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Revitalising Democratic Local Governance:
Enhancing Citizen Access and Participation through Smart City

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Abstract. This paper examines the implementation of smart city in two cities; Surabaya and Jakarta, focusing specifically on the smart city structure, citizen access, and public participation. Smart city model is seen as new strategy to revitalise democratic local governance. Identically, smart city is mainly associated with the usage of information and communication technology (ICT) which addresses interconnectivity and integration between not only government bodies, but also civil society. This paper looks at how the smart city implementation is organised, how it widens citizen access, and how it enhances citizen participation. The research utilises case study method. Data collection were done by three techniques; document analysis, online observation, and fieldwork. The findings show that the smart city implementation in Surabaya and Jakarta have successfully transformed some of the governing procedures. The transformations mostly appear in the forms of applications and online services such as complaint-handling system and one-stop government service. In addition, some smart city applications enable the open feedback where citizens might also monitor the current condition in the city.

Keywords: Local governance; Smart city; Public participation, E-governance

Introduction

Cities are habitation that represents economic growth, socio-culture, and living condition of a country. Cities also illustrate a nation's economic condition where infrastructure, governance, and civilisation are generally better established than in any other areas. According to Lee and Lee (2014), the number of people living in the cities has reached half of the world's population since 2009. This trend seems consistently growing as the UN predicts the city population will increase by 60% in 2030 (United Nations, 2016). With such a vast percentage of inhabitants, it is undebatable that economic activities will dominantly take place concentratedly more in the cities. However, the massive migration to cities will mark challenges for city stakeholders to maintain life quality aspects given limited space and available opportunity (Joga, Prawestiti, Ismaun, Wardhana, & Indrajoga, 2017). In order to provide those necessities, the smart city concept appears to answer complex demands for better city governance. One common strategy of the smart city calls the adoption of transformational development dominantly assisted by information and communication technology (ICT) usage that will improve citizen access and participation.

This research aims to increase the understanding of smart city implementation by studying its day-to-day basis operation. The direction of this research focuses on two cities with high population where a strong foundation of policy, government's commitment, and city stakeholder's capability are required to manage complex structures, characteristics, and divergences of the city. There are two questions that will be addressed in this research. First, **how does the public participate in the smart city implementation?** Second, **to what extent smart city implementation could enhance and accelerate citizen participation?**

Our decisions go to best practices in Indonesia, particularly in Surabaya and Jakarta city. The consideration to choose both cities is determined by their characteristics, achievements, and similar digital-features of public services. Both Surabaya and Jakarta are the two most prominent cities with the largest population in the country (2.8 and 9.7 million) as well as capital cities. Considering Internet Provider Association's research on internet infrastructure (APJII, 2014), both cities performed quite well in internet penetration and mobile devices ownership. Looking at those factors, this research aims to compare the progress and highlight the differences between two smart city implementations.

Research method

To answer two questions of this research, case study method was used to picture the implementation of smart city in Surabaya and Jakarta. From various smart city initiatives, we limited this research only by analysing complaint-handling system application and one-stop service information available in both cities.

Data collections were done by conducting document analysis, online observation, and fieldwork. Document analysis looked at government's official documents and previous studies. Since smart city implementation offers services available in the forms of website, desktop application, and mobile application, it is important for us to organise online observation. During online observation, we analysed as well as utilising available online services by checking their functions, features, access, and rooms for improvement. Lastly, the field work was arranged by visiting Surabaya and Jakarta city, particularly in the Department of Communication and Informatics Surabaya and Jakarta Smart City Lounge. Offline data and information collection during the fieldwork were taken through in-depth interview, observation, and participating in public seminar organised by the government.

Literature review
Interpreting smart city

Prior to the previous study, smart city has been broadly defined by scholars. Dominantly, smart city literature relates to combining good governance and ICT usage (Hollands, 2015). While this argument is likely acceptable, the view of ICT usage as a core of smart city leads to an ambiguous relationship between city governance and global problems such as climate change, poverty, and citizen rights. The technology utilisation is essential. However, it does not cover the whole mission brought in the idea. Meijer and Bolívar (2016) argue that smart city concept should emphasise more on 'smartness' framework. Smartness of a city is a condition where city stakeholders gain a political understanding of economic benefits and public values. Embracing public values means the government should profoundly concern to improve participation and collaboration in governing activities not only between internal governmental organisations, but also from non-governmental actors. In other words, regional politicians are urged not to solve city problems by their own, but they are encouraged to increase and strengthen the capacity of the urban system, especially the citizens, to work together. Thus, a smart city is not only about transforming conventional procedure to technology since it will not make a city smarter automatically.

Smartness framework which seeks sustainable solutions for city development could be enhanced with the help of ICT usage. ICT is needed when there is a possibility to upgrade business process to be more effective, efficient, and accountable. Even so, Anthopoulos (2017)

sees that smartness of a city does not merely come from ICT. Instead, he argues that the phenomena of emerging market and integration in an urban environment are the ones that lead to smart city concept. Thus, the urgency of comprising today's relevant ICTs is not everything because there are other factors that determine smartness improvement of a city.

To give more understanding of smartness and ICT usage in smart city concept, Meijer and Bolívar's work (2016) analyses 51 academic articles that discuss or are nearly relevant to the smart city. After classifying various definitions, the study recognises that smart city's focus area could be divided into four categories. The first focus is the smart technology in the city, aiming to take advantages of the progressive development of technology. Although the smart city is initiated by the government, it does limit the utilisation of technologies made for non-governing purposes. However, irrespective of an open attitude to any advancement of technology, this smart city form does not automatically accept the usage of every available technology.

The second attention concentrates on people's smartness in the city. Even the most advanced technology will be wasteful as long as its users do not have adequate capacity to maximise and take benefits from it. Thus, the focus of city stakeholders should pay more attention to increasing human capacity and awareness. Capacity improvement puts efforts on enabling the citizens to benefit as well as contributing to tackling city's problems. Another fundamental aspect is citizen's awareness. As smart city aims to achieve sustainable goals, every individual must comply with the norms and regulations applied in the area. The last concentration is the collaboration between actors and organisations in the city. As stated earlier, the initial concentration of smart city is not to equip governing process with technology, but to promote a user-centred environment that enables collaboration among city stakeholders (Calderoni, Maio, & Palmieri, 2012). Technology will play a crucial role in enabling interactions and facilitating networks between urban actors. Therefore, it can be said that instead of being core, technology should be seen as the smart city enabler that eases the interaction between government and non-government stakeholders. Lastly, the combination that embraces technology, smart people, and smart governance will be the most advanced smart city form. Without one aspect, it would be difficult to maintain the expected sustainable city development.

Smart city, ICT level, and democratic ecologies

This section will highlight the correlation of smart city and democratic principles, especially how digitisation could facilitate city stakeholders to involve in city development. To do so, we utilise the digital maturity framework introduced by Di Maio and Howard (2017). From the illustration below, each maturity level marks different characteristics of values, service models, platforms, ecosystem, leadership, technology focus, and key metrics. The higher maturity level of digital government, the more advanced ICT features that possibly enhance and accelerate city stakeholders' involvement in city development.

Figure 1: Digital Maturity Model

Maturity Level	E-Government 01 Initial	Open 02 Developing	Data-Centric 03 Defined	Fully Digital 04 Managed	Smart 05 Optimizing
Value Focus	Compliance	Transparency	Constituent Value	Insight-Driven Transformation	Sustainability
Service Model	Reactive	Intermediated	Proactive	Embedded	Predictive
Platform	IT-Centric	Customer-Centric	Data-Centric	Thing-Centric	Ecosystem-Centric
Ecosystem	Government-Centric	Service Co-creation	Aware	Engaged	Evolving
Leadership	Technology	Data	Business	Information	Innovation
Technology Focus	SOA	API Management	Open Any Data	Modularity	Intelligence
Key Metrics	% Services Online	No. of Open Datasets	% Improvement in Outcomes, KPIs	% New and Retired Services	No. of New Service Delivery Models

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Source: Di Maio and Howard (2017)

In order to create ideal smart city governance, e-government initiative needs to be fulfilled first as an initial usage of technology in governing matters. At this pace, e-government starts introducing IT-centric to government's operations resulting in some of the government services being made online. Nevertheless, there are limits that hinder the initiative. The substantial obstacle is the public access. Using technological devices do not necessarily mean that governing process is automatically being open because its dependency on government's role. The government's role in smart city will determine the recognition of ICT features and openness to let non-government actors to have their say in monitoring their city development progress. Thus, an open government is an expected government format to run smart city. Open government unlocks learning opportunities for everyone to take benefits from (now) less-restricted data and information. Open government sets 'open by default' mechanism, marking a more pro-active business process instead of reactive (Rogers & Lindsey, 2012). Pro-active mechanism applies an automatic public information disclosure with or without public information request.

The next digital government is the data-centric approach. This pace marks the increase of public's data awareness that can be seen from data management included as a critical performance indicator. Opening data and information access are not meant only to unlock public access, but it also creates possibilities to strengthen government and public's interaction (Luna-Reyes et al., 2012) allowing public voices counted and heard more strongly. Further, when the government has entered a fully-digital phase, it would become easier to integrate available services. Again, openness culture has undoubtedly stimulated the citizens to demand more interaction with their government, asking for more transparent, accountable, tangible, and democratic system of governance. The final phase of digital government is the smart digital governance where the culture of governance has shifted to innovation and collaboration.

To sum up, smart digital governance will subsequently strengthen the democratic values where the openness culture succeeds to connect public demand and needs to better services. The democratic values adopted by these interested stakeholders would likely stimulate inclusive

development as ICT features will increase the capability of government and non-government sectors to interact, participate, and collaborate each other.

Findings And discussion

Smart city structure

Both smart city has showed dissimilar implementation. In terms of smart city structure, the concept of Surabaya Smart City (hereafter, SSC) is not established as a special working unit. SSC is a vision on how the government will shape the city in the future which later is translated into various government-led ICT-based projects. On the other hand, Jakarta Smart City (hereafter: JSC) is established as a technical implementation unit (UPT) under the Department of Communication, Informatics, and Public Relations. Despite the differences in the structure, smart city vision between two cities is similar to support informative, transparent, and collaborative society. However, the differences between both smart cities indicate that the ecosystem of digital governance in Indonesia is not well-organised. As there is no national institution/body that coordinates or leads the digital initiative, regional governments run their digital innovations on their own without clear guidance to achieve national priorities.

According to our interview with the Head of Communication and Informatics Department in Surabaya, the core of smart city Surabaya is 'e-government'. To conduct its realisation, e-government of Surabaya city is divided into four sub-units; planning, information management, public service, and communication. Interestingly, looking at the platforms that open to the public, none of these initiatives are made by non-government stakeholders. Meanwhile, JSC concerns on the interconnectivity between government system in order to create open and collaborative environment with non-government stakeholders. An official website is available to provide data and information regarding the smart city initiative, www.smartcity.jakarta.go.id. In the interim, Surabaya city government has no website dedicated specifically for Smart City implementation. Nevertheless, any updated news on the smart city will be disseminated into Surabaya City Government's news portal. Besides available on the websites, JSC facilitates applications for citizen participation made by government agencies and/or third sectors.

How smart city enhances public information access

This section will depict how both Surabaya and Jakarta government develops public information access for its citizens. In general, both Surabaya and Jakarta smart city provide an informative one-stop portal. A one-stop portal is an innovation that maximises one website to contain all information needed for both government officials as well as citizens so that they would not need to find any additional information on other platforms. In Surabaya, the city government creates a platform called *Surabaya Single Window* (SSW). SSW is accessible as website and mobile application. In SSW, citizens could access any information needed for licensing varied from required documents, submission procedures, and contact persons. Even though online submission is not available for all licensing, there are also features that enable citizens to register online which later will quicken the procedure during office visitation. While Surabaya city government provides SSW, Jakarta Smart City also has similar services called *Satu Pintu* (one-stop services). Compared to SSW, *Satu Pintu* has similar functions such as providing information online, queuing online, and online submission. The only feature of *Satu Pintu* not available in SSW is the video call.

This research finds that the information access for the public is not merely about available services. During our observation, we argued that Jakarta Smart City is superior in terms of

transparency level, especially raw material data and information that are shared to the public for greater use. Some examples of these raw materials include open data and application programming interface (API) (see figure 2). Another further usage of information access can be seen in Jakarta Smart City Map. JSC Map provides visualisation of open government data. This real-time-based map will provide the current condition of the city such as government institution's location, bus route, air condition, and feedback from the citizens. The features of this application will not only enhance public transparency, but also interaction among government bodies, non-government institutions, and the citizens at any time.

Figure 2: Various functions in Jakarta Smart City's portal
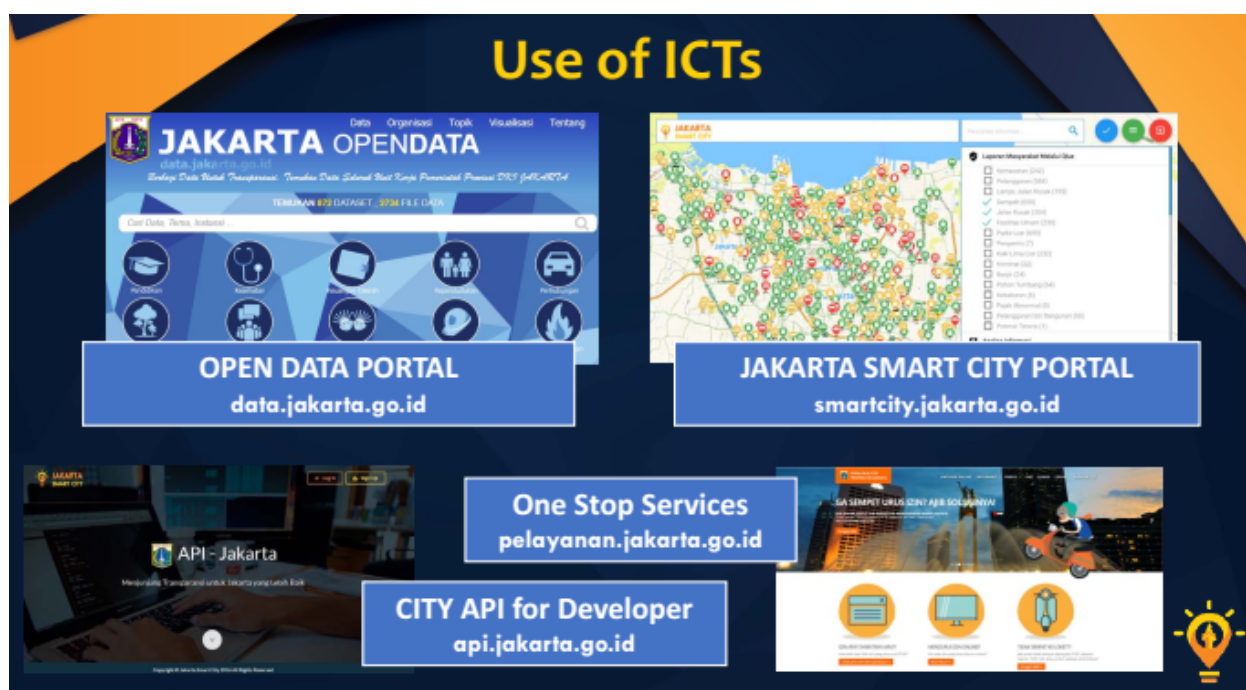
After providing findings and analysis in government structure and information access, this sub-section will highlight how both Smart Cities facilitate citizen response through their innovative platforms, particularly the complaint-handling system applied in SSC and JSC. Complaint handling system is crucial to maintain the government accountability in responding public demand. Complaint-handling system that are enhanced with digital features will definitely become more cost-effective, efficient, convenient, and faster.

Although having a similar mechanism, this research spots the differences in open feedback between two smart cities. Open feedback is the mechanism where the citizens are given access to see feedback from other citizens while close feedback sets that it is the government officials that will be the only one able to see the inputs. The national platform of the complaint-handling system, *LAPOR* (available in both cities) is one of the examples that does not provide open feedback. Any input submitted to *LAPOR* will be given an identification number that will be directed to particular institutions which might solve the compliance. According to *LAPOR*'s administrator, the reason behind this close feedback circumstance is to protect the informant's id because the report might harm his or her security in case of whistle-blower type of report. Nevertheless, we must consider that open feedback could enhance more possibilities to improve available services.

Open feedback will increase the opportunity for citizens to be part of public-solving matters. By displaying problems to people, open feedback might increase the opportunity to stimulate ordinary citizens to create movements. A third-party complaint-handling system

application, *Qlue* integrates its system to Jakarta Smart City's portal where everyone is able to access the city's problems in real-time situation. The problems vary from traffic, pollution, disposal, and criminal report. The problems displayed to public, ideally, should be responded not only by government officials but also non-government stakeholders in the city.

In Surabaya, open feedback can be found in *e-Wadul*, a government-made complaint-handling system in the form of mobile-application. Despite its limited access to those who only have Surabaya citizenship number, *e-Wadul* highlights the recent situation in the city similar to *Qlue*. In addition, there are also other platforms that Surabaya citizens can use such as *e100*, a local radio's initiative provides updated information through Facebook page. Although it is an unofficial one, the government sometimes also responds the situation in this platform.

To summarise, this research finds that there are three essential factors that determine public participation in the smart city implementation. First, government structure of the initiative. The government as the initiator of the smart city must provide a precise form of institution that will run the smart city projects. A clear initiative that has been officially run by the government will ease democratic process on how the citizens or other city stakeholders to participate in the development. A platform that has been authorised by the government body can also increase public trust so that their feedback will be responded by a responsible government institution. Second, the availability of information access enables citizens to know and keeps them updated regarding recent information in the city. Before expecting active citizens, the government must provide a transparent platform to make citizens know and are aware first. Third, transparency and participation will not be beneficial as long as the feedback of the citizens is not handled properly. Citizen feedback should become an irreplaceable input for policymaking as it might strengthen the data-driven process which subsequently will lead to the discovery of suitable solutions answering society demands and needs.

Table 1: Investigation of Smart City in Surabaya and Jakarta

Components	Surabaya Smart City	Jakarta Smart City
Government Structure	Smart City as a Vision - Applied to Government Agencies.	Smart City as a Technical Implementation Unit.
Core	e-Government.	Interconnectivity.
Strategy	• Regional Development Planning (RDP). • Government Information. Management System (GIMS). • Public Service (PS). • Public Communication (PC).	• Government Listens. • Interconnected System. • Citizen Participation.
Dedicated Official Site	None	www.smartcity.jakarta.go.id
Transparency Level	Public Information	Public Information. Open Data. Application Programming Interface (API). Open Feedback.
Single Window Initiative	*Surabaya Single Window* (online information, online submission, online registration)	*Satu Pintu (One-stop service)* (online information, online submission, online registration, video call).
Complaint-handling system	e-Wadul (open feedback available but not available for non-Surabaya citizens). Call Center 112. LAPOR. Social Media (Facebook, Twitter, and Instagram). Offline Procedure Available.	Qlue (open feedback available). LAPOR. Satu Layanan. Social Media (Facebook, Twitter, and Instagram). Offline Procedure Available.
Integrated Third-sector applications	None (Third sector applications are available but not integrated and should be utilised separately).	Qlue. Trafi. Zomato. Go-Food. iJakarta. Waze.
Additional Note	None of the government applications are made by third sectors. Some applications are restrictedly available for citizens with Surabaya ID number only.	Smart city is applied through combination between government-made and third-sector-made applications integrated to a single portal. However, portal is often crashed.

Source: primary observation.

Conclusion

This research acknowledges that both smart cities in Surabaya and Jakarta have been equipped with smart technology. Although there is no national framework or standardisation as a guidance for the implementation, both governments have successfully started their initiatives sufficiently despite some differences between the two. Referring to Meijer and Bolívar's smart city framework, both cities have adopted technology into their daily basis that reform some bureaucratic procedures. Both cities have also established several digital applications as their product. This indicates that from governmental sector, Surabaya and Jakarta governments can

be considered to have adequate human resources to operate daily basis of running the smart city. However, as discussed in the literature review, a city will not be automatically smart just because of the presence of technology. We argue that two smart city implementations are dissimilar in terms of format. Surabaya government's role is more dominant than Jakarta government. This can be seen from the domination of e-government applications that are almost made and operated by government officials.

This research also finds limited access of data and information in the forms of raw materials in Surabaya. This can be seen from available e-government applications that only open for government information that is not interoperable because those initiatives mostly focus on giving government information and access to online procedure of available public services. An interoperable government data will enable the user to analyse further regarding the government information. For example, open data portal Jakarta now that has provided more than one thousand interoperable datasets or raw data that can be downloaded anywhere and anytime without restricted access. Another striking project is the API Jakarta that enables the users to obtain application programming interface only by accessing the portal. With open data and API, a citizen can create initiatives by utilising these raw materials for greater usage such as establishing applications. In addition, there is no restriction access for portal's visitors. Unfortunately, this is not applied in some of the e-government initiatives in Surabaya where to dig further information, an id of government offices will be required. Therefore, citizens in Jakarta might be able to participate sufficiently in terms of using digital feature.

After conducting this study, this research provides some of the recommendations that can be considered for the improvement of both smart cities. First, it is important to strengthen the integration and collaboration between institutions to support the smart city. This could be done by opening access for further improvement, especially the development of digital initiatives in order to increase the usefulness and reduce difficulties for the users. Second, leadership will remain crucial in the existence of the smart city. An open culture will not be possible as long as there are supportive leaders that believe the essence of conducting more transparent, participative, and collaboration process will bring greater good for the society. Leadership also takes place in a way the government provides clear guidance that can be translated as a roadmap for smart city implementation. At the moment, unfortunately, there is no clear guidance from the central government to conduct e-government initiatives across the country. While this research finds some action plans from the National Planning Agency (*BAPPENAS*), the paper is, unfortunately, merely a political document rather than legal support that can directly mandate a majority of government institutions. Lastly, we would like to recommend that bigger efforts are needed to stimulate people's awareness to utilise open government data and information. Transparency would be meaningless as long no one is benefiting from the openness. The next question will focus on whether the people have the capability to maximise the usefulness of open government channels. Thus, we recommend education and training such as start-up incubator that will increase human resource quality to help government creating more innovations in the future. Once again, a smart city is not only about the presence of technology, but the actual efforts to make citizens smart.

References

Anthopoulos, L. (2017). Smart Utopia VS Smart Reality: Learning by Experience from 10 Smart City Cases. *Cities*, *63*, 128–148. https://doi.org/10.1016/j.cities.2016.10.005

Calderoni, L., Maio, D., & Palmieri, P. (2012). Location-aware Mobile Services for a

Smart City: Design, Implementation and Deployment. *Journal of Theoretical and Applied Electronic Commerce Research*, *7*(3), 74–87. https://doi.org/10.4067/S0718-18762012000300008

Di Maio, A., & Howard, R. (2017). Introducing the Gartner Digital Government Maturity Model, (September).

Hollands, R. G. (2015). Critical Interventions into the Corporate Smart City. *Cambridge Journal of Regions, Economy and Society*, *8*(1), 61–77. https://doi.org/10.1093/cjres/rsu011

Joga, N., Prawestiti, N., Ismaun, I., Wardhana, B., & Indrajoga, D. N. (2017). *Kota Cerdas Berkelanjutan*. Jakarta: Gramedia Pustaka Utama.

Lee, J., & Lee, H. (2014). Developing and Validating a Citizen-centric Typology for Smart City Services. *Government Information Quarterly*, *31*(SUPPL.1). https://doi.org/10.1016/j.giq.2014.01.010

Luna-Reyes, L. F., Chun, S. A., Harrison, T. M., Guerrero, S., Burke, G. B., Cook, M., … Pardo, T. (2012). Open government and e-government: Democratic challenges from a public value perspective\m{1}. *Information Polity: The International Journal of Government & Democracy in the Information Age*, *17*(2), 83–97. https://doi.org/10.1145/2037556.2037597

Meijer, A., & Bolívar, M. P. R. (2016). Governing the Smart City: a Review of the Literature on Smart Urban Governance. *International Review of Administrative Sciences*, *82*(2), 392–408. https://doi.org/10.1177/0020852314564308

Rogers, P., & Lindsey, T. D. (2012). Principles of open Government data. *CRB Shoty Subjects: Open Government Series*, (August), 2. Retrieved from https://opengovdata.org/

United Nations. (2016). *The World's Cities in 2016*.