Meta-Analysis: Smart City Technology of Special Capital Region of Jakarta Facing the Covid -19 Pandemic

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ABSTRACT
This study aims to determine the smart city technology used by the DKI Jakarta provincial government to deal with the Covid-19 Pandemic using the Twitter account @JSCLab. This research uses descriptive qualitative research. The analysis in this paper uses a literature study. The analysis in this research was done through the Twitter account of the DKI Jakarta provincial government, namely @JSCLab, using the Ncapture feature of Nvivo 12 Plus with Web Chrome. The problem formulation of this paper is how the Jakarta Smart City program will be implemented to face the Covid-19 pandemic. This research reveals the tweets of the DKI Jakarta Provincial Government regarding the smart city technology that the government has implemented to deal with the Covid-19 pandemic through their Twitter account. From the literature study, it was found that one of the methods to optimize the public service process was the e-government infrastructure which allows an integrated online public service system from the government for the provision of information and public services.

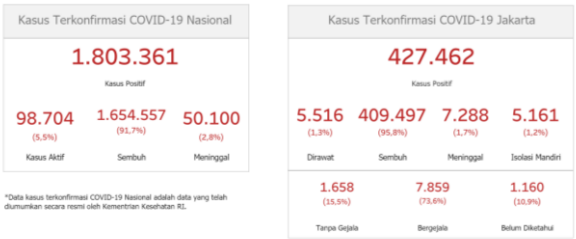
Keywords: *Technology, Smart City, Covid-19, DKI Jakarta.*

1. INTRODUCTION

The increase in the adoption of verbal exchange and statistics era allows and speeds up the waft of statistics in society [1]. Simultaneously, the idea of city control that adopts a period called Smart City evolved to cope with the problem of urbanization in developing and growing towns [2]. The Smart City idea emerged to enhance the first-class lifestyle of humans in city regions with human and social capital and statistics and verbal exchange era [3]. Smart Cities allow towns to efficiently and correctly manage sources to cope with urbanization issues using innovative, integrated, and sustainable strategies to enhance the overall performance of numerous sectors [4]. Adopting the idea, towns have created extra smart infrastructure, higher data-pushed choice making, a more secure environment, progressed social services, and big digitization that could concurrently recover the urbanization issues, resulting in a monetary increase and enhancing humans first-class lifestyle. People and attain sustainability [5]. Cities that undertake the idea have emerged as sustainable groups that allow the advent and development of knowledge [6].

Since 2017, Indonesia's Ministry of Communication and Information Technology has been implementing a pilot project for the Smart City Movement. The movement intended to achieve one hundred Smart Cities by 2020, each with the characteristics of various groups and towns [7]. However, the implementation of Smart City in each city is contingent on how local governments incorporate the concept with the local characteristics [2].

In current conditions, the coronavirus is not an endemic that can be neglected. If you observe the symptoms, people will suppose the disease is simply influenza. However, this virus is quite risky and deadly [6]. Since 2020, the spread of this virus transmission has covered worldwide, and all nations have felt the impact, including Indonesia [8]. Anticipating and decreasing the number of coronavirus patients in Indonesia has been attained in all regions, which includes offering regulations to restrict sports outside the home, faculty sports being suspended, operating from home (paintings from home), even worship activity being dismissed [9]. This has emerged as a central authority coverage primarily based totally on concerns analyzed to the fullest, of course [6].



Picture 1. Covid-19 cases in Indonesia and Jakarta

Jakarta is the capital city of Indonesia which is the center of citizen interaction. Many Indonesians and foreigners come to Indonesia through Jakarta. In addition, Jakarta is also the center of government and economy[10]. Based on the Jakarta Health Office data, from the beginning of the March 2020 pandemic until yesterday, Jakarta has carried out PCR tests on 2,825,116 people.[7]. This means that the ratio of PCR tests per 1 million population in Jakarta is 265,394. Regarding smart cities, this article discusses how DKI Jakarta applies smart city technology in dealing with covid-19[2]. The formulation of the problem in this paper is how to implement the Jakarta Smart City program in dealing with the Covid-19 Pandemic.

2. METHOD

To explain the phenomena that occur and to understand the significance of the events, this study takes a qualitative method. The research was conducted in the DKI Jakarta area. Jakarta, as one of the world's most urbanized cities and has the highest per capita GDP in Indonesia, faces many complicated challenges and is still working to develop a cohesive community. As a result, using integrated information and communication technologies across all public sectors in Jakarta will make problem-solving more effective and efficient[2].

Furthermore, the data collection technique used in this study is field data, which includes online data from websites and social media, as well as a literature evaluation of smart city technology in dealing with Covid-19, particularly in the interdisciplinary field of interdisciplinary research.

3. BASIC THEORY

3.1. Smart City Concept

The idea of a Smart City is a city development idea in numerous fields(Firmansyah, 2020). These regions had been decided primarily based totally on decision-making associated with the exceptional existence and had to enhance the environmental extraordinary with a systemic technique to fixing a hassle [5]. Based on the paper, the Smart City idea is a brand new idea aimed toward handling towns in a contemporary-day way, mainly through using the cutting-edge technical strategies supplied through superior generation (IoT) through environmentally pleasant concepts and nevertheless keeping the tendency to shop for resources and obtained the predicted results [13]. With the improvement of modern technology, particularly computing generation, the Internet of Things, and wi-fi communique, it is feasible to significantly enhance modern towns' capability [14]. Smart and clever City [15]. In short, Smart City may be described as a creative metropolis with advanced talents in fixing troubles, knowing the relationships, learning, adapting to disruptive outside conditions, seizing opportunities, stopping threats, appearing intentionally, reasoning to resolve problems effectively, actively tactics statistics, acting logically and might are expecting the consequences [16].

3.1.1. Smart Economic, Cities need to have excessive productivity primarily based on an aggregate of science, weather to

innovate, and bendy markets. Usually, the economic system in this City has modern answers to weather alternate and the surroundings. In addition, it may be associated with the industry, business, and generation related regionally and globally.

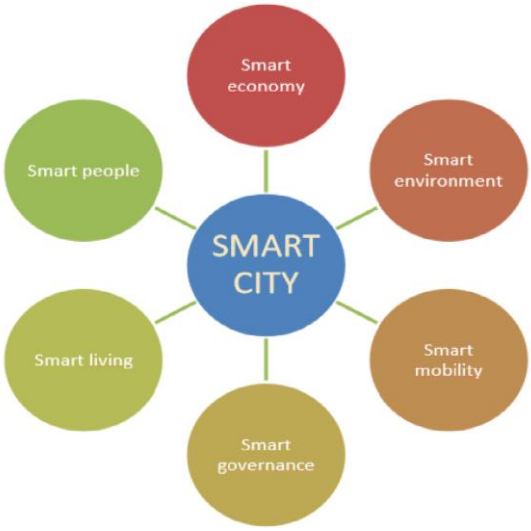
3.1.2. Smart Mobility, A metropolis has an in-depth community and is hooked up to all resources. Access to numerous modes of transportation, environmentally pleasant rides, in which most of these additives are related to statistics and communique generation on a cell basis.

3.1.3. Smart Environment, A metropolis that optimizes electricity intake through renewable electricity sources, seeks to reduce waste emissions and bases its waste control guidelines on sustainable improvement concepts (Sustainable Development Goals). Environmental sports additionally require an excessive stage of ecological education.

3.1.4. Smart People, Having a society that is thirsty for learning. All modifications in towns need to be initiated through citizens who can save you immoderate electricity intake and pollutants and enhance their existence while furnished with proper technical support.

3.1.5. Smart Living, The City has a wise residing surrounding, mainly with massive access to public services, technical and social infrastructure, excessive stages of security, full-size culture, and entertainment. City has the right to take care of the surroundings and greenery.

3.1.6. Smart Governance, Development of suitable metropolis governance. Development of approaches that require cooperation from neighborhood government and different metropolis users, and new technology in running the City.



Picture 2. Elements of a Smart City

Based on these six elements, we can hypothesize that Smart City requires high technology that allows fast and unrestricted data transfer, database availability, infrastructure appearance that is effective and easy to program, and enhanced sensor network and control modules, with proper enhancements. The City can be perfectly computerized [6]. The most respected device in the term of the smart city this decade is the Internet of Things or IoT [10]. IoT is a physical device used to monitor the environment with specific methods using sensors. The data obtained will be sent to the application via a web server and stored in the database center [17].

3.2. Platforms and Technology

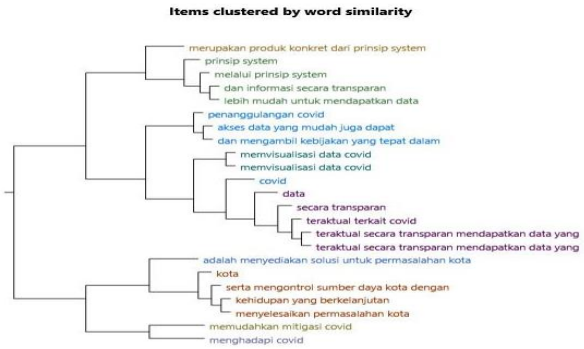
The information era is positive for the network in stopping the Covid-19 virus [16]. Technological trends are considered to have a pleasing effect in inhibiting the spread of the COVID-19 virus. The information era performs a position in disseminating facts or subtle messages to lessen the variety of sufferers of the COVID-19 Pandemic [4]. People can speedily get diverse points associated with the Covid-19 virus [2]. Television is the maximum handy medium to broadcast information concerning the spread of the COVID-19 virus. However, different media are extra powerful in reaching out to the public. The media is social media [18]. Social media is a medium for disseminating facts to all levels of society. The authorities also use social media to bring facts associated with the Covid 19 virus to the public [19]. Although social media can

disseminate facts broadly and effectively, humans have to stay careful in analyzing points [20]. The ease of sharing facts no longer rules out the opportunity to spread insufficient facts of the Covid-19 Pandemic [21]. The era of energetic humans at domestic consists of assisting everyday activities, socializing, and supplying comfort [22].

4. FIGURES AND TABLES

4.1. Smart City Technology as Mitigation amid a Pandemic

The Covid-19 Pandemic not only encourages digital transformation acceleration in the financial sector. However, digital transformation and the Development of Information and Communication Technology (ICT) are also expected to help the health sector, especially in mitigating Covid-19. Information and Communication Technology is the basis for the work system for developing a Smart City in DKI Jakarta, known as the Jakarta Smart City (JSC). By optimizing ICT use, Jakarta Smart City aims to identify, understand, and manage city resources more effectively and efficiently, especially in improving the quality of public services, solving urban problems, and building a sustainable life. Therefore, accessible technology for everyone is needed so that people can know and control the activities of the spread of COVID-19 as a mitigation effort during a pandemic. The following is an analysis of the Jakarta Smart City website regarding disseminating information during a pandemic.



Picture 3. Jakarta Smart City Website in Dissemination of Information

One of the goals of Jakarta Smart City is to provide solutions to city problems. The Covid-19 Pandemic has become a global issue; Jakarta is no exception. DKI Jakarta is one of the provinces whose people are most vulnerable to being exposed to Covid-19. This is because of the high mobility of the population in Jakarta. In this condition, Jakarta Smart City has mitigated and handled Covid-19 by optimizing ICT, which was realized into four principles: Mobile First, System and Data-Driven Technology, Digital Xperience, and Smart Collaboration.

4.1.1. Mobile First

Principle Mobile is very closely related to the smartphone that becomes one of the essential items in our daily lives, so we always carry it everywhere. Therefore, Jakarta Smart City developed the JAKI (Jakarta Kini) application as a nifty app that can facilitate citizens' needs and solve Jakarta's problems. JAKI makes mitigating and handling covid-19 in Jakarta easier through its features. Using the JakLapor feature, residents can report Large-Scale Social Restrictions (PSBB) violations in their surrounding environment. The Trace feature helps building managers manage the number of visitors so that new clusters are not created. There is also a JakWifi feature that makes it easier for residents to get free internet access so that citizens' mobility can be suppressed through their daily activities online.

4.1.2. System and Data-Driven Technology

Utilizing the principle systems and data-driven technology, Jakartans find it easier to obtain data and information transparently. Design and data-driven technology help integrate, collect, process, and visualize Covid-19 data. This facility is not only beneficial for the wider community. Easy access to data can also help stakeholders or stakeholders design and take appropriate policies for Covid-19 the corona.jakarta.go.id website is a concrete product of the principle of system and data-driven technology. Through this website, we can check the progress of the number of Covid-19 cases, monitor the map of the distribution of points, check the availability of beds at referral hospitals, and watch the distribution of social assistance.

4.1.3. Digital Experience

The Development of technology and digital transformation must, of course, be accompanied by higher digital literacy. Therefore, Jakarta Smart City collaborates with many parties to increase knowledge related to digital literacy among the community. One of Digital Xperience's products is the Corona Likelihood Metric (CLM). Using this

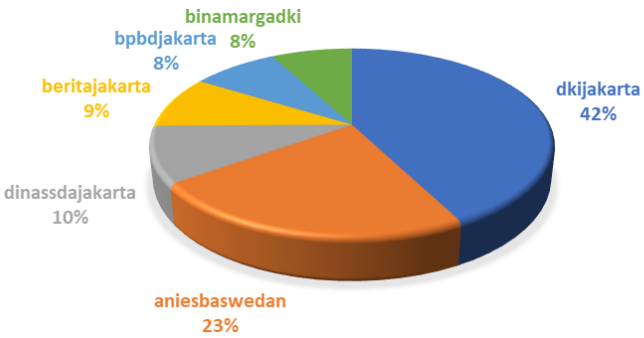
feature, Jakarta people can conduct a self-assessment to test the risk of Covid-19 symptoms more quickly and easily without meeting a doctor physically.

4.1.4 Innovative Collaboration

To maximize the government's role as a collaborator, Jakarta Smart City collaborates with many start-ups and academics asco-creator. According to Yudhistira Nugraha, as Head of the Jakarta Smart City Regional Public Service Agency (BLUD), the principle Smart Collaboration will facilitate the mitigation of Covid-19 through three basic concepts: design systems and computational thinking.

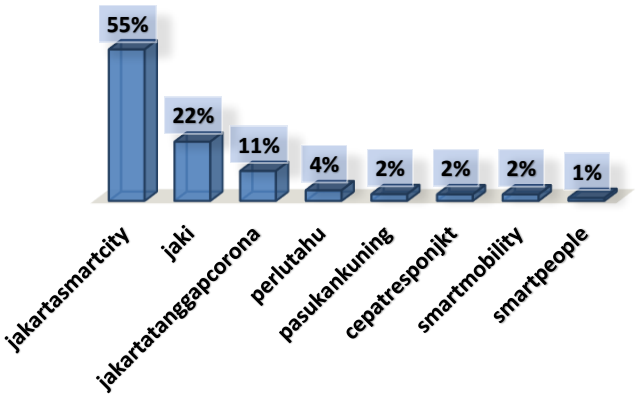
4.2. The Effectiveness of Disseminating Pandemic Mitigation Information

Information disclosure on efforts to mitigate the COVID-19 Pandemic is broadcasted through the @JSCLab post that is carried out by government agencies, media, and government officials. The strategy for delivering mentions and hashtags is to convey information to the public.



Picture 4. Mention Social Media Twitter

The Mentions feature is one of Twitter's strengths. Every tweet will go viral if it is spread using the Mention and Retweet features. When you first create a Twitter account, users are required to create a username. This username function is to make it easier for users to communicate with other users on Twitter. The @JSCLab account is seen frequently interacting with the government account @dkijakarta and the governor official account @aniesbaswedan, which shows the percentages of 42% and 23%. This data proves that the two reports often carry out social media activities to discuss disseminating COVID-19 data in the DKI Jakarta area. The mention feature shows that the @JSCLab account also constantly interacts with other government accounts such as @dinassdajakarta, @beritajakarta, @bpbdjakarta, and @binamargadki, with an average percentage of around 9%. Dissemination of information through social media is considered more effective because it can convey broad objectives by mentioning various accounts.



Picture 5. Hashtag Social Media Twitter

One of the exciting features of Twitter is that we can find out trending topics in real-time or also known as hashtags. Disclosure of information related to the dissemination of information regarding covid-19 occurred in the DKI Jakarta area submitted by the Jakarta Smart City account using various hashtags to classify each substance. #jakartasmartcity has the highest percentage of 55%. The general nature of the COVID-19 pandemic mitigation efforts is focused on the stage of disseminating information through the hashtag #jaki, a platform created by the DKI Jakarta government to help residents meet their needs by integrating all services, whether made by the DKI Provincial Government, the community, or the community -designed services).

The information submitted by the @JSCLab account uses several hashtag messages to carry out various innovative city campaigns in the face of the covid-19 Pandemic, such as #jakartaResponscorona with a percentage of 11%, #pasukankuning, and #cepatresponjkt with a rate of 2% each. Through the official Jakarta Smart City Twitter account, information dissemination aims to socialize and educate about disseminating information about the COVID-19 Pandemic to the broader community. There are several essential elements in implementing a Smart City. Two hashtags related to these elements

are #smartmobility and #smartpeople. These two hashtags describe a city with an extensive network. They are connected to all resources to facilitate access to various modes of transportation, environmentally friendly ride, where all these components are associated with information and communication technology on a mobile basis. This has to be supported by a society that is thirsty for learning, so changes in cities must be initiated by residents who, when provided with the proper technical support, improve their quality of life.

5. CONCLUSION

Based on the explanation above, it can be concluded that one of the goals of Jakarta Smart City is to provide solutions to city problems. The Covid-19 Pandemic has become a global issue; Jakarta is no exception. DKI Jakarta is one of the provinces whose people are most vulnerable to being exposed to Covid-19. This is because of the high mobility of the population in Jakarta. In this condition, Jakarta Smart City has mitigated and handled Covid-19 by optimizing ICT, which was realized into four principles: Mobile First, System and Data-Driven Technology, Digital Xperience, and Smart Collaboration. In addition to the Jakarta Smart City Website and Application, the DKI Jakarta Provincial government also disseminates information on mitigating the COVID-19 Pandemic through social media with mention and hashtag features. Through the official Jakarta Smart City Twitter account, information dissemination aims to socialize and educate about disseminating information about the COVID-19 Pandemic to the broader community.

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REFERENCES

[1] S. U. Hassan et al., “Leveraging Deep Learning and SNA approaches for Smart City Policing in the Developing World,” Int. J. Inf. Manage., vol. 56, no. November 2019, p. 102045, 2021, doi: 10.1016/j.ijinfomgt.2019.102045.

[2] S. I. Syalianda and R. D. Kusumastuti, “Implementation of smart city concept: A case of Jakarta Smart City, Indonesia,” IOP Conf. Ser. Earth Environ. Sci., vol. 716, no. 1, 2021, doi: 10.1088/1755-1315/716/1/012128.

[3] G. Boeing, “Spatial information and the legibility of urban form: Big data in urban morphology,” Int. J. Inf. Manage., vol. 56, no. October 2019, p. 102013, 2021, doi: 10.1016/j.ijinfomgt.2019.09.009.

[4] H. Hasyim, R. Rizki Pratama Suroso, and S. Profesional Makassar, “Peranan Teknologi Informasi Dalam Upaya Pencegahan Virus COVID-19 di Lingkungan Universitas,” CIRCUIT J. Ilm. Pendidik. Tek. Elektro, vol. 4, no. 2, pp. 124–129, 2020, [Online]. Available: https://www.jurnal.ar-raniry.ac.id/index.php/circuit/article/view/7061.

[5] Y. K. dewi Sutopo, “Sosialisasi Pandemik Covid-19 dan Diseminasi Konsep Kota Cerdas, Sehat, dan Tangguh Pandemik,” J. TEPAT Appl. Technol. J. Community Engagem. Serv., vol. 3, no. 2, pp. 119–134, 2020, doi: 10.25042/jurnal_tepat.v3i2.148.

[6] G. Halegoua, “Smart City Technologies,” Smart Cities, 2020, doi: 10.7551/mitpress/11426.003.0005.

[7] R. Martinez and I. N. Masron, “Jakarta: A city of cities,” Cities, vol. 106, p. 102868, 2020, doi: https://doi.org/10.1016/j.cities.2020.102868.

[8] D. Das and J. J. Zhang, “Pandemic in a smart city: Singapore’s COVID-19 management through technology & society,” Urban Geogr., vol. 00, no. 00, pp. 1–9, 2020, doi: 10.1080/02723638.2020.1807168.

[9] K. R. Kunzmann, “Smart Cities After Covid-19: Ten Narratives,” Disp, vol. 56, no. 2, pp. 20–31, 2020, doi: 10.1080/02513625.2020.1794120.

[10] D. Gupta, S. Bhatt, M. Gupta, and A. S. Tosun, “Future Smart Connected Communities to Fight COVID-19 Outbreak,” Internet of Things, vol.

13, p. 100342, 2021, doi: https://doi.org/10.1016/j.iot.2020.100342.

[11] N. Khairu Nissa, Y. Nugraha, C. F. Finola, A. Ernesto, J. I. Kanggrawan, and A. L. Suherman, "Evaluasi Berbasis Data: Kebijakan Pembatasan Mobilitas Publik dalam Mitigasi Persebaran COVID-19 di Jakarta," J. Sist. Cerdas, vol. 3, no. 2, pp. 84–94, 2020, doi: 10.37396/jsc.v3i2.77.

[12] G. N. Effendi and U. Pribadi, "The Effect of Leadership Style on the Implementation of Artificial Intelligence in Government Services," IOP Conf. Ser. Earth Environ. Sci., vol. 717, no. 1, 2021, doi: 10.1088/1755-1315/717/1/012018.

[13] M. Javaid and I. H. Khan, "Internet of Things (IoT) enabled healthcare helps to take the challenges of COVID-19 Pandemic," J. Oral Biol. Craniofacial Res., vol. 11, no. 2, pp. 209–214, 2021, doi: https://doi.org/10.1016/j.jobcr.2021.01.015.

[14] O. Said and A. Tolba, "Accurate performance prediction of IoT communication systems for smart cities: An efficient deep learning based solution," Sustain. Cities Soc., vol. 69, p. 102830, 2021, doi: https://doi.org/10.1016/j.scs.2021.102830.

[15] Z. Allam and D. S. Jones, "Future (post-COVID) digital, smart and sustainable cities in the wake of 6G: Digital twins, immersive realities and new urban economies," Land use policy, vol. 101, p. 105201, 2021, doi: https://doi.org/10.1016/j.landusepol.2020.105201.

[16] A. Firmansyah, "Analisis Tantangan Penerapan Protokol dan Cloud Production Deployment pada Internet of Things dalam Membangun Smart City di Indonesia sebagai Sustainable Development Goals setelah Masa Pandemi COVID-19," no. July, 2020.

[17] A. Kumari, R. Gupta, and S. Tanwar, "Amalgamation of blockchain and IoT for smart cities underlying 6G communication: A comprehensive review," Comput. Commun., vol. 172, pp. 102–118, 2021, doi: https://doi.org/10.1016/j.comcom.2021.03.005.

[18] A. Smith and P. P. Martín, "Going Beyond the Smart City? Implementing Technopolitical Platforms for Urban Democracy in Madrid and Barcelona," J. Urban Technol., vol. 28, no. 1–2, pp. 311–330, 2021, doi: 10.1080/10630732.2020.1786337.

[19] M. Abdel-Basset, V. Chang, and N. A. Nabeeh, "An intelligent framework using disruptive technologies for COVID-19 analysis," Technol. Forecast. Soc. Change, vol. 163, p. 120431, 2021, doi: https://doi.org/10.1016/j.techfore.2020.120431.

[20] R. K. R. Kummitha, "Smart technologies for fighting pandemics: The techno- and human-driven approaches in controlling the virus transmission," Gov. Inf. Q., vol. 37, no. 3, p. 101481, 2020, doi: https://doi.org/10.1016/j.giq.2020.101481.

[21] V. Chang, "An ethical framework for big data and smart cities," Technol. Forecast. Soc. Change, vol. 165, p. 120559, 2021, doi: https://doi.org/10.1016/j.techfore.2020.120559.

[22] O. Gerwe, "The Covid-19 pandemic and the accommodation sharing sector: Effects and prospects for recovery," Technol. Forecast. Soc. Change, vol. 167, p. 120733, 2021, doi: https://doi.org/10.1016/j.techfore.2021.120733.