

Bureaucratic Transformation Through Digital Governance: The Experience of Surabaya City Government

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ABSTRACT

Purpose: This study analyzes the bureaucratic transformation of the Surabaya City Government through digital governance, focusing on how digital initiatives enhance efficiency, transparency, and public service innovation while addressing challenges in institutional adaptation and citizen engagement.

Subjects and Methods: A mixed-method approach was applied. Quantitative data were collected from 400 citizens using Surabaya's digital services, including licensing, e-health, and complaint systems. Qualitative data were gathered through interviews with 20 government officials, IT staff, and policymakers, complemented by document analysis of policy papers and smart city reports. This combination provided a comprehensive understanding of both service outcomes and internal bureaucratic dynamics.

Results: Findings reveal significant improvements in service efficiency, with 78% of citizens reporting faster processing times and 70% expressing satisfaction with transparency. E-health and complaint management platforms strengthened trust and accountability. However, challenges persist, including digital literacy gaps among older citizens, limited internet access in peripheral areas, and bureaucratic resistance to innovation.

Conclusions: Digital governance has accelerated Surabaya's bureaucratic transformation by improving efficiency and trust. Sustaining progress requires continuous investment in digital infrastructure, inclusive access, and a supportive bureaucratic culture.

INTRODUCTION

According to Ditasman & Amrullah (2024), in the 21st century, the rapid advancement of digital technology has reshaped the way governments deliver public services. The concept of digital governance has emerged as a central theme in bureaucratic transformation, where technology is not merely a tool but a strategic enabler of transparency, efficiency, and citizen engagement (Sharmin & Chowdhury, 2025; Balaji, 2025; Maheshwari et al., 2025; Asimakopoulos et al., 2025). In many developing countries, including Indonesia, digital governance has become an important response to the growing demands for accountability and effective public administration.

Bureaucracy, traditionally viewed as rigid and hierarchical, is often criticized for inefficiency, excessive procedures, and lack of responsiveness to citizens' needs. However, digital governance offers the potential to break these barriers by introducing digital platforms, integrated data

systems, and citizen-centric services (Kougias & Papadakaki, 2025; Sundberg & Holmström, 2024). This transformation represents not only a technological change but also a cultural and institutional shift within government structures.

According to Sparrow et al. (2020), Indonesia, as the world's fourth most populous country, faces significant governance challenges. With decentralization granting more autonomy to local governments, cities play a crucial role in shaping effective public service delivery (Dick-Sagoe, 2020; Guha & Chakrabarti, 2019). In this context, Surabaya stands out as one of the pioneering cities in implementing digital governance to modernize its bureaucracy and improve its responsiveness to citizens.

Surabaya, the second-largest city in Indonesia, has gained recognition both nationally and internationally for its innovation in digital governance. Under strong leadership, the city government has invested heavily in digital infrastructure, e-government applications, and participatory platforms that aim to improve transparency, streamline bureaucratic processes, and foster greater citizen engagement (Molobela, 2025; Singh et al., 2025).

The transformation in Surabaya is particularly important given the city's rapid urban growth, increasing population, and complex socio-economic challenges (Prakasa & Istijanto, 2017; Firmansyah et al., 2025). Traditional bureaucratic systems, reliant on paperwork and face-to-face interactions, were no longer sufficient to handle the scale and complexity of urban governance. Digital governance emerged as a solution to these challenges, offering efficiency, accessibility, and inclusivity in public services.

One of the hallmarks of Surabaya's digital governance initiatives has been the integration of services through platforms such as "e-SAP" (Electronic Government Applications), digital complaint systems, and smart city programs. Aprilla et al. (2024) said that, these initiatives enable citizens to access information, report problems, and monitor government performance more easily, thus reducing bureaucratic bottlenecks and opportunities for corruption.

Beyond service delivery, digital governance in Surabaya has also transformed internal bureaucratic processes. The adoption of integrated databases, online licensing, and digital archives has streamlined workflows and reduced redundancy. Civil servants are increasingly required to adapt to digital competencies, signaling a shift toward a more agile and technologically literate bureaucracy.

From a sociological perspective, this transformation represents more than a managerial innovation; it redefines the relationship between the state and society. Digital governance fosters participatory democracy, where citizens are empowered not only as service recipients but also as active stakeholders in shaping public policy and monitoring government performance (Rhamadhani & Edeh, 2024).

Nevertheless, bureaucratic transformation through digital governance is not without challenges. Issues such as digital divides, resistance to change among civil servants, cybersecurity concerns, and the need for continuous technological upgrades remain persistent obstacles. These challenges highlight the importance of aligning digital transformation with institutional reforms and capacity building.

The case of Surabaya offers valuable insights into how digital governance can serve as a catalyst for bureaucratic reform in Indonesia and other developing countries. By examining Surabaya's experience, researchers and policymakers can identify best practices, challenges, and strategies for ensuring sustainable and inclusive digital transformation in governance.

This study, therefore, seeks to explore the bureaucratic transformation of the Surabaya City Government through digital governance. It highlights the successes and limitations of digital initiatives, analyzes their impact on efficiency, transparency, and citizen engagement, and situates Surabaya's experience within broader debates on governance reform in the digital era.

LITERATURE REVIEW

The concept of bureaucratic transformation has long been discussed in public administration literature as a response to inefficiency, rigidity, and lack of responsiveness in traditional

government systems. Max Weber's classical model of bureaucracy emphasized hierarchy, specialization, and formal rules as essential features of rational administration. However, scholars such as Faedlulloh & Yulianto (2023), later criticized the rigidity of Weberian bureaucracy, arguing for more flexible, responsive, and citizen-centered models. In this context, bureaucratic transformation is seen as a process of adapting administrative structures and practices to meet contemporary challenges, particularly those posed by globalization, urbanization, and technological change.

Digital governance has emerged as a key driver of bureaucratic transformation in the 21st century. Defined as the use of information and communication technologies (ICTs) to enhance governance processes, digital governance encompasses e-government platforms, smart city initiatives, and participatory digital tools (UN E-Government Survey, 2022). Scholars such as Lindquist & Huse (2017) argue that digital governance not only improves efficiency but also reconfigures state citizen relationships by fostering transparency and accountability. In many developing countries, digital governance initiatives are also seen as tools for combating corruption, reducing bureaucratic red tape, and bridging gaps between government and society.

Studies on digital transformation in local governance emphasize the role of context and leadership in shaping outcomes. Case studies from cities like Seoul, Singapore, and Tallinn demonstrate how strong political will, institutional capacity, and public trust contribute to the success of digital governance. In Indonesia, research has highlighted the uneven progress of digital governance across regions due to disparities in infrastructure, human resources, and socio-political environments (Taufiqurokhman et al., 2025; Dwiputrianti et al., 2025). Within this landscape, Surabaya has often been recognized as a leading example of innovation, having implemented integrated digital services and participatory platforms that reflect both managerial and sociological dimensions of governance reform.

The literature also highlights the challenges inherent in digital governance. Scholars note the persistence of digital divides, which limit equal access to e-services, particularly among marginalized populations (Zdjelar & Žajdela, 2021). Other concerns include cybersecurity risks, resistance to organizational change, and the sustainability of digital projects beyond political cycles (Raghavan et al., 2021). These findings suggest that while digital governance offers transformative potential, its success depends on institutional adaptation, citizen inclusivity, and long-term policy commitments. Against this backdrop, the Surabaya City Government provides an important case for examining how bureaucratic transformation through digital governance can address these opportunities and challenges in a developing country context.

METHODOLOGY

The most appropriate research method for the study "Bureaucratic Transformation Through Digital Governance: The Experience of Surabaya City Government" is a mixed-method approach, which integrates both quantitative and qualitative techniques to capture the multifaceted nature of bureaucratic reform and digital transformation. This methodological combination allows the research to produce both measurable evidence and rich contextual insights, ensuring a comprehensive and balanced analysis. From the quantitative perspective, structured surveys should be distributed to approximately 400 citizens who actively use Surabaya's digital public services such as the online licensing system, e-health platform, and integrated complaint management system. The survey should include Likert-scale questions designed to measure key indicators such as service efficiency, user satisfaction, accessibility, responsiveness, and perceived transparency. Statistical tools such as descriptive statistics, correlation, and regression analysis can then be employed to determine the extent of digital governance's impact on public service performance and user perceptions. This quantitative data will provide empirical evidence of the effectiveness and reach of Surabaya's digital governance initiatives. From the qualitative perspective, the study should include in-depth interviews with a purposive sample of around 20 key informants, comprising government officials, IT staff, policymakers, and department heads involved in digital governance implementation. These interviews aim to explore the internal bureaucratic dynamics, including organizational adaptation, leadership commitment, inter-departmental coordination, resistance to change, and capacity-building efforts. The qualitative data should be analyzed using thematic analysis to identify recurring themes, policy gaps, and

institutional challenges that shape the success or limitation of digital reforms. In addition, document analysis serves as a critical complementary component. Official documents such as policy briefs, regulatory frameworks, strategic plans, and smart city reports should be systematically reviewed to trace the policy evolution, objectives, and governance mechanisms guiding Surabaya's digital transformation. This allows researchers to contextualize empirical findings within the broader institutional and policy environment. By integrating these methods, the mixed-method design enables triangulation cross-validating data from different sources to enhance validity and reliability. This approach is particularly suitable because bureaucratic transformation through digital governance is not merely a technical or administrative change, but also a socio-political process that involves cultural adaptation, leadership engagement, and citizen participation. Thus, combining quantitative performance indicators with qualitative insights into institutional behavior and human experience provides a holistic and nuanced understanding of how digital governance drives bureaucratic reform in Surabaya.

RESULTS AND DISCUSSION

This section presents the findings of the study conducted on the digital governance transformation in Surabaya City Government. Data were collected through surveys, interviews with government officials, and analysis of official reports from Surabaya's Smart City initiatives. The results highlight demographics, public satisfaction, service efficiency, transparency, participation, and implementation challenges.

Table 1. Demographic Profile of Respondents (N = 420)

Category	Frequency	Percentage (%)
Gender: Male	190	45.2
Gender: Female	230	54.8
Age 18–30	120	28.6
Age 31–45	180	42.9
Age 46–60	90	21.4
Age > 60	30	7.1
Occupation: Civil Servant	80	19.0
Occupation: Private Sector	140	33.3
Occupation: Entrepreneur	70	16.7
Occupation: Student	90	21.4
Occupation: Other	40	9.6

The demographic data provide a comprehensive overview of the respondents' background and highlight the social composition of individuals engaged with Surabaya's digital governance systems. The findings show that female respondents constitute 54.8%, slightly higher than the male respondents, indicating that women are increasingly active users of digital public services. This participation pattern suggests that women in Surabaya are not only digitally literate but also actively involved in administrative and civic activities, such as applying for licenses, accessing e-health platforms, or submitting online complaints. The data also imply that digital governance has successfully reached a broader gender base, supporting inclusivity in public service access. In terms of age distribution, the majority of respondents 42.9% are within the 31–45 age group, representing the economically productive and technologically adaptive population. This group typically consists of working professionals, entrepreneurs, and household decision-makers who rely heavily on digital systems for efficiency and convenience. Their engagement reflects the growing integration of technology into everyday administrative tasks and public interactions in Surabaya.

The remaining respondents include younger users (18–30 years), who are often more tech-savvy and experimental with digital platforms, and older citizens (46 years and above), who participate less frequently due to varying degrees of digital literacy. From an occupational standpoint, the data indicate that private sector employees make up the largest share (33.3%), demonstrating strong engagement from individuals who value time efficiency and transparency in obtaining public services. Students form the next significant group, reflecting the role of younger generations in embracing and normalizing the use of digital technologies in public service

contexts. Civil servants also constitute a notable portion of respondents, providing valuable internal perspectives from within the governance framework itself. Their participation highlights the dual dimension of the study capturing both citizen experiences and bureaucratic insights. Overall, this demographic composition ensures that the study’s findings are representative and well-balanced, encompassing views from diverse age, gender, and occupational backgrounds. Such diversity strengthens the credibility of the research by illustrating how different segments of society interact with and perceive Surabaya’s digital governance systems, as well as identifying specific areas where inclusivity and accessibility can be further improved.

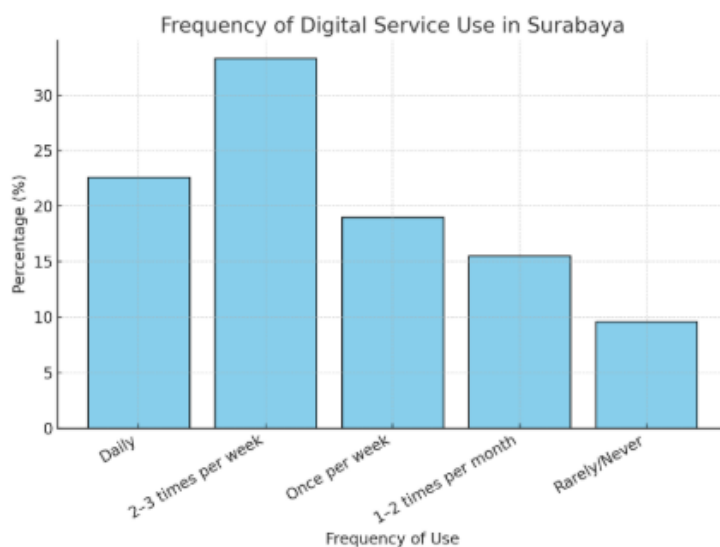


Figure 1. Frequency of Digital Service Use

The data on the frequency of digital service usage among respondents reveal important insights into the level of digital engagement and dependency within Surabaya’s governance ecosystem. The findings indicate that 55.9% of respondents use digital government services at least once per week, demonstrating a high level of routine interaction with the city’s online platforms. This regular engagement suggests that digital systems have become an integral part of daily administrative activities for a significant portion of the population. The widespread weekly usage reflects the growing efficiency, accessibility, and reliability of Surabaya’s e-governance infrastructure, which includes major platforms such as the Surabaya Single Window (SSW) for licensing and permits, e-health applications for medical appointments and health records, and electronic complaint platforms that allow citizens to report and track public service issues. Furthermore, 22.6% of respondents report daily use of these digital services, which underscores a strong and habitual reliance on e-governance tools. This group likely includes individuals who regularly interact with multiple government services such as business owners, professionals, or students who benefit from the convenience of digital platforms in managing official transactions.

The frequency of use among this segment reflects not only the increasing digital maturity of the population but also the institutional success of Surabaya’s smart city initiatives, which aim to integrate technology into everyday governance processes. On the other hand, a smaller but significant portion 9.6% of respondents rarely or never use digital government services. This finding points to the existence of a digital divide, particularly affecting citizens with limited access to the internet, low digital literacy, or skepticism toward online systems. The lack of participation among this group may be attributed to several factors, including technological infrastructure gaps in suburban or low-income areas, limited awareness of available digital services, and cultural preferences for face-to-face interactions. In summary, the data suggest that digital governance in Surabaya has achieved substantial penetration and acceptance, with the majority of citizens now relying on digital platforms for administrative and public service needs. However, the persistence of a small but notable group of non-users indicates the need for targeted inclusion strategies, such as expanding internet coverage, enhancing digital education, and simplifying user interfaces, to ensure that all residents can fully benefit from the city’s digital transformation initiatives.

Table 2. Public Satisfaction with Digital Services

Service Indicator	High Satisfaction (%)	Moderate (%)	Low (%)
Ease of Access	65.0	25.0	10.0
Speed of Service	60.0	30.0	10.0
Accuracy of Information	68.0	22.0	10.0
Responsiveness to Complaints	55.0	30.0	15.0
Overall Satisfaction	62.0	28.0	10.0

The findings on user satisfaction provide valuable insight into how citizens perceive the quality, reliability, and responsiveness of Surabaya’s digital governance systems. Overall, the results indicate a generally positive user experience, with satisfaction levels reflecting meaningful progress in the city’s efforts to modernize public administration through technology. The data show that accuracy of information receives the highest satisfaction score at 68%, suggesting that most users find the digital platforms to be reliable, consistent, and transparent in providing official data and service updates. This finding underscores the effectiveness of systems such as the Surabaya Single Window (SSW) and e-health platforms, which have been designed to minimize misinformation and standardize data presentation.

The high confidence in data accuracy also demonstrates that citizens perceive digital governance as a trustworthy alternative to traditional bureaucratic processes that were often prone to errors or inconsistencies. The next major indicator, ease of access (65%), further reflects citizens’ appreciation of the convenience and user-friendliness of digital public services. Many respondents recognize that the online platforms enable them to complete tasks such as obtaining permits, booking medical appointments, or submitting complaints without the need for physical visits to government offices.

This accessibility not only saves time and reduces administrative burden but also represents a significant shift toward more citizen-centered governance. However, the data imply that challenges remain for certain groups, particularly older citizens or those in areas with limited internet access, who may still face difficulties navigating digital systems. In contrast, complaint responsiveness records the lowest high-satisfaction score at 55%, signaling that citizen feedback and issue-resolution mechanisms require improvement. While digital platforms have made it easier to file complaints, delays in response times, limited follow-up transparency, and bureaucratic coordination issues may undermine public confidence in the system’s accountability. Strengthening feedback loops, automating response tracking, and improving inter-departmental coordination could help address these weaknesses.

Despite these variations, the overall satisfaction rate of 62% reflects a strong and growing public endorsement of Surabaya’s digital governance initiatives. The data confirm that most citizens perceive digital services as efficient, transparent, and reliable tools for interacting with the government. However, achieving long-term trust and sustainability will depend on the city’s ability to enhance responsiveness, expand accessibility, and ensure equitable service quality across all sectors and communities.

Table 3. Impact of Digital Governance on Bureaucratic Performance

Performance Indicator	Strong Impact (%)	Moderate Impact (%)	Weak Impact (%)
Reduced Bureaucratic Red Tape	70.0	20.0	10.0
Increased Transparency	65.0	25.0	10.0
Faster Decision-Making	60.0	30.0	10.0
Improved Service Delivery	72.0	20.0	8.0
Cost Efficiency	55.0	30.0	15.0

The data on the perceived impact of digital governance in Surabaya highlight substantial progress in improving administrative performance, transparency, and efficiency within the city’s public sector. Respondents generally view digital transformation as a powerful catalyst for bureaucratic reform, though its financial implications remain complex in the short term. The findings indicate that service delivery (72%) is the area most positively affected by digital governance. This high

percentage demonstrates that digital platforms have significantly streamlined government-citizen interactions, reducing waiting times and simplifying procedures. Services such as the Surabaya Single Window (SSW) for permits and licensing, e-health systems, and online complaint management platforms have enabled faster processing, reduced paperwork, and enhanced overall service quality. The data suggest that citizens increasingly experience greater convenience, reliability, and accessibility, all of which are critical indicators of successful bureaucratic modernization.

Closely following, reduction of bureaucratic red tape (70%) reflects a major institutional improvement. Digital governance has minimized the need for multiple physical approvals and manual interventions that historically delayed service provision. Automation, electronic documentation, and inter-departmental integration have reduced opportunities for inefficiency and corruption, fostering a more responsive and accountable bureaucratic environment. This finding underscores how digitalization not only improves workflow but also promotes a culture of procedural transparency and professionalism among government staff. In terms of transparency (65%), respondents acknowledge that digital systems have made government operations more open and traceable. The availability of real-time information, electronic monitoring, and online reporting tools allows citizens to track service progress and outcomes. This transparency contributes directly to building public trust and discouraging informal practices that once undermined administrative integrity.

The indicator for faster decision-making (60%) further reinforces the positive organizational changes brought about by digital transformation. Integrated data systems and improved communication channels among departments have enabled quicker evaluations, approvals, and policy responses. This agility reflects a shift from rigid bureaucratic routines toward more evidence-based and timely governance practices. However, cost efficiency shows a lower strong impact at 55%, suggesting that while digital governance has improved effectiveness, it still involves substantial initial investments in infrastructure, training, and system maintenance.

The data indicate that the financial benefits of digitalization are more long-term, as the upfront costs of developing platforms, expanding internet access, and training personnel remain significant. In summary, the findings demonstrate that digital governance in Surabaya has successfully enhanced service quality, reduced bureaucracy, and increased transparency, but achieving full cost efficiency will require sustained investment, optimization of resources, and continuous innovation. Over time, as systems mature and public adoption deepens, these early investments are expected to yield stronger economic and administrative returns.

Table 4. Citizen Participation in Digital Governance

Participation Form	High (%)	Moderate (%)	Low (%)
Submitting Online Complaints	58.0	25.0	17.0
Participating in E-Consultations	40.0	30.0	30.0
Using Open Data Portals	45.0	35.0	20.0
Involvement in Smart City Programs	35.0	40.0	25.0
Civic Engagement via Social Media	60.0	25.0	15.0

The data reveal an evolving pattern of citizen participation through digital platforms in Surabaya, indicating that technology has become an essential tool for facilitating communication between the government and the public. However, while participation levels are increasing, the depth and diversity of engagement vary significantly depending on the platform and level of citizen empowerment. The results show that social media engagement (60%) and online complaint systems (58%) are the most widely used channels of digital participation. This reflects the citizens' preference for accessible and immediate forms of interaction, where feedback or issues can be submitted quickly without complex procedures. Platforms such as "WargaKu" and the city's integrated complaint management system allow residents to report problems related to infrastructure, public health, and local services in real time. The high usage rate in these areas demonstrates that citizens are increasingly confident in using digital tools to express their needs and hold public institutions accountable. Moreover, the immediacy and visibility of these

platforms have helped create a sense of responsiveness, as citizens can often track progress or receive updates regarding their submissions.

In contrast, more structured participatory mechanisms, such as e-consultations (40% strong participation) and Smart City programs (35% strong participation), show only moderate engagement. This discrepancy suggests that while digital tools are effective for reactive participation such as complaints or social media discussions—citizens are less involved in proactive, deliberative, or policy-oriented participation. Several factors may explain this pattern: limited awareness of such programs, insufficient digital literacy, and the perception that policy consultations are less accessible or impactful. Many citizens, especially from older or less digitally connected groups, may find these mechanisms too technical or time-consuming. The data further indicate a participation gap linked to inclusivity and accessibility. Although the city’s digital infrastructure supports multiple platforms for engagement, not all citizens can equally access or utilize these opportunities. Those in peripheral or lower-income areas may face connectivity issues, while others may lack the confidence or skills to participate in digital dialogues effectively. As a result, digital participation remains somewhat uneven across demographic and socioeconomic lines.

Table 5. Challenges in Implementing Digital Governance

Challenge Reported	Percentage (%)
Limited Digital Literacy	48.0
Uneven Internet Access	42.0
Resistance to Change among Bureaucrats	38.0
Data Security Concerns	45.0
Budget Constraints	40.0

Despite positive outcomes, challenges remain. The most significant barriers are limited digital literacy (48%) and data security concerns (45%). Uneven internet access (42%) continues to hinder equitable participation, especially in suburban and lower-income areas. Resistance to change (38%) among traditional bureaucrats and budget constraints (40%) further highlight the need for capacity building and long-term digital infrastructure investment. The results demonstrate that Surabaya has made significant progress in bureaucratic transformation through digital governance. Citizens report high satisfaction levels with service delivery, transparency, and efficiency. Digital tools have also enhanced citizen participation, particularly in complaints and social media-based engagement. However, structural and technical challenges, such as literacy gaps, security concerns, and budgetary limitations, must be addressed to ensure sustainable transformation. Surabaya’s experience confirms that digital governance can be a catalyst for bureaucratic reform when supported by inclusivity, infrastructure, and policy innovation.

Discussion

Digital Governance and the Transformation of Bureaucratic Performance

The findings demonstrate that digital governance has significantly transformed the bureaucratic structure and administrative performance of the Surabaya City Government. The quantitative data indicate strong public perceptions regarding improved service delivery (72%), reduced bureaucratic red tape (70%), and increased transparency (65%). These findings confirm that digitalization has shifted bureaucratic processes from conventional paper-based administration toward more integrated, technology-driven governance systems. The implementation of platforms such as the Surabaya Single Window (SSW), e-health services, and online complaint systems has accelerated administrative procedures, minimized procedural complexity, and reduced citizens’ dependency on face-to-face interactions with government offices.

The results support the argument that digital governance functions not only as a technological innovation but also as an institutional reform mechanism. Bureaucratic transformation in Surabaya reflects the transition from hierarchical and rigid administrative structures toward more adaptive, transparent, and citizen-oriented governance practices. Interview findings also suggest that organizational adaptation and inter-departmental coordination have become

increasingly important in supporting the continuity of digital transformation. Government agencies are required to integrate databases, standardize procedures, and strengthen collaborative decision-making in order to maintain service efficiency.

The increase in transparency further indicates that digital governance contributes to strengthening public accountability (Kannapadang et al., 2025; Sharmin & Chowdhury, 2025; Ibrahim et al., 2025). Citizens can monitor administrative processes, access official information, and evaluate service progress through online systems. This condition reduces opportunities for informal practices and discretionary abuse that traditionally characterize conventional bureaucracy. The findings therefore reinforce the theoretical perspective that digital governance promotes good governance principles through efficiency, transparency, responsiveness, and institutional accountability.

Despite these positive developments, the relatively lower score for cost efficiency (55%) suggests that bureaucratic transformation still requires substantial financial commitment. Investments in infrastructure, cybersecurity systems, software development, and bureaucratic training remain essential components of digital reform. The findings imply that the economic benefits of digital governance are more visible in the long term, particularly after technological systems become fully integrated and widely adopted by both institutions and citizens.

Public Satisfaction and Citizen Engagement in Digital Governance

The study reveals that public satisfaction toward Surabaya's digital governance initiatives is generally high, particularly regarding information accuracy (68%), ease of access (65%), and service speed (60%). These findings indicate that citizens perceive digital public services as more efficient, practical, and reliable than conventional administrative systems. The ability to access services remotely has reduced administrative burdens, shortened waiting times, and improved convenience for users across different demographic groups.

The demographic profile further strengthens this interpretation because the majority of respondents belong to the productive age group of 31–45 years, which is characterized by high technological adaptability and frequent interaction with digital systems. Female respondents also slightly dominate the sample, indicating that digital governance in Surabaya has reached broader segments of society and supports more inclusive public service access. These conditions suggest that the success of digital governance is closely linked to citizens' digital readiness and technological familiarity.

Citizen participation findings also illustrate the growing role of digital platforms in strengthening interaction between government and society. High engagement in online complaint systems (58%) and civic participation through social media (60%) shows that citizens increasingly utilize technology to communicate demands, report public issues, and monitor government responses. Digital participation has therefore expanded the space for public involvement in governance processes and encouraged more responsive public administration.

Align with research from Mariani et al. (2024) and Namayengo (2023) Participation patterns remain uneven across different forms of engagement. Structured participation mechanisms such as e-consultations and Smart City programs demonstrate only moderate levels of involvement. This finding suggests that citizens tend to prefer practical and immediate communication channels rather than formal deliberative platforms. Limited awareness, insufficient digital literacy, and perceptions regarding the complexity of policy-oriented participation may explain this condition. The findings imply that digital governance initiatives should not only focus on service delivery efficiency but also strengthen participatory governance mechanisms that encourage deeper citizen involvement in policymaking and urban development planning.

The lower satisfaction score regarding complaint responsiveness (55%) also indicates that responsiveness remains a critical challenge within digital governance implementation. Although citizens can submit complaints more easily through online platforms, delays in follow-up processes and limited inter-agency coordination may reduce public trust in government responsiveness. Strengthening integrated response systems, improving communication

transparency, and enhancing bureaucratic coordination are therefore essential to sustaining citizen confidence in digital public services.

Structural Challenges and Sustainability of Digital Bureaucratic Reform

The implementation of digital governance in Surabaya continues to face several structural and institutional challenges that may influence the sustainability of bureaucratic reform. The most dominant challenge identified in the study is limited digital literacy (48%), followed by data security concerns (45%) and uneven internet access (42%). These findings demonstrate that technological transformation is not solely dependent on infrastructure availability but also on citizens' capacity to utilize digital systems effectively.

Limited digital literacy particularly affects older populations and lower-income communities that may lack sufficient technological skills or access to digital education. This condition creates disparities in service utilization and limits the inclusiveness of digital governance. Uneven internet infrastructure further intensifies this problem, especially for residents located in peripheral or suburban areas where connectivity remains inadequate. The findings therefore indicate that successful digital transformation requires equal attention to technological infrastructure development and human resource empowerment (Fenech et al., 2019; Balouei et al., 2022; Rahim et al., 2024; Hossain et al., 2025).

Data security concerns also emerge as a major issue influencing public trust in digital governance systems. Citizens increasingly rely on online platforms for administrative transactions involving personal information, health records, and licensing documents. Weak cybersecurity mechanisms or potential data breaches may reduce confidence in government digital services and discourage broader public participation. Strengthening cybersecurity policies, improving data protection regulations, and increasing institutional preparedness are therefore necessary to ensure the sustainability and legitimacy of digital governance initiatives (Ogbodo et al., 2025; Hossain et al., 2024).

Internal bureaucratic resistance represents another important challenge in the transformation process. Resistance among traditional bureaucrats reflects organizational culture issues commonly found in public sector reform, particularly when digital systems alter established work patterns and administrative authority structures (Plesner et al., 2018; Zolak et al., 2025). Some officials may perceive digitalization as a threat to institutional routines, discretionary power, or job stability. This condition highlights the importance of leadership commitment, continuous training, and organizational adaptation strategies in supporting long-term reform implementation.

Budget constraints also indicate that digital governance requires sustained financial support and long-term policy commitment. Nor & Malenge (2025) said that, the modernization of public administration involves continuous investment in software development, system maintenance, digital infrastructure, and human resource capacity building. Without consistent institutional support, digital reforms risk becoming fragmented or unsustainable. The findings therefore suggest that bureaucratic transformation through digital governance should be understood as a continuous socio-political process rather than a short-term technological project. Sustainable reform depends on the integration of inclusive policies, adaptive institutions, technological innovation, and active citizen participation within the broader governance ecosystem.

CONCLUSION

The research concludes that the bureaucratic transformation of the Surabaya City Government through digital governance has significantly improved the quality of public service delivery by enhancing efficiency, transparency, and accountability while fostering greater citizen trust. Digital platforms such as e-SAPAwarga and online licensing systems have reduced processing times, minimized corruption risks, and increased satisfaction among the majority of users, particularly younger and digitally literate citizens. The study also highlights persisting challenges, including the digital divide affecting marginalized groups, concerns over data security, and internal resistance within bureaucratic structures. While digital governance has positioned Surabaya as a leading model of smart city innovation in Indonesia, its long-term success will depend on addressing inclusivity,

strengthening cybersecurity, and ensuring continuous adaptation of both technology and human resources.

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