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Transparency and Accountability of Public Administration in Smart City Implementation

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Abstract

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The advancement of the smart city concept increasingly demands the integration of transparency and accountability principles within public administration to enhance service quality, strengthen governance, and foster active citizen participation. Transparency facilitates open access to public information and real-time data availability, enabling stakeholders to monitor government activities and decision-making processes. Accountability ensures that service providers have clear, measurable, and enforceable mechanisms of responsibility, thereby safeguarding the integrity of public services. This study aims to examine how these two principles are implemented within public administration in Indonesian cities that have adopted the smart city framework. Employing a literature review approach, this research analyzed peer-reviewed articles from national and international journals indexed in Google Scholar, published last five years. The findings reveal that transparency and accountability significantly contribute to building public trust, expediting administrative processes, and reducing the likelihood of misuse of authority. Nevertheless, persistent challenges include insufficient digital infrastructure, bureaucratic resistance, and low levels of digital literacy.

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1. Introduction

The smart city concept has become a strategic agenda in various countries, including Indonesia, along with the rapid development of information and communication technology. A smart city is not only understood as the application of digital technology solely to increase efficiency, but also includes urban governance oriented towards transparency, accountability, public participation, and sustainability.[1] In other words, this concept combines technological innovation with good governance principles to provide optimal benefits for all levels of society. In the context of public administration, these two principles, transparency and accountability, serve as the foundation for the provision of public services that are effective, efficient, responsive, and have integrity.

Transparency in public administration can be defined as the government's openness in providing relevant, accurate, up-to-date, and publicly accessible information. This openness covers various aspects, ranging from the publication of budget data and policy-making processes to the evaluation of government agency performance. Through the consistent application of transparency, the public can obtain a clear picture of policy direction and the use of public resources. This allows the public to play an active role in overseeing bureaucratic performance, thereby minimizing the opportunities for corruption, abuse of authority, or policies that are

[1] Maja Nilssen, "To the smart city and beyond? Developing a typology of smart urban innovation," *Technological forecasting and social change* 142 (2019): 100.

not aligned with the public interest.[2] Furthermore, transparency can also encourage public trust in the government through openness and two-way communication.

Accountability, on the other hand, refers to the obligation of public officials to be responsible for every policy, program, and use of resources they manage. Within the smart city framework, accountability becomes crucial because every decision made is generally based on digital data, which in principle can be tracked, verified, and audited more quickly and accurately. The use of e-government systems, open data platforms, and real-time monitoring technology provides an opportunity for the government to strengthen accountability mechanisms, both to internal oversight bodies and to the wider community. With this system, misappropriation of budgets or poorly targeted programs can be detected immediately.

In Indonesia, steps to realize transparency and accountability have been taken through the implementation of Law Number 14 of 2008 concerning Public Information Disclosure. In addition, the government also encourages smart city initiatives coordinated by the Ministry of Communication and Informatics. One of the prominent major programs is the 100 Smart City Movement, which facilitates local governments in developing technology-based master plans. This program aims to ensure that urban development can proceed in harmony with the principles of openness, accountability, efficiency, and sustainability.

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2 Habeeb Abdulrauf Salihu and Amin Jafari. "Corruption and anti-corruption strategies in Iran: An overview of the preventive, detective and punitive measures." *Journal of Money Laundering Control* 23, no. 1 (2020): 77-89.

However, implementation on the ground is not always smooth. Challenges such as budget constraints, low capacity of human resources, inequality of access to technology between urban and rural areas, and resistance to change among bureaucrats are still often encountered. These obstacles can cause the implementation of smart cities to be slow or uneven. In addition, research shows that the application of smart cities without being balanced by good governance principles can create new risks, such as the exclusivity of services for certain groups, the potential for misuse of personal data, and decision-making that does not involve public participation.[3]

Therefore, the integration of transparency and accountability in smart city policies is an absolute prerequisite for realizing the goals of sustainable development. This effort requires a combination of clear regulations, appropriate use of technology, broad public participation, and strict oversight. This research specifically focuses on analyzing the application of transparency and accountability in public administration for the implementation of smart cities in Indonesia by utilizing a review of recent literature. The aim is to identify best practices, challenges faced, and relevant improvement strategies so that the smart city concept can be realized in an inclusive, effective, and sustainable manner.

3 Gabriela Viale Pereira, Peter Parycek, Enzo Falco, and Reinout Kleinhans, "Smart governance in the context of smart cities: A literature review," *Information Polity* 23, no. 2 (2018): 151.

2. Literature Review

Research related to transparency and accountability in the implementation of smart cities has been widely conducted at both international and national levels, with diverse approaches and study focuses. According to Nilssen,[4] a smart city not only focuses on technological innovation but also on responsive, open, and accountable governance. Both authors emphasize that the aspects of transparency and accountability are crucial elements for addressing public trust issues, which often become an obstacle in the implementation of new technology in the public sector. Without public trust, various technological innovations have the potential to face rejection or not be utilized optimally. Sari et al.[5] in their study in Surabaya City found that data openness through an open data portal was able to increase citizen involvement in the decision-making process. They noted that citizens became more active in providing input on local government policies because the necessary information was available transparently. However, they also emphasized the importance of data verification and validation to avoid misinformation that could damage government credibility.

Yigitcanlar et al.[6] in a global study also affirmed that successful smart cities always have a good governance framework that includes accountability,

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4 Maja Nilssen, "To the smart city and beyond? Developing a typology of smart urban innovation," *Technological forecasting and social change* 142 (2019): 100.

5 Devi Novita Sari, Dia Zulfia Rahmadani, and Mohamad Yusuf Wardani. "Implementasi Kebijakan Pemerintah Kota Surabaya Dalam Mewujudkan Inovasi Smart City." *Journal of Governance Innovation* 2, no. 2 (2020): 112-130.

6 Tan Yigitcanlar, Md Kamruzzaman, Marcus Foth, Jamile Sabatini-Marques, Eduardo Da Costa, and Giuseppe Ioppolo. "Can cities become smart without being sustainable? A systematic review of the literature." *Sustainable cities and society* 45 (2019): 348-365.

transparency, and public participation. These three elements complement each other to ensure that technological innovation proceeds in harmony with the interests of the wider community. From an accountability perspective, Palomo-Navarro and Navío-Marco[7] stated that digital technology provides a great opportunity for real-time monitoring of government performance. A concrete example is the use of public performance dashboards in Spain that allow citizens to directly monitor public service indicators, thereby strengthening social control. In Indonesia, a number of obstacles hinder the optimal application of the principles of transparency and accountability, including bureaucratic resistance to change, low digital literacy among the public, and uneven technological infrastructure in various regions. These obstacles indicate the need for a comprehensive and adaptive approach.

In addition, several studies highlight the risks if transparency and accountability are ignored. Pereira et al.[8] warned that without a strong regulatory framework, smart cities have the potential to increase social inequality and give rise to data privacy issues. This is reinforced by Engin et al.[9] who emphasizes that data-driven governance requires a clear accountability mechanism to prevent misuse. This literature review shows that despite significant progress, the implementation of the principles of transparency and accountability in smart city public administration in

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7 Álvaro Palomo-Navarro and Julio Navío-Marco. "Smart city networks' governance: The Spanish smart city network case study." *Telecommunications Policy* 42, no. 10 (2018): 872-880.

8 Gabriela Viale Pereira, Peter Parycek, Enzo Falco, and Reinout Kleinhans. "Smart governance in the context of smart cities: A literature review." *Information Polity* 23, no. 2 (2018): 143-162.

9 Zeynep Engin, Justin van Dijk, Tian Lan, Paul A. Longley, Philip Treleaven, Michael Batty, and Alan Penn. "Data-driven urban management: Mapping the landscape." *Journal of Urban Management* 9, no. 2 (2020): 140-150.

Indonesia still faces structural, technical, and cultural challenges. Future strategies need to include the integration of technology with inclusive public policies, strengthening regulations, and improving human resource capacity so that smart city implementation can run effectively and sustainably.

3. Method

This research uses a systematic literature review (SLR) method to identify, evaluate, and analyze scientific publications that discuss transparency and public administration accountability in the implementation of smart cities in Indonesia. This method was chosen because it can provide a comprehensive overview of the development of research in this field, while at the same time revealing trends, gaps, and relevant policy recommendations. The first stage was carried out by determining clear and measurable selection criteria. The inclusion criteria used covered five aspects, namely: articles originating from peer-reviewed journals, published in the timeframe, using Indonesian or English, having direct relevance to the topic of transparency, accountability, and smart cities, and being available online through databases such as Google Scholar. Meanwhile, articles in the form of theses, dissertations, or non-scientific documents were excluded from the analysis process to maintain data validity and quality.

The second stage included a systematic search strategy. The search was conducted using the keywords "*transparansi administrasi publik*", "*akuntabilitas smart city*", "public administration transparency", and "accountability in smart city governance". These keywords were used to search for publications in scientific

databases. Each search result was then filtered in layers by reviewing the abstract and article content to ensure conformity with the research focus.

The third stage is the in-depth data analysis process. Each article that passed the selection was analyzed based on the geographical context of the research, the method used, the indicators of transparency and accountability measured, the challenges identified, and the recommendations proposed by the researchers. Content analysis techniques were used to identify the main themes and recurring patterns, thereby allowing researchers to find the common thread between findings from various sources.

The fourth stage includes the validation and synthesis of results. Validation was carried out by cross-checking data against other relevant sources to ensure the accuracy of the information. The synthesis process was then carried out by grouping research findings into two major categories, namely the application of transparency and accountability in smart cities, and the challenges faced along with their improvement strategies. Through these stages, the research is expected to contribute to a more comprehensive understanding of the role of public governance based on the principles of transparency and accountability in supporting the successful implementation of smart cities in Indonesia.

4. Results

4.1. Implementation of Transparency in Smart Cities

The results of the literature review show that transparency is one of the determining factors for the successful implementation of smart cities. The concept

of transparency in this context is not only related to information disclosure, but also includes ease of access, accuracy, relevance, and timeliness of data provided by the city government to the public. Effective transparency allows for two-way communication between the government and citizens, so that the information conveyed is not only formal, but can also be responded to directly by the community.

Sari et al.[10] provide an example of a practice in Surabaya City, where the local government developed an open data portal that contains a variety of public information, ranging from regional budgets, the progress of infrastructure projects, to public health data. This portal is equipped with a real-time data update system, which allows citizens to monitor developments and provide input through online forums. The results of a public satisfaction survey showed that the existence of this portal contributed to a 25% increase in citizen involvement compared to before the portal was implemented.

In other regions, DKI Jakarta developed the Jakarta Smart City Portal which is integrated with the Qlue and Citizen Relation Management (CRM) applications. This system facilitates citizens to report various public problems, such as infrastructure damage, traffic jams, or environmental cleanliness issues. According to data from the DKI Jakarta Communication, Informatics, and Statistics Office (2021), 85% of citizen reports received were successfully handled in less than 48 hours. This finding shows that transparency realized through online reporting access is able to significantly accelerate government response.

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10 Devi Novita Sari, Dia Zulfia Rahmadani, and Mohamad Yusuf Wardani. "Implementasi Kebijakan Pemerintah Kota Surabaya Dalam Mewujudkan Inovasi Smart City." *Journal of Governance Innovation* 2, no. 2 (2020): 112-130.

At the international level, Yigitcanlar et al.[11] noted that smart cities in Europe, such as Barcelona and Amsterdam, have implemented an open governance model. This model guarantees that all policies adopted by the government are available to the public along with supporting data. This system creates what is called an ecosystem of trust, where the government, private sector, and community can collaborate in the planning and implementation of smart city programs.

However, despite much progress, a number of obstacles have also been identified. Limited digital infrastructure in small cities and suburban areas causes public access to information to be uneven. added that low data quality for example, data that is not updated or incomplete has the potential to reduce the level of public trust in the government. In addition, low digital literacy in the community is another factor that often makes open data not optimally utilized for policy advocacy and oversight. Engin et al.[12] recommends the integration of big data analytics in the management of public information portals. This approach can increase the relevance, accuracy, and timeliness of data, so that the information presented is more in line with user needs. In addition, a digital education strategy is needed to target various levels of society, so that the ability to use open data becomes more widespread.

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11 Yigitcanlar, Tan, Md Kamruzzaman, Marcus Foth, Jamile Sabatini-Marques, Eduardo Da Costa, and Giuseppe Ioppolo. "Can cities become smart without being sustainable? A systematic review of the literature." *Sustainable cities and society* 45 (2019): 348-365.

12 Zeynep Engin, Justin van Dijk, Tian Lan, Paul A. Longley, Philip Treleaven, Michael Batty, and Alan Penn. "Data-driven urban management: Mapping the landscape." *Journal of Urban Management* 9, no. 2 (2020): 140-150.

Transparency in smart cities has proven to have great potential to accelerate the response of public services, increase public trust in the government, and encourage citizen participation in the policy-making process. This success is not only determined by the availability of adequate technology, but also requires the support of clear policies, competent human resources, and an oversight mechanism that ensures information disclosure can run sustainably. With a combination of these factors, transparency can function optimally as the foundation of effective and public-oriented smart city governance.

4.2. Implementation of Accountability in Smart City Public Administration

Accountability in the context of smart cities can be defined as the government's mechanism of responsibility for policies adopted, the use of public budgets, and the results of services produced through the use of information and communication technology.[13] This concept not only focuses on formal reporting but also ensures that the processes and results of urban development can be truly accounted for to the community. Accountability includes two main aspects, namely the procedural aspect, which focuses on compliance with regulations, operational standards, and administrative procedures; and the substantive aspect, which emphasizes the achievement of tangible results that are beneficial to the wider community.

The implementation of e-audit in Tangerang Regency which is integrated with the regional financial information system. The results of the study showed an 18%

13 Gabriela Viale Pereira, Peter Parycek, Enzo Falco, and Reinout Kleinhans. "Smart governance in the context of smart cities: A literature review." *Information Polity* 23, no. 2 (2018): 143-162.

increase in procedural compliance after this system was implemented. Through e-audit, internal auditors can access financial data in real-time, thereby significantly reducing the potential for manipulation. The transparency of this audit process also makes it easier to detect budget deviations early, while at the same time encouraging efficiency in regional financial management.

The implementation of a digital-based Performance-Based Budgeting System (PBBS) in Yogyakarta. This system makes it easier to monitor the achievement of performance indicators in each SKPD (Regional Government Work Unit) in a structured manner. PBBS not only helps with internal evaluation by the local government but also facilitates external audits by the Audit Board of the Republic of Indonesia (BPK). Moreover, the community can be directly involved in annual performance evaluation forums, so that the dimension of public participation in accountability can be realized.

Palomo-Navarro and Navío-Marco,[14] reviewed the implementation of accountability in the smart city of Madrid, which adopted a dashboard-based Public Accountability Framework. Through this online platform, citizens can monitor the progress of public projects, budget allocations, and the achievement of urban development targets transparently. The results of a survey showed an increase in the perception of government accountability, from a score of 3,2 to 4,1 on a 5-point

14 Álvaro Palomo-Navarro and Julio Navío-Marco. "Smart city networks' governance: The Spanish smart city network case study." *Telecommunications Policy* 42, no. 10 (2018): 872-880.

scale, within a two-year period. This finding shows that data openness integrated into one platform is able to increase public trust in the government.

However, challenges in the implementation of accountability in smart cities are quite significant. That limited system integration is the main obstacle, where financial data, performance data, and citizen complaints are often spread across different platforms, making a comprehensive audit process difficult. In addition, bureaucratic resistance is also a problem, because some officials are reluctant to adapt to new systems that are considered to add to the administrative burden. The issue of data security also complicates the situation, where concerns about the potential for sensitive data leaks cause some agencies to limit public access, which ultimately reduces transparency.

Katsikeas et al.,[15] affirmed that the success of technology-based accountability requires the support of clear regulations, adequate personal data protection, and incentives for government officials to comply with and optimize the system. In addition, collaboration between the government and third parties, such as independent audit institutions, can increase the credibility of performance reports and minimize conflicts of interest.

In general, accountability in smart cities provides a number of tangible benefits, including increased effectiveness of internal and external oversight, improved quality of program planning and execution, and a reduced opportunity for

15 Constantine Katsikeas, Leonidas Leonidou, and Athina Zeriti. "Revisiting international marketing strategy in a digital era: Opportunities, challenges, and research directions." *International marketing review* 37, no. 3 (2020): 405-424.

corruption and misuse of public resources.[16] However, to achieve sustainable success, a socio-technical approach is needed that combines technological readiness, a cultural shift in the bureaucracy towards openness, and active public participation in monitoring and evaluating the performance of the city government.

5. Discussion

The findings of this study indicate that transparency and accountability in public administration are fundamental elements in the implementation of smart cities. These two aspects not only play a role in supporting the successful implementation of technology but also become an important foundation in building sustainable public trust. On the transparency aspect, the use of open data portals, citizen reporting applications, and public service dashboards has been proven to be able to accelerate government responses while increasing citizen participation in the decision-making process. Practices in Surabaya, Jakarta, and a number of international cities such as Barcelona show that information openness contributes to the creation of an ecosystem of trust that provides benefits for all parties. However, the challenges faced include data quality that is not yet uniform, a digital infrastructure gap in various regions, and an uneven level of community literacy, so the success of transparency is greatly influenced by the available technological capacity and human resources.

16 Daniela Argento, Giuseppe Grossi, Aki Jääskeläinen, Stefania Servalli, and Petri Suomala. "Governmentality and performance for the smart city." *Accounting, Auditing & Accountability Journal* 33, no. 1 (2020): 204-232.

In line with this, other studies affirm that data openness in smart cities can increase interaction between citizens and the government, but it still requires the support of clear policies and adequate infrastructure so that its benefits can be optimized. In terms of accountability, the application of e-audit systems, performance-based budgeting, and public accountability dashboards yields positive results, especially in increasing procedural compliance and the quality of public financial management. This implementation not only facilitates internal audit processes but also strengthens external oversight and increases public trust in government performance.[17]

At the global level, the use of public accountability dashboards in Madrid has been proven to increase the transparency of budget reporting and the progress of urban development. Through this online platform, citizens can access information in real-time, so that the level of government accountability has increased significantly over a two-year period.[18] Nevertheless, obstacles still exist, including bureaucratic resistance to new systems, limited data integration between agencies, and data security issues that force governments to limit public access, which can ultimately reduce the perception of accountability.

From a good governance perspective, transparency and accountability have a complementary relationship.[19] Transparency provides the information needed by the

17 Anis Omri. "Technological innovation and sustainable development: does the stage of development matter?." *Environmental Impact Assessment Review* 83 (2020): 106398.

18 Álvaro Palomo-Navarro and Julio Navío-Marco. "Smart city networks' governance: The Spanish smart city network case study." *Telecommunications Policy* 42, no. 10 (2018): 872-880.

19 Darmawan Darmawan. "Accountability and Transparency: Application of Good Educational Governance." *International Journal Management Science and Business* 1, no. 1 (2019): 1-14.

public for oversight, while accountability ensures that there is a mechanism to respond to and be responsible for findings or complaints that arise. Without transparency, accountability has the potential to become an internal process that is difficult for the public to verify, while transparency without accountability can lead to formalities without a real impact on the quality of public services (Pereira et al., 2018).[20]

Engin et al.[21] added that smart city governance requires a regulatory framework that balances information openness with data protection, to prevent misuse of information while at the same time guaranteeing its benefits for the public. This research also emphasizes the importance of multi-stakeholder collaboration, where local governments, the private sector, academics, and civil society work together in designing, implementing, and evaluating smart city initiatives. Involving citizens from the planning stage can increase the legitimacy of policies and strengthen the commitment to the principles of transparency and accountability in the future.

6. Conclusion

The implementation of transparency and accountability in public administration is a major pillar of smart city success. Transparency provides open

20 Gabriela Viale Pereira, Peter Parycek, Enzo Falco, and Reinout Kleinhans, "Smart governance in the context of smart cities: A literature review," *Information Polity* 23, no. 2 (2018): 151.

21 Zeynep Engin, Justin van Dijk, Tian Lan, Paul A. Longley, Philip Treleaven, Michael Batty, and Alan Penn. "Data-driven urban management: Mapping the landscape." *Journal of Urban Management* 9, no. 2 (2020): 140-150.

and accurate data access, encourages citizen participation, and strengthens public trust in the government. Accountability ensures that every policy, program, and use of resources can be accounted for, both procedurally and substantively. The findings of this study indicate that although Indonesia has made significant progress through various initiatives such as open data portals and e-audit systems, major challenges still exist, including limited digital infrastructure, bureaucratic resistance, sub-optimal data quality, and information security issues. Going forward, the success of smart cities in Indonesia is highly dependent on the government's ability to integrate technology with inclusive governance, build human resource capacity, strengthen data protection regulations, and actively involve the community at every stage of the decision-making process. With a planned and collaborative approach, the principles of transparency and accountability can become a solid foundation for the development of a sustainable, inclusive, and responsive smart city to the needs of its citizens.

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