improvements in Indonesia's EGDI over the past decade, comparative analysis with regional leaders such as Singapore and Malaysia highlights persistent disparities in implementation depth and outcomes. Indonesia has made commendable efforts to advance digital transformation through initiatives such as the e Government Roadmap and Smart City programs in urban areas. However, the rollout of these initiatives has been uneven, constrained by infrastructural disparities, limited digital literacy, and bureaucratic fragmentation (Al-Omairi et al., 2020; Nasirin et al., 2023). Meanwhile, countries like Singapore have achieved high EGDI scores by adopting holistic strategies that integrate cutting edge infrastructure, real time citizen feedback mechanisms, and inclusive digital policies.

One area where Indonesia diverges from regional best practices is in its implementation approach. The current top down model often limits opportunities for participatory governance and hampers adaptive innovation at the local level. By contrast, countries like Singapore and South Korea have emphasized citizen co creation in digital service development, fostering higher levels of trust and engagement. Indonesia's digital governance efforts could benefit substantially from strengthening bottom up mechanisms, building local government capacity, and enabling civil society involvement in service design and policy formulation (Nasirin et al., 2023).

Challenges in Decentralized Digital Governance

Decentralized governance produces diverse service quality, which risks undermining fairness perceptions. The challenge is not decentralization itself but the absence of harmonized standards. Causally, inconsistent protocols create uncertainty that erodes trust. Policy solutions must balance local autonomy with national oversight through shared benchmarks and interoperability standards. (Abouelfaiz, 2024).

Decentralization also introduces risks of bureaucratic redundancy and misalignment in digital policy goals. Disparities in local digital readiness ranging from budget allocation and IT infrastructure to skilled personnel create significant inconsistencies in service delivery. In response, a coordinated governance framework is essential, combining national policy alignment with localized adaptation. This could include shared digital standards, interoperability protocols, and performance evaluation tools, supported by central government incentives for meeting service quality benchmarks (Radwan et al., 2023).

Institutionalizing Transparency and Inclusiveness

Institutionalizing transparency and inclusiveness in digital public services is critical to fortifying trust and legitimacy in governance. Transparency begins with proactive information disclosure, user friendly open data platforms, and public performance dashboards that make government operations and outcomes visible and comprehensible to citizens. These tools not only foster accountability but also empower users to make informed decisions and hold institutions accountable (Hartanti et al., 2021).

Inclusiveness, on the other hand, involves more than equitable access it requires actively incorporating citizen voices into the digital policy process. This can be achieved through participatory platforms such as online consultations, interactive town halls, and service feedback mechanisms that facilitate real time citizen input (Afrizal et al., 2023). Such platforms are crucial for identifying underserved populations, understanding user needs, and refining services in response to citizen demands. Digital transformation initiatives must also prioritize investments in ICT infrastructure and training programs to bridge the digital divide and enable marginalized communities to participate fully in e governance (Anser et al., 2021).

Sustaining Trust Through Ethical Governance

Additionally, long term sustainability of digital trust and service adoption depends on aligning technology use with broader governance reforms. Digital services must be embedded within a value system that promotes ethical data use, protection of privacy rights, and responsiveness to diverse citizen needs. In this regard, trust is not merely an outcome of system functionality but a reflection of institutional values and policy coherence.

Ultimately, the evidence underscores that digital governance is a socio-political transformation. Causally, technology alone cannot sustain trust; it must be embedded in ethical governance and

citizen-centered values. For Indonesia, this implies that digital reforms must integrate policy coherence, ethical data use, and inclusive participation to ensure sustainable legitimacy.

CONCLUSION

This study demonstrates that Indonesia's digital transformation from 2016 to 2024 has improved EGDI performance, public trust, and governance quality, yet progress remains uneven across regions and institutions. The findings highlight three key contributions: (1) digital service quality particularly transparency, reliability, and personalization emerges as a decisive factor shaping citizen trust; (2) disparities between urban and rural regions illustrate that digital inclusion cannot be achieved through infrastructure expansion alone, but requires targeted literacy and capacity-building programs; and (3) Indonesia's largely top-down approach limits citizen co-creation, contrasting with regional leaders such as Singapore that embed participatory governance in their digital reforms. These insights underscore that trust in e-government is not merely a by-product of technology, but a function of institutional design and governance responsiveness.

Despite these advances, the study also acknowledges key limitations: EGDI remains insufficient to capture qualitative aspects of citizen satisfaction, and data constraints limited deeper causal modeling across provinces. Future research should integrate user-level behavioral data, longitudinal surveys, and comparative ASEAN case studies to enrich analysis of trust dynamics. For policy, the priority is to institutionalize transparency through open data, establish consistent service standards across decentralized administrations, and expand participatory platforms that enable two-way interaction between government and citizens. By embedding ethical governance, inclusivity, and citizen empowerment at the core of digital reforms, Indonesia can translate its digital gains into sustainable democratic accountability and long-term public trust.

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