

# Surabaya towards a smart city constrained by COVID-19

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## Abstract

Surabaya, East Java is one of the cities in Indonesia which is well known as a Smart City. This achievement can not be separated from the breakthroughs and innovations that the local City Government (Pemkot) has made. The city government of Surabaya has also received various awards from within and outside the country, especially in the field of smart city. One of the awards is the 2018 OpenGov Recognition of Excellence. However, when the smart city was being held, a pandemic emerged that attacked almost all parts of the world. This study aims to identify obstacles and steps to deal with Covid-19 without disturbing the stability of Surabaya towards a smart city. The data were obtained from social media from the Surabaya municipal government and the smart city parameters were taken from academic papers. The concept of smart city according to Surabaya begins with Smart Government, namely by implementing an internet-based government system which is also known as e-procurement. Other parameters are smart branding, smart economy, smart living, smart society, smart environment. This paper focuses on discussing smart environment without neglecting other parameters. Unfortunately, since the Covid-19 pandemic Surabaya has become the city in Indonesia with the most corona cases after Jakarta and Bogor with confirmed positive data up to November 1, 2020, amounting to 15,973 cases. The Surabaya City Government (Pemkot Surabaya) has implemented various efforts in order to prevent or break the chain of the spread of COVID-19. Consists of promotive, preventive, curative and rehabilitative efforts.

**Keywords:** Surabaya Smart city, smart environment, to maintain covid 19.

## 1. Introduction

### 1.1 background

Surabaya, East Java is one of the cities in Indonesia which is well known as a Smart City. This achievement cannot be separated from the breakthroughs and innovations that the local City Government (Pemkot) has made. Smart city is the use of intelligent computing technology to integrate various critical components of urban infrastructure and services. Smart City itself has six main axes as identification materials, including smart governance, smart economy, smart society, smart living, smart branding. The city government of Surabaya has also received various awards from within and outside the country, especially in the field of smart city. However, when the smart city was being glorified, a pandemic emerged that attacked almost all parts of the world. The Corona virus is part of the virus family that causes disease in animals and also in humans. In Indonesia, they are still fighting the Corona Virus until now, as well as in other countries. The number of Corona Virus cases continues to grow with some reporting recoveries, but not a few who have died. Handling and prevention efforts are continuously being made to fight COVID-19 with flu-like symptoms.

The case started with pneumonia or mysterious pneumonia in December 2019. Many cases of this mysterious pneumonia infection are found in the animal market. The Corona virus or COVID-19 is thought to be carried by bats and other animals that are eaten by humans until transmission occurs. Coronavirus is actually no stranger to the world of animal health, but only a few types are capable of infecting humans and causing pneumonia. Then what is the attitude of the city government in responding to this pandemic, and what are the steps taken by the city government in dealing with this situation.

### ***1.2 Objectives of the study***

The spread of Covid-19, if it is related to how the concept of a smart city is how capable the concept is to answer the problem of this pandemic, of course with the support of all stakeholders plus a clear mechanism and can correctly implement the concept of a smart city.

This study has two objectives:

1. Be able to identify the obstacles that will occur in the process of getting to Surabaya smart city, especially during this pandemic.
2. Be able to know the steps to handle covid-19 without disturbing the stability of Surabaya towards a smart city.

### ***1.3 Study approach***

The object used is the city of Surabaya. This case study approach is based on a literature review of secondary data. Because of this pandemic, the data were obtained from social media from the Surabaya municipal government and the smart city parameters were taken from academic papers. This study identifies the obstacles that will occur in the process towards the smart city of Surabaya, especially during this pandemic COVID-19.

In reference to this, an analysis was carried out regarding steps to handle COVID-19 without disturbing the stability of Surabaya towards a smart city.

## ***1.2. Smart city concept according to the city of Surabaya***

### ***1.2.1 Smart governance***

Before carrying out improvements externally, Surabaya carried out its first phase by addressing internal government. This improvement seems to have been carried out since the leadership of Bambang Dwi Hartono, the Mayor of Surabaya before Risma.

During Bambang's leadership, he touched a lot on various internal government issues. This has made a lot of changes for the future of Surabaya. Once completed, external service development is carried out. This can be seen when Risma served as mayor. The main axis of change that Risma is implementing is an internet-based government system which is also known as e-procurement.

### ***1.2.2 Smart branding***

Smart Branding is an effort to build smarter regional branding in accordance with the potential and opportunities for regional development. Innovation to market the region is a

challenge for regional development, so as to increase regional competitiveness by developing three elements, namely:

- Tourism
- Business
- Face of the City

The goal of Smart Branding is to increase regional competitiveness by structuring the face of the city and marketing regional potential both locally, nationally and internationally. City branding is one of the marketing strategies of a city to create a big and strong positioning in the region and globally. Smart branding will provide the identity of the city which is useful for marketing all activities of the city, especially the potential for regional development, including: tourism, culture, local products and city landmarks. Smart Branding has the aim of increasing regional competitiveness in the local, national and international scope.

### ***1.2.3 Smart economy***

Making Surabaya a Smart City must also be supported from an economic perspective. During his tenure, Risma thought of a program to overcome poverty in Surabaya.

These programs include the Hero of the Economy. This program became popular only around 2012. In addition, Risma also created a Young Fighters program. Through these two programs, housewives and youth are mobilized to hone creativity. In addition, they are also encouraged to gain insight through selling activities.

### ***1.2.4 Smart living***

Environment has a big role for a person's growth. Risma wants children in Surabaya to grow up in a good environment. In the past, "Gang Dolly" was a known factor in Surabaya. The prostitution area is a source of income for many people.

Even so, Risma did not hesitate to close the brothel in 2014. Risma's reason was simple, she did not want the young generation who grew up there to live in an environment where prostitution was commonplace. Apart from Gang Dolly, Risma also closed four other localizations in Surabaya including Dupak Bangunsari, Tambaksari, Moroseneng and Klakah Rejo.

### ***1.2.5 Smart society***

Smart Society is a dimension where human interactions have moved towards a socio-technical ecosystem with the physical and virtual dimensions of the lives of city residents increasingly intensively intertwined. The interaction between residents is increasingly strong and without being separated by technological mediation. The goal of the Smart Society is to create a productive, communicative and interactive society with high digital literacy. This is realized by the development of three elements in the Smart Society, namely:

- Community of citizens (community)
- Learning ecosystem (learning)
- Security system (security)

### ***1.2.6 Smart environment***

As a scholar who studies urban planning, it is not difficult for Risma to change the open space in Surabaya. Many locations that were previously abandoned have been transformed into interesting places. During his tenure, Risma gave many parks to Surabaya residents. Not only beautiful, the park also has educational value. Apart from the park, Risma also made many changes for the Surabaya Zoo, whose initial conditions were very poor.

Other great performances that Risma did were the banana prevention system in Surabaya Early Warning System (SEARS), the ITS-ATSC smart transportation system, and waste management into energy and more useful products.

## **2. What's in Surabaya**

### ***2.1 Position of Surabaya***

#### ***2.1.1 Against Indonesia***

It is the second largest city in Indonesia after Jakarta. The city is located 800 km east of Jakarta. In the past, Surabaya was also known as the City of Heroes because of its history which was very much taken into account in the struggle of Arek-Arek Suroboyo (Surabaya youths) in defending the independence of the Indonesian nation from invaders. Not only that, in today's modern world in the economic sector, Surabaya's strategic location is almost in the middle of Indonesia and right in southern Asia, making it an important hub for trade activities in Southeast Asia. As a metropolitan city, Surabaya is the center of economic, financial and business activities in East Java and its surroundings. As one of the trade centers, Surabaya is not only a trade center for the East Java region, but also facilitates areas in Central Java, Kalimantan and Eastern Indonesia. Surabaya and its surrounding areas are the areas with the fastest economic development in East Java and one of the most developed in Indonesia. Apart from that, Surabaya is also one of the most important cities in supporting the Indonesian economy. Most of the population is engaged in services, industry and trade. Surabaya is a trading center that is experiencing rapid development. Its main industries include shipbuilding, heavy equipment, food processing and agriculture, electronics, household furniture, and handicrafts. Many large multinational companies headquartered in Surabaya, such as PT Sampoerna Tbk, Maspion, Wing's Group, Unilever Indonesia, Pakuwon Group, Jawa Pos Group and PT PAL Indonesia. In addition, Surabaya is also the second largest port city in Indonesia after Jakarta. The most important port in Surabaya is Tanjung Perak Port which is the second largest trading, container and passenger port in Indonesia after Tanjung Priok Port in Jakarta.

Surabaya is also a central business district in addition to the capital city of Jakarta. Within 2 decades, Surabaya and the surrounding satellite cities have had a vital financial role in Indonesia due to the growing trade, industry and service sectors. This in turn causes people's purchasing power to increase and the consumer confidence index to grow rapidly. This has certainly attracted investors' interest to take part in changing the face of the city, thus encouraging the emergence of an "Integrated Business District" / Central Business

District (CBD) as centers of business activities in Surabaya. The high rise building area is around Jalan Tunjungan, Basuki Rachmat, Darmo, Mayjend Sungkono, H.R. Muhammad, and Ahmad Yani, while industrial areas in Surabaya include the Surabaya Industrial Estate Rungkut (SIER), Karang Pilang and Margomulyo.

### ***2.1.2 Against East Java***

Surabaya's position towards East Java is equally important because Surabaya is the capital of East Java Province, Indonesia, as well as the largest metropolitan city in the province. Not only is it the center of the government of the province of East Java, but also Surabaya has become a city of life for the people around Surabaya because there are many industries in this city so that many people in the cities around Surabaya flock to Surabaya to make a living.

### ***2.1.3 Gate Kertosusila***

With a very rapid development, which includes the population and economy, of the urban metropolitan area of Gerbangkertosusila, various discourses have emerged to develop its own region into the Surabaya Metro Special Region, at the same level as the province and separate from the East Java Province, led by a governor. This separation aims to reduce the gap between the Kertosusila Gate and other areas in East Java, especially since it has been supported by the Suramadu Bridge that connects Surabaya with Bangkalan (Madura). aims to realize equitable development between regions. The Gerbangkertosusila area which is centered in Surabaya is the second largest metropolitan area in Indonesia.

## ***2.2 Surabaya city administrative data***

### ***2.2.1 Surabaya city administrative boundary map***

Surabaya is located between 070 12' - 070 21' south latitude and 1120 36' - 1120 54' east longitude, and is the second largest city in Indonesia after Jakarta. The boundaries of the city of Surabaya are as follows.

- Northern boundary: Madura Strait
- Southern boundary: Sidoarjo Regency
- Eastern boundary: Madura Strait
- West boundary: Gresik Regency



Fig. 1. Surabaya City Boundary

Source: [https://id.wikipedia.org/wiki/Templat:Location\\_map\\_Kota\\_Surabaya](https://id.wikipedia.org/wiki/Templat:Location_map_Kota_Surabaya)

### 2.2.2 Map of districts and villages

The city of Surabaya has 31 sub-districts and 154 sub-districts. The following is a map of districts and villages in Surabaya.



Fig. 2. Map of Districts and Villages

Source: <http://dpm-ptsp.surabaya.go.id/v3/pages/topografi-kota-surabaya>

### 2.3 Surabaya towards smart city

Indonesia itself in 2019 is developing a Movement Towards 100 Smart Cities which encourages the use of technology to advance cities in order to realize more effective, transparent and reliable governance. However, smart cities are not just about using technology or physical development. According to Mr. Joko Widodo, the President of the Republic of Indonesia elected for the period 2019 - 2024, "What is more important is how we can build a better mindset, attitude and character of society,".



The smart city itself is a system built with the aim of increasing the productivity of remote areas and economic competitiveness, by enabling data exchange activities such as smart lighting technology, smart parking systems, waste management, smart drainage systems, and smart electrical systems. Typically, a smart city infrastructure consists of various objects and machines connected in a complex network that transmit data to one another using wireless technology and cloud computing.

Reliable internet of things connectivity is one of the many requirements to develop a smart city and can support other services such as big data analysis, artificial intelligence (AI) implementation, machine learning (ML), and blockchain technology. Meanwhile, the notion of integrity is a concept related to consistency in actions, values, methods, measurements, principles, expectations and various things that are produced.

#### ***2.4. Achievements of the city of Surabaya in the last 5 years***

Surabaya is one of the cities in Indonesia which has experienced significant changes in the last few years. Here are some of the achievements of the city of Surabaya in the last 5 years:

- The city of Surabaya won the Adipura trophy 4 times in a row  
The city of Surabaya has won four consecutive Adipura Cups, namely in 2011, 2012, 2013 and 2014 for the category of metropolitan city.
- Surabaya is becoming a much cleaner city  
When he first served as the mayor of Surabaya, Risma found that the condition of the city of Surabaya was very dirty, lots of garbage, and mosquitoes. Seeing these conditions, Risma then committed to transforming Surabaya into a cleaner city. The methods used are various, from building a village waste bank to cleaning waterways that are blocked by piles of garbage. As a result, gradually the villages and cities became clean and free of trash.
- Public parks are available to the public in almost every corner of the city of Surabaya  
When the parks in Surabaya have been transformed by the bu risma into parks that are public friendly and eye-catching. Public parks are made in such a way as to attract Surabaya residents to visit and tour the park.
- Some flood spots in Surabaya have started to decrease  
Surabaya is a metropolitan city that cannot be avoided from flooding. However, in recent years, the municipal government has committed to clean the canals and normalize the river ”in Surabaya.
- Close localization  
Surabaya is also famous for the largest localization in Southeast Asia which is very legendary. Even though it received rejection from the residents of the localization, it was finally closed in 2014.

#### ***2.5. Awards received by Surabaya***

Surabaya with all the achievements above. Surabaya has also received many awards on a national and international scale as well as several awards that have been received by the city of Surabaya.

### 2.5.1 National

The following are the awards received by the city of Surabaya on a national scale:

- 2019 Top 99 Sinovik (Public Service Innovation Information System) Award from the Ministry of State Apparatus Empowerment and Bureaucratic Reform (KemenPanRB).
- 2019 Child-Friendly City Award with the title Main.
- Award for the Pioneer of Child Friendly Playroom (RBRA) in Taman Flora.
- Award for Child Friendly Puskesmas at Puskesmas Tanah Kali Kedinding.

### 2.5.2 International

- International Women Empowerment Award (WEA). The award was given by Her Times, a Chinese media based in Singapore.
- Lee Kuan Yew World City Prize in the Special Mention category in Singapore
- OpenGov Recognition of Excellence 2018
- The Guangzhou International Award 2018, Category Online Popular City
- Scroll of Honor Award from UN Habitat 2018
- Unesco Learning City Award 2017
- Sustainable City and Human Settlements Award for the Global Green City category 2017

## 3. The Covid-19 pandemic in Surabaya

### 3.1 Covid pandemic statistical data in Surabaya

The following are statistics on the latest Covid-19 situation that occurred in Surabaya. From the data below, the number of Covid-19 patients continues to decline. Which in the previous months Surabaya became one of the cities with quite severe cases of Covid.

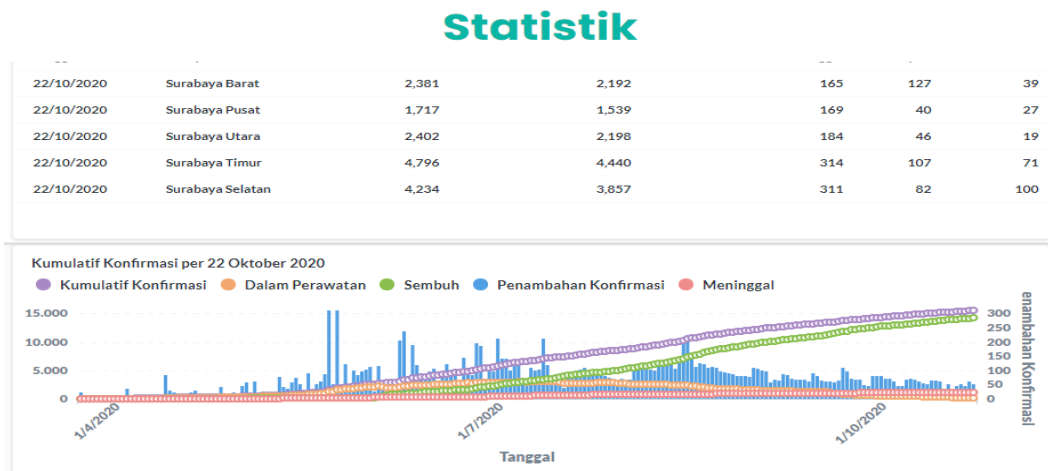


Fig. 3 COVID-19 Statistical Data

Source: <https://lawan-covid-19.surabaya.go.id/visualisasi/graph>



### ***3.2 Efforts made by the Surabaya city government***

The Surabaya City Government (Pemkot) has implemented various efforts in order to prevent or break the chain of the spread of COVID-19. Consists of promotive, preventive, curative and rehabilitative efforts. consists of promotive, preventive, curative and rehabilitative efforts. for preventive efforts, first by carrying out epidemiological investigations, monitoring and collecting data on all the criteria for cases and their close contacts. Another curative effort that has been carried out is by providing medicines to handle COVID-19 cases, the city government also provides medical equipment for handling COVID-19 patients and provides safe referral facilities for COVID-19 patients. As for rehabilitative efforts, we monitor patients who are recovering to find out about their health progress and to continue doing social distancing

### ***3.3 Changes in the behavior of the people of Surabaya***

In the new normal era, there have been changes in people's behavior in various aspects of life. One example is keeping a distance from the people around you when in public space, obviously this is a different culture, new normal habits, making many activities must be completely virtual and digital to apply physical distancing rules. This change applies from learning in the world of education, shopping for basic needs, health services to others that are completely online. This habit makes many people inevitably have to be digitally literate to keep up with technological developments. This can also continue until the pandemic is said to be over. Then in this pandemic era, many of us have encountered Surabaya people who are increasingly active in paying attention to their health by exercising, especially by cycling. As well as the people of Surabaya now doing more activities at home because there are still many offices that implement Work From Home (WFH).

In terms of learning to the community, many examples and suggestions have been disseminated, because this pandemic is worldwide. So that both the Indonesian government, the East Java provincial government and the Surabaya city government, work together in conveying appeals every time. Restrictions on the use of public areas are also adjusted to the Covid protocol. Seating arrangements, restrictions on operational hours, and appeals to stay at home are also recommended. So that schools ranging from early childhood education to higher education are conducted online, up to an undetermined time limit.

The closure of entertainment venues that trigger crowds are temporarily closed, and entertainment activities involving large crowds are prohibited. Likewise, the use of places of worship must also comply with health protocols.

The most pronounced impact of this change is the creation of new unemployment by limiting the implementation of activities outside the home. This will have a broad impact in various aspects of life such as the economy, crime.



Source: <https://news.detik.com/>

### ***3.4 Referral hospital for covid***

In order to accelerate breaking the chain of distribution and handling of Covid-19 patients. A total of 15 hospitals in the City of Surabaya, East Java, were appointed by the Ministry of Health as references in handling the new type of corona virus or COVID-19. Mayor Tri Rismaharini advised the residents of Surabaya, if they feel unwell and have symptoms of pneumonia, such as shortness of breath, fever, cough, and runny nose, immediately conduct an examination at the nearest health service facility (fasyankes), Surabaya.

### ***3.5 Kampung Jogo Tangguh***

Kampung jogo Tangguh (tough village) makes discipline to implement health protocols. The main objective of forming a resilient village is so that people are aware (concerned) with preventing the spread of Covid-19. The existence of a tough village encourages people to be more obedient and orderly in carrying out health protocols in their environment.

The success of the Surabaya City Government (Pemkot) in implementing 'Kampung Tangguh Wani Jogo Suroboyo' seems to have really materialized. Evidence of this success is a form of community cooperation in helping residents who have been confirmed that Covid-19 is getting stronger. A total of 1,296 Tangguh villages are currently established in Surabaya

The city government of Surabaya has also provided funding assistance of around 12.6 billion to support this tough village program. Each resilient camp is planned to receive funding assistance of around 5 million rupiah. The existence of a tough village in Surabaya also plays a big enough role to break the chain of spreading Covid19. So that with the provision of assistance, it is hoped that the role of a resilient village in breaking the chain of spreading covid will be more effective.



Source: <http://dpm-ptsp.surabaya.go.id/>

### 3.6 Application of the covid protocol in city activities

In an effort to break the chain of the spread of covid-19, the city government of Surabaya urges its people to carry out physical distance in carrying out daily activities during this pandemic, such as always maintaining distance, avoiding crowds, using masakers when leaving the house, not making physical contact with other people and always washing hands or use a hand sanitizer. Because Surabaya is a topolitan city, the mobility of its people is fairly high, so the implementation of health protocols must really be considered.



Source: [SURYA.CO.ID](http://SURYA.CO.ID/)/Tony Hermawan

## 4. Sustainable development

### 4.1 Development in Surabaya

From the existing developments in Surabaya, it is not surprising that this city is nicknamed the Smart City. The changes made by the City Government are not only in one area, but also cover many fields at once. The following are some of the developments that have occurred in Surabaya in order to get to a smart city:



- Internet-based government system, also known as e-procurement.
- Economic heroes and young fighters, both of which encourage housewives and youth to hone their creativity and gain insight through selling.
- Surabaya Early Warning System (SEARS) banana prevention system
- ITS-ATSC intelligent transportation system
- Waste management into energy and more useful products.
- Construction of various public facilities such as bridges, pedestrian-friendly sidewalks, etc.
- Construction of adequate educational facilities

#### ***4.2 Stagnancy Development Towards a Smart City***

In an effort to get to a smart city, the city of Surabaya is experiencing various problems, one of which is the covid-19 pandemic. Surabaya as a smart city must overcome the economic problems of its city, in this case the smart economy, which is experiencing a considerable impact from the covid pandemic. The most affected are micro, small and medium enterprises (MSMEs).

The construction of various public facilities is obstructed, one of which is the bridge in the southern region of Surabaya being delayed. Various construction of educational facilities are also hampered. As a result of the covid-19 pandemic, various sectors must feel the impact.

#### ***4.3 Acceleration That Needs To Be Done***

In the midst of a pandemic like this, the city of Surabaya must immediately solve the problems that hinder efforts to get to a smart city where various accelerations must be carried out, as explained above, the city of Surabaya has experienced the impact of the Covid-19 pandemic which attacks the economic sector, which is part of the smart city, namely the smart economy. Steps that must be taken are to provide material assistance to the affected umkm, exemption from electricity and PDAM costs in the affected sectors, as well as exempt from PBB tax in order to ease umkm in Surabaya.

In other fields, such as infrastructure, it must be reviewed whether infrastructure development is urgent or not, without neglecting the maintenance and maintenance elements of infrastructure to extend its life. Because now the main focus or priority of the Surabaya city government is breaking the chain of distribution of the Covid-19 pandemic.

### **5. Conclusion and recommendation**

Based on what has been discussed above, conclusions can be drawn into the following points:

- The implementation of policies and the implementation of the Surabaya Smart City went according to plan until the Covid-19 pandemic which then attacked several important sectors in Surabaya, including MSMEs, education, industry to infrastructure development which had to be delayed. So the priority step taken by

the city of Surabaya is to save the citizens of the city while still providing opportunities for its citizens to continue economic activities

- The covid19 pandemic has also changed the culture of the people of Surabaya in accordance with the health protocol from being free to be controlled and supervised by city officials for its implementation. Because the number of people exposed to Covid is very volatile, so it needs to be suppressed its spread.

The suggestions that can be given to the Surabaya city government are as follows:

- The implementation of health protocols must be continued independently until the pandemic has subsided, while still limiting the use of public areas.
- Changes in behavior and culture of the Surabaya community in accordance with health protocols must be carried out by every resident and citizen, especially in the city of Surabaya.

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