Conference

Smart Governance: A Study of the Jakarta Smart City During the Covid-19 Pandemic

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Abstract. This study focused on the problems of smart city governance in Indonesia, especially in the implementation of smart governance during the COVID-19 pandemic in the Jakarta Smart City. Smart governance can help provide information and influence governance in handling COVID-19. This study examined the development of smart city governance in contributing to the handling of COVID-19, especially in providing smart information to stakeholders to improve the effectiveness of policies. This study also investigated the development of technological, institutional and human capital aspects. Data were collected from websites and smart city media in Jakarta such as Citizen Relations Management, Open data, Qlue applications, Jakarta Kini (Jaki), and the Jakarta Smart City portal. The results showed the technical aspects that influenced the development of smart city governance, in terms of the basis for digitizing government that led to urban intelligence, as well as the institutional and human capital aspects which were also needed to support the success of the smart city.

Keywords: smart city governance, Jakarta smart city, COVID-19 pandemic

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1. Introduction

A developed city is always identified with how far the city can provide the best service from various aspects. The service is not limited to providing information on public services and providing infrastructure, however, it goes further on how to build various services that can be digitally integrated and make it easy for city residents to access them. The various needs for digitizing government and digitizing cities (1), (2) have foundations in the development of smart cities. The birth of digitization is in line with hopes to answer various urban challenges and problems, so the concept of a smart city is born as a solution. Studies on smart cities are widely known and studied since the 90s (3), (4).

The emergence of this concept cannot be separated from the increasing use of information technology in the world. The idea of using digitalization in governance is accompanied by the concept of e-governance. The assumption with e-gov can help provide efficiency and effectiveness in running the government bureaucracy. After several decades, the concept of e-governance is considered incapable of making

the government bureaucratic system much more effective and efficient. However, it is considered as a new part of the corruption in its development (5) (6). The emergence of the concept of smart city governance is new hope for urban management which is considered to have complex problems. For example, problems with transportation, environment, bureaucracy, and public services, welfare, spatial planning, and so on.

Various thoughts on smart city governance have been put forward, such as (7) understanding Smart City as an integrated and multidimensional system that aims to overcome urban challenges based on partnerships and stakeholders. On the other hand (8) shows that there is much overlap between the three dimensions of smart city (technological innovation, governance, and human capital), which indicates the need for a multidisciplinary, inter-disciplinary, or transdisciplinary collaborative approach to integrate theory and maximize positive potential. On smart city sustainability. Meanwhile, (9) focus on the Smart City aspect with a collaborative financial and economic perspective. In line with this, (10) public service innovation from an innovation management perspective and shows that joint evaluation does not only need to discuss technological innovation but also integrate it with social innovation. Phenomena in the implementation and development of smart cities are presented in different ways and perspectives but still question the extent to which aspects of technology, aspects of governance, and Human Development. Some of these studies have not discussed how smart governance is in seeing conditions such as the existence of crisis problems such as the Covid-19 pandemic and the new era.

The existence of sophisticated information technology in Smart Jakarta City (JSC) is designed to provide information, accommodate and respond to various city problems. This study will respond to the conditions and implementation of smart governance in the conditions of the new era. There are at least several purposes for this research. First, what is the implementation of smart governance in the covid-19 period? Second, the extent to which smart city governance contributes to providing information communication services and mapping so that it has a real impact in the pandemic era. The third is how the policies are taken by Jakarta Smart City in dealing with the new normal during the Covid-19 pandemic. It is considered important to re-examine the thesis developed that where smart city governance is directed on whether to infrastructure, the quality of life of the community, or the innovation ecosystem (11).

Looking at various aspects of the problem regarding smart governance in the face of the Covid-19 pandemic, it should be able to answer the various challenges and problems that arise including the problem of the Covid-19 pandemic in the new era. This should be momentum to make a real contribution to the implementation of smart

governance because of this new normal period. Most people and governments use various technological tools and the internet in carrying out activities and work. The existence of Jakarta Smart City (JSC) is to provide fast, responsive, accurate, and responsive public services supported by a good digitization system. The presence of sufficiently large and good capability that JSC has should be an essential element in providing influence in handling the Covid-19 pandemic.

1.1. An Important Dimension in Smart City Development and Methods

Several aspects are quite important in the development and implementation of smart cities, especially in the aspect of smart governance, namely the dimensions of technology, dimensions, institutions, and dimensions of human capital. The dimensions of technology are described in several items, such as digital city, intelligence city, ubiquitous city, wired city, hybrid city, information city (18). The existence of technological advancement as an essential part of smart city development is also emphasized by (11), (12, 13). The development of smart solutions through technology such as smart internet networks including internet data, Internet of Things, Internet of Services and Internet of people) this can encourage the development of smart cities and social welfare (15). The existence of internet data and information technology also provides excellent opportunities in creating convenience for the government and society in carrying out every activity and service (16) in government administration. The existence of the internet of services at least promises to make it easier for people to access government activities and can even participate in public policies.

The need for the use of internet data in the implementation of smart cities requires technological innovation and policies that can be implemented by the government and society easily (17, 19). To support the application of smart cities, big data and the Internet of things (IoT) are needed which can enable the integration of sensor data, frequency, and so on (20, 13). It is hoped that the existence of big data can be used to make various efforts to solve urban problems appropriately, quickly, and correctly. A significant technology component is required, such as infrastructure, hardware, and software. The rapid development of technology will also have a big influence on every innovation and technological development, such as the emergence of 5G network technology (19).

The second concept that is considered to influence the development of smart city governance is institutional which is called (18) in which there are aspects of governance, policies, and regulations/directives. Governance is more about institutional management

and governance. Institutionalization and good community governance will strengthen the development of smart cities. This is also widely referred to as a smart community (14, 21, 22). In addition to some positive experts and scientists seeing positively about the development of smart cities, however, other studies describe various aspects of seeing some representative cities in the world that describe 'smart cities' or simply 'smart utopia' and far from the expected reality of urban intelligence (23).

In the institutional dimension, it is also known as the smart community. This intelligent community can be interpreted as an external community and starts from the smallest group to the national group so that it becomes a common interest. So that there can be a collaborative collaboration by applying IT to change things for the better (18, 24, 25). Another thing is related to policy aspects, a study (11) says that smart city activists in their developers forget many aspects of policy. The urgency of the smart city policy is a form of the seriousness of the government in providing services and convenience in government administration. The existence of the internet of service has become an inseparable part of enforcing digitalization and urban intelligence efforts. The last aspect in the category of institutional dimension is regulation so that there is certainty in the management of smart cities. It is no less critical for strong regulations to regulate various matters related to the implementation of smart cities. The existence of legal certainty will make it easier for stakeholders to run every smart city item and maintain legal order.

In the human factor, at least two things are needed in the development of a smart city, namely, human infrastructure and social capital. It is called human capital infrastructure when there are creativity and workforce, knowledge networks, voluntary organizations, free from environmental crimes, which are considered as a way to advance smart cities (26, 18). For social infrastructure, such as the existence of intellectual capital and social capital, is something that is needed by a smart city. Infrastructure is about the people with the network. Smart people generate and benefit from social capital. Smart cities are about a mix of education/training, culture/arts, and business/commerce (Bartlett, 2005).

Human infrastructure, which is an essential part of the development of a smart city, is expected to give birth to a city of creativity, a learning city, a humane city, and a knowledge city. The birth of city creativity in supporting various aspects to be able to give birth to innovations to answer various city challenges that are considered increasingly complex (18, 26, 27). What is no less important is the existence of social capital. Social capital is referred to as part of human infrastructure because it requires intelligent and insightful people who can comprehensively see and read urban problems and are

formulated to solve problems without neglecting cultural and artistic aspects. This social capital can also have a reasonably broad meaning, such as exemplary support from the community.

This research was conducted at the Jakarta Smart City (JSC) in Jakarta, especially in the three aspects of smart city development in Jakarta such as the technology aspect, the Jakarta Smart City institutional aspect, and the human capital development aspect associated with the Covid-19 pandemic. The research was conducted by interviewing parties related to the management of Jakarta Smart City (JSC) such as government employees who are responsible for administering the JSC—starting from the provincial level to several elements of government living in the village. The data obtained apart from the results of the interview also obtained various data on the Jakarta Smart City website. Jakarta is the city with the most favorable cases of Covid-19.

1.2. Jakarta Smart City (JSC) in The COVID-19 Pandemic Era

This section will present mixed results of studies related to the development of technological factors, institutional factors, and human factors that are considered to have a significant influence in the implementation of smart cities, especially in the implementation of smart governance. In the technological aspect, several indicators of the use of technology in Jakarta Smart City (JSC) can be seen, such as the use of various technological infrastructures from the Jakarta Smart City (JSC) portal.

Data in fig.1. There are 1,466 microcell towers, 1,033 fiber optic, 7,108 CCTV, and 1,237 free wifi or in the JSC program, it is called JakWifi. The data is contained in the communication, informatics, and statistics office in the Jakarta Smart City (JSC) portal. The availability of this technology infrastructure is mentioned to provide support for JSC development. Microcells are said to strengthen network strength in areas where mobile phone usage is very dense (28). Optical fiber itself is considered a transmission line or a type of cable made of glass or plastic which is very fine and smaller than a strand of hair and can be used to transmit light signals from one place to another (29).

An aspect that is no less important in this factor technology is the use of applications. There are several applications used by JSC in implementing smart cities such as; *Citizen Relation Management (CRM) application, Jakarta Kini (Jaki), QLUE application, Waze*. CRM as a forum for accommodating complaints, problems, and reports from Jakarta residents that the DKI Jakarta government has set as a system to respond quickly by providing 13 (thirteen) channels for citizen complaints. The JAKI application is also
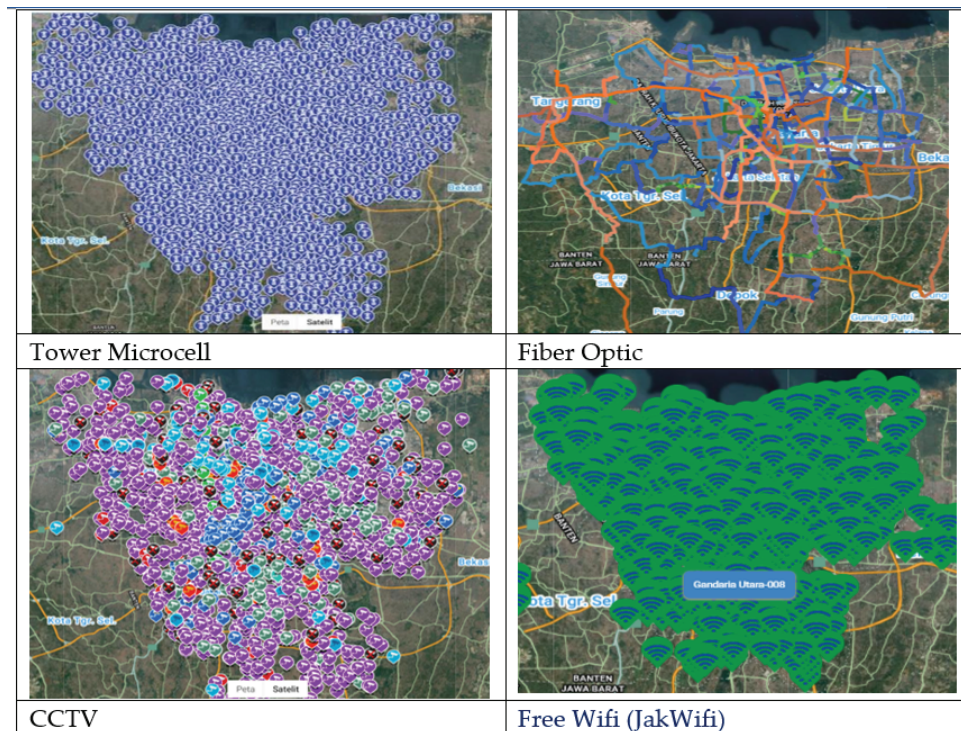
Figure 1: Four aspek teknologi JSC (http://smartcity.jakarta.go.id).

an application used to provide services to residents of DKI Jakarta. Various information in this application is provided, such as the latest news information, *JakPantau*, Jakarta Corona Likelihood Metric *(JakCLM), JakWifi,* and others. Likewise with the *Qlue* Application, in the JSC portal, various types of public reports related to problems in Jakarta are reported through this application with more than 15 reporting items such as waste problems, illegal parking, public facilities, violations, to potential terrorists. As for the WAZE application, it provides more information related to traffic conditions. In this context, there are so many choices of applications and technologies that the DKI Jakarta

In the institutional factor, it is mentioned that there are several aspects such as aspects of governance, policies, and regulations. In the aspect of governance, JSC has formed a JSC Implementing Unit under the Communication and Information Technology office. The Jakarta Smart City Management Unit (UP JSC) was formed through governor regulation number 280 of 2014. Where the consideration for the formation of this UP JSC is in the context of managing the City of Jakarta by developing and synergizing all potential and resources in an integrated manner by utilizing information technology to realize The city of Jakarta as a modern city that is neatly arranged and consistent with the regional spatial plan, builds a culture of tolerant urban society as well as having awareness in maintaining the city and developing a clean and transparent government

and oriented to public services. In 2017, a new regulation was issued to regulate public complaints with the Citizen Relation Management (CRM) application which is integrated with JSC.

To develop the JSC institution, various collaborations were carried out to form intelligent communities such as *indorelawan*, *Tokopedia*, *node flux*, *iJakarta*, *Qlue*, Waze, Jaki, *Trafi, Zomato, Ragunan Zoo, and Go Food*. Some of those mentioned are smart communities that partner with JSC in implementing smart cities. Take, for example, the *Qlue* application, this application which is integrated with the Jakarta Smart City in the form of social media for reporting complaints and appreciating the environment. In the smart literacy sector, JSC also partners with *iJakarta,* a social media-based digital library application equipped with an ebook reader and various social features. JSC also partners with *indorelawan* who are considered as a digital platform for connecting that makes collaboration between volunteers and social organizations/communities with social missions easier.

Mentioned some of the concepts referred to as human capital infrastructure are the birth of several indicators such as creative cities. In Jakarta, the form of a creative city is by launching the Jakarta Smart City (JSC) Hive, which is considered to be able to provide a forum for creative young Jakartan. JSC Hive is a coworking space that will be a place for startups to meet local governments. Various creative applications in supporting it as a creative city are the birth of applications from startups such as Qlue, Jaki, Waze, and others. In a creative city, it is also known as the ability to build shared cooperation to provide convenience and solve various problems. In the concept of human capital, there is also a voluntary organization, and JSC collaborates with Indorelawan as a form to accommodate organizations and volunteers in various social activities. On the site www.indorelawan.org, data after special filters were obtained for the DKI Jakarta area as many as 723 organizations with various focuses (as many as 19 focuses). The various focuses of these volunteer organizations are human rights, health, disaster management, science-technology, culture and arts, child development, community development, and others.

In the human capital aspect, it is also explained that the importance of innovation and community support, especially in the aspect of serving and providing information related to Covid-19. On the JSC page, it can be seen that the platform that provides information services related to Covid-19 is the *Jaki (Jakarta Kini)* application which was launched in 2020. The news page for tempo.com also states that the Jaki application is projected to become a city-super app as well as a one-stop service for residents of the capital. In this application, at least two things are provided in covid-19 information,

namely, the *JakCorona* application. The *JakCorona* feature allows residents to know the most updated conditions around the development of the corona case at hand. To ensure accuracy, all information presented in the *JakCorona* feature, such as monitoring data for Covid-19 in Jakarta, maps of the distribution of Covid-19 in each urban village area, and data on social assistance distribution, are taken from the provincial government's official corona.jakarta.go.id website. DKI Jakarta. *JakCorona* also provides emergency number shortcuts that can be contacted by the public for emergencies related to the Covid-19 pandemic. Second, is *JakCLM*, Corona Likelihood Metric (CLM) in the *JakCLM* feature is a self-test application for Covid-19 symptoms. This feature is useful for measuring a person's risk of contracting Covid-19. Supported by machine learning-based technology, *JakCLM* can provide medical recommendations that match the answers given by JAKI users.

As a result of this study, data related to the development of technology infrastructure were obtained, such as the existence of various aspects that support the implementation of smart cities to provide maximum information services to the public through the Jakarta Smart City (JSC). Technological devices such as microcell towers, fiber optic, free wifi, and CCTV, and several other supporting devices.

The more sophisticated the technology in the infrastructure aspect and technological factors, especially in understanding urban problems, the more complex urban problems will be answered. This, of course, requires great support both in terms of financial support in presenting sophisticated technology as well as support for good policies and regulations from the government. Therefore, various main tools are needed to provide the right support for smart city development. No less important is the existence of technology or applications that meet the needs of city residents and solve city problems. Digitalization of cities is indeed important in realizing smart cities, but the aspect of digitization does not automatically make cities smart. Constraints can arise, such as changes in city structure but innovations in the application do not update or do not follow existing developments. This could create new problems in smart city policy and implementation. Instead of solving city problems, it can even give birth to new problems. For example, there are various applications, but they are not integrated or users/city residents do not understand the applications provided.

The findings on the development aspects of Smart City development in Jakarta are in the communication, information, and technology office, which is named the Jakarta Smart City Implementation Unit (UP JSC). The existence of this institution is a form of regulations established by local governments, in the implementation and implementation of the JSC since 2014. It is true that there have been several collaborations and

collaborations that have been carried out with various star ups, and providing various information services and particularly on public complaints/complaints services that can be resolved or resolved quickly. One of the characteristics of a smart city is when a city can understand the problems of its citizens and solve them quickly and precisely. JSC tries to answer these various things by providing various access to information and applications such as Rapid Public Opinion Response (CROP) which is then changed to Citizen relation management (CRM).

Various intelligent communities such as indorelawan, Tokopedia, nodeflux, iJakarta, Qlue, Waze, Jaki, Trafi, Zomato, Ragunan Zoo, and Go Food collaborate with JSC. From various intelligent communities, some applications provide information related to covid-19, such as the JAKI application, which includes the JakCorona feature. Information mapping is quite good in several aspects such as basic information about COVID-19, transmission, large-scale social assistance (PSBB), and PSBB in the business world. Furthermore, related to the development of human capital, it is stated in various concepts that this aspect is more about how a city creates a creative city. A city that always brings out the creativity in various aspects both in terms of welfare and well-being

2. Conclusion

This research suggests that it is related to smart cities in dealing with the Covid-19 pandemic in Indonesia, especially in Jakarta. This study found the results that the smart city Jakarta (JSC) made various innovations to answer the various challenges and complexities of the city, especially in facing a pandemic. In the technology aspect, various things have been provided so that it can run during conditions of limitations and specified Health protocol regulations. There are no significant obstacles in necessary technology in smart cities; however, technology innovation still needs to be carried out so that public services do not stop with a pandemic. Several applications have emerged, such as the Jaki application (Jakarta now), Qlue, Ijakarta other applications. However, some applications seem to overlap with other applications. This is because one application provides several of the same features. Most applications provide related public services and public complaints/complaints.

Concepts related to the development of smart cities such as the need for technological infrastructure, institutional factors, human capital factors (30, 17, Nam & Pardo, 2011; 20) are essential in the development of smart cities. Technological infrastructure has always been considered as the main thing in laying the basic foundation in digitizing government.

The limitation of this research is that it has not examined the aspects of citizen satisfaction and sustainability in implementing the JSC program. More in-depth research is needed regarding sustainability and citizen satisfaction. Is it true that these various applications are used and needed by the community during a pandemic like today? Big cities, like Jakarta, have not found a significant relationship in the number of cases and the handling of Covid-19. Even since the Indonesian government announced the coronavirus. The case in Jakarta has continued to experience a significant increase since March 2020.

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