

Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19

Ulinata*¹ 

¹ Architecture Study Program, Faculty of Engineering, Universitas Kristen Indonesia, Jakarta, 13630, Indonesia

*Corresponding Author: ulinata@uki.ac.id

ARTICLE INFO

Article history:

Received 13 August 2025

Revised 24 April 2026

Accepted 5 August 2026

Available online 30 August 2026

E-ISSN: 2622-1640

P-ISSN: 2622-0008

How to cite:

Ulinata. Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19. International Journal of Architecture and Urbanism. 2026. 10(2):314-321.



This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International.
<http://doi.org/10.32734/ijau.v10i2.25805>

ABSTRACT

DKI Jakarta Province is the capital city of the Republic of Indonesia which is the largest city and is developing every year. Population growth and the increasing need for buildings, urban facilities and utilities are some of the impacts of developments that occur in the capital city. The future of DKI Jakarta Province will no longer be the capital city but will become an economic center, a trade center, a business city, a financial city or a trade services city, a global or international service city. In addition, DKI Jakarta Province also has the opportunity to become a center for health, education, and culture. Environmental conditions and dense circulation are unavoidable, due to the proliferation of both commercial and residential developments in DKI Jakarta Province. From this trend, there needs to be an idea for a more effective and sustainable development concept, especially during the pandemic of Covid-19, which avoids activities in crowded areas so as to avoid crowds. COVID-19 is a pandemic that affects all sectors of the field, as a result, it is necessary to adapt designs both in terms of interior, exterior and even the built environment to adjust to the new normal order such as social distancing. Therefore, Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19 becomes a study of how changes in architectural design concepts as a form of adaptation from the Pandemic of Covid-19 can be learned from the past for an unpredictable future because there is no who never knows when the Pandemic of Covid-19 will end or whether there will be other diseases and viruses in the future. The focus is on minimizing land use, improving the environment, and knowing changes in building design, especially buildings along with new normal conditions during the Pandemic of Covid-19 in DKI Jakarta Province. The method used is a literature study method by searching for the latest scientific books and articles, citations in scientific sources, published bibliographies and others then analyzed so that the objectives and results of the research are expected. It can be concluded that Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19 can be a reference for the design of DKI Jakarta in the future so that DKI Jakarta becomes a friendly city that is ready to face the new normal era after the COVID-19 pandemic has passed.

Keywords: architectural design concepts, DKI Jakarta, the pandemic of Covid-19

1. Introduction

COVID-19 was first reported on January 31, 2020 in Wuhan, Hubei Province, China [1]. COVID-19 is an outbreak of a viral disease that is easily transmitted so that it has become a pandemic that has occurred in many countries around the world, including Indonesia [2]. There are more than 170,000 victims who died from this pandemic virus and the number is increasing from time to time. WHO also announced how the symptoms

caused by this virus are mild to severe respiratory symptoms and mandatory self-isolation and social distancing. In addition, COVID-19 causes economic shocks that have an impact on the economy on a local, national, and even global scale [3]. So, to minimize the spread of this virus, the government has implemented a new regulation, namely the health protocol (5M) to avoid the spread of the COVID-19 virus, such as using masks, washing hands, maintaining distance, avoiding crowds, and minimizing mobility [4]. The spread of this virus can occur in public places such as schools, public buildings, cinemas, religious buildings, and cafes and other buildings [5]. As a result, people who are quarantined are not allowed to leave their homes so that they can carry out all their activities at home such as studying and working, shopping, resting and even looking for entertainment to avoid the transmission of the COVID-19 virus but can have a negative impact on psychological and social health for the community [6]. Therefore, it is necessary to make changes to the design of buildings and landscapes in all cities and countries in the world that follow the implementation of the health protocols put in place so that people can do activities outside the home so that they do not have an impact on psychological and social health but can still be protected from the transmission of the COVID-19 virus.

The Covid-19 virus disease has finally provided an opportunity for urban planners and communities, architects including landscape architects, city managers and city councils to adapt and rebuild in a better way despite facing various challenges [7]. Changes in the design of buildings, urban landscapes can help make Government Regulations run properly.

Several previous studies have said that architectural design provides new innovations such as the use of touch less technology, the provision of hand washing and temperature detectors, the provision of self-isolation rooms equipped with health workers.

The purpose of this study was to determine changes in architectural design concepts as a form of adaptation after the COVID-19 pandemic.

A pandemic is a non-natural disaster that indirectly encourages humans to innovate comprehensively. Architecture is one of the sectors of life that is required to respond to current and future challenges related to the Covid-19 pandemic [8]. Based on data as of July 2020 in Indonesia, the highest number of cases is in DKI Jakarta Province [9]. Therefore, DKI Jakarta needs to get more attention, because the confirmed cases of corona are very significant when comparing the ratio of the population as reported by the Covid-19 Task Force Information Center [10].

The impact that occurs due to the current pandemic allows buildings that initially only have one function to become buildings that are adaptive or have other functions. In the example case that occurred, namely the Athlete's House in Kemayoran Jakarta and the Semarang Mayor's Office House which both changed the function to become a temporary isolation place or an emergency hospital for people exposed to Covid-19 [11]. In this case, then residences such as hotels, apartments, dormitories, guesthouses, and so on, when a pandemic occurs.

And when the world is hit by a pandemic, like the current Covid-19, every aspect of human life will experience changes, including the field of architecture. From time to time, every time a global disease outbreak appears, at the same time the evolving architectural concept will automatically adapt and adjust to conditions. The pandemic shapes changes and functions in a residential design and the rest changes the landscape of a city, including the city of DKI Jakarta.

The cholera and typhus pandemics, in the 19th century, which prompted regulations for housing to be equipped with toilets and brass materials were also used in hospital designs because they were known to have anti-bacterial properties [12].

Then during the Tuberculosis (TBC) pandemic in 1820, the residential design also underwent a transformation in the form of raising and widening the openings in order to capture a lot of sunlight [13].

In the end, all changes in the concept of architectural design are present as a response and form of adaptation that is constantly evolving as time goes by.

During this COVID-19 pandemic, the architectural design concept of a building will also have adaptation to the COVID-19 pandemic conditions. In addition to using masks, within the scope of health protocols such as washing hands, maintaining distance, avoiding crowds, and minimizing mobility can produce Changes in Architectural Design Concepts as a Form of Adaptation after the Covid-19 Pandemic.

Washing Hands

However, there will be a high risk of transmission of the virus if the faucets of water and soap can be touched directly by many people are presented by figure 1.



Figure 1. washing hands by washing tools

So it is necessary to design a water and soap container with a touch less system so that when used it can minimize the spread of the virus because it is not touched directly by the user.

Physical Distancing

Maintaining a distance can be anticipated by following the standard rules for maintaining distance during the Covid 19 Pandemic, which is about ≥ 1 meter are presented by figure 2.

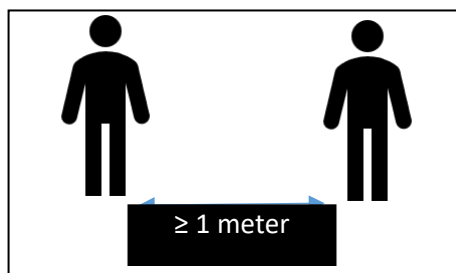


Figure 2. Physical Distancing

If the basic width of 1 person is 60 cm, 2 people becomes 120 cm + 100 cm (physical distancing) then the width becomes 220 cm. So that the space needed per person also increases. For example, if it is set according to the standard before the new life, per person is 4 m², after physical distancing it is possible to increase the size to 2 x 4= 8 m², so the overall space requirement will increase and more bigger are presented by figure 3.

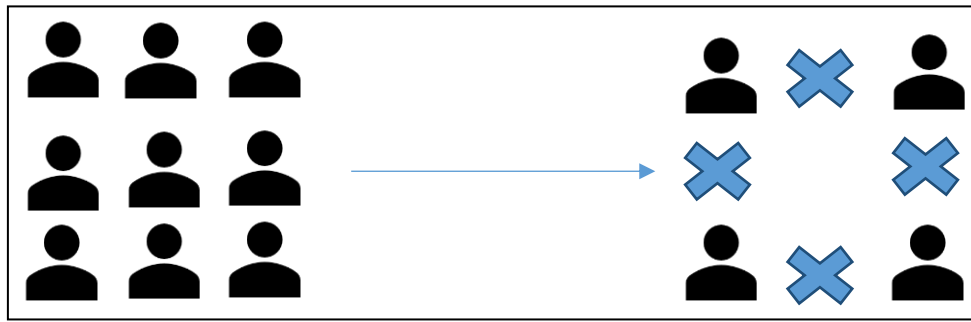


Figure 3. New layout room (right picture) based on physical distancing

From the material side, based on the observations of the doctors, it is possible that the virus can live longer on certain materials, and not be exposed to sunlight. Therefore, the choice of material becomes a very important thing in the context of new social life, such as the use of metal element materials which are reported to last longer, this is very risky for areas with high occupancy rates, or during holidays.

Therefore in planning and design need to consider the problem of material use with the consideration that the virus cannot last longer. Therefore, it is necessary to pay attention to in the design of which elements are often touched by the user, based on the inventory it will be determined the type of material and the finishing method so that the virus does not last long.

Stair railings are objects that are often touched, therefore the selection of material types and placements is attempted to be able to kill the virus as quickly as possible are presented by figure 4.



Figure 4. People touched the stair railings

Door handles as well as windows and elevators are often touched. and to prevent contact transmission are presented by figure 5.



Figure 5. People touched the door handle and window handle

It is necessary to work around so that users do not make contact/hold door handles in general by using a touchless system, so as not to become a center of contact transmission are presented by figure 6.



Figure 6. People touched the door by using touchless system

Avoiding Crowds and Minimizing Mobility

Avoiding crowds and minimizing mobility can be anticipated by not visiting crowded places and doing more activities at home. Like working from home by using internet facilities that have been carried out since the beginning of the Covid-19 pandemic, it will also affect the design of the space in the house to be more flexible. Residential homes are also required to have sports facilities and sunbathing areas as an answer to the need to maintain the immune health of the occupants Residential building materials during this pandemic will be more inclined to anti-bacterial materials.

Architectural design adaptation will also occur on a larger scale such as offices, hospitals, and even urban landscapes. For office design, in the future, space requirements will certainly be greater because the distance between workers must be prioritized and the existence of open spaces also needs to be optimized are presented by figure 7.



Figure 7. Illustration of co-working space

It is also directed that the concept of a workspace uses the concept of a co-working space equipped with internet facilities to be more effective and efficient as well as better air movement and can avoid the risk of virus transmission. “The overall urban landscape design will also change. There will be fewer open spaces to avoid crowds” are presented by figure 7.



Figure 8. Illustration of open space in urban landscape

2. Method

Before conducting the research, the researcher took a first approach by reviewing several similar previous research articles. The study is needed so that it can be known what methods will be used and used by previous researchers. From the results of the study, it can be selected and determined what method is suitable for this research.

The first research is entitled Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19 which uses a qualitative approach with a descriptive analysis method where the researcher starts by formulating the main problem into a research question) which is followed by collecting data through literature study then data obtained are compiled and processed, so that conclusions can be developed to answer these questions [14].

The second research is entitled Analysis of Proposed Adaptation of Fostered Environment and Evaluation of Built Environment in Bali in Facing Covid-19 which uses a literature study method quoted from international scientific journal articles and blog posts from experts and journalists published in the mass media and then analyzed so that got the results of the analysis [15].

The third study, entitled Designing Post COVID-19 Buildings: Approaches for Achieving Healthy Buildings, used identification methods from scientific articles to develop a detailed literature review on healthy buildings and their systems. From the three previous studies above, the research entitled Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19 is to use a literature study method such as the second research because the type of research is closer to this research. The method used is a literature study method by searching for the latest scientific books and articles, citations in scientific sources, published bibliographies and others then analyzed so that the objectives and results of the research are expected.

3. Result and Discussion

All the characters, changes, and impacts of Covid-19 certainly produce a new environment and lifestyle. Unexpected conditions during the pandemic require us to be able to live side by side with the pandemic. Architecture can help us adapt to a pandemic. In addition to rethinking the construction of buildings such as homes, offices and others, the design must also consider how to control the pandemic and have a sustainable design for the future. For example, by providing buildings that focus on health and cleanliness, setting quality standards for new buildings, having outdoor design priorities such as open spaces and multipurpose rooms, and promoting technology that can help people avoid touching each other to avoid virus transmission. The designed spaces must also be able to actively function as areas of interaction, recreation, and sports that are able to strengthen the building's relationship with the surrounding environment and be adaptive during the new normal.

In terms of health, the building must provide a place to wash hands before entering the room and minimize the furniture in the room so that the virus does not stick to the furniture and make it easier to do cleaning in the

room. In terms of safety and technology, we must prepare facilities and infrastructure regarding touch less technology facilities, then give a sign about COVID-19 and provide structural and utility concepts that provide safety for building users. In terms of comfort, it must also provide wide openings and minimize the use of air conditioning so that air exchange runs optimally and then provide open space in the form of a garden so that you can interact outside or sunbathe.

4. Conclusion

The building will require versatility, more space, functional expansion to include both living and work or study spaces. While we are heading for a normal life with vaccine validation and hopes of mass immunization, the COVID-19 pandemic will bring about a change in the way we design buildings and cities. The pandemic will continue and our comfort is very important in terms of activities both inside and outside the home. Likewise, the productivity of working from home must be maintained. This pandemic has given birth to a new way of life, which will definitely be maintained even after it has passed. The freelance is bound to continue at least partly at home and thus requires workspaces everywhere. This increase in usable area will result in open spaces and compartmentalized or partitioned spaces. The post-pandemic COVID-19 architectural changes not only emphasize the health of users, but also emphasize safe and comfort issues in order to create a friendly city.

Though this pandemic do not know when it ends, architects should play a vital role in shaping and providing guidelines for sustainable cities and settlements that is health, safe and comfort, resilient and ready for post pandemic covid 19 and any pandemic.

5. Acknowledgments

The author would like to thank God for His blessings this research article can be completed properly. The author also expresses his gratitude to LPPM Universitas Kristen Indonesia which has funded so that the author can participate and be a speaker in the 6th FCIC International Conference. The author would like to thank the 6th FCIC International Conference Committee for providing the opportunity for the author to contribute in writing articles and as presenters. The author also would like to thank to families, friends who support me always. Hopefully this article can be useful for all readers wherever they are.

6. Conflict of Interest

The author believes there is no conflict of interest regarding the article titled "Changes in Architectural Design Concepts as A Form Adaptation After The Pandemic of Covid-19" that would compromise its neutrality or introduce bias.

7. References

- [1] M. Johnson, Wuhan 2019 Novel Coronavirus - 2019-nCoV (Mater. Methods, 2020), pp. 1–5 DOI: 10.13070/mm.en.10.2867.
- [2] A. D. D. Ahmad, Bunga Rampai Skenario Covid-19 Prodi Statistika Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Islam Indonesia (2021).
- [3] R. Djalante, J. Lassa, D. Setiamarga, A. Sudjatma, and M. Indrawan, "Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID- 19 . The COVID-19 resource centre is hosted on Elsevier Connect , the company ' s public news and information," (2020).
- [4] I. N. J. (2021) WHO. (2020). Coronavirus disease (COVID-19). Retrieved Desember 20, 2020, from, Irwan, A. Mopangga, and Y. Mokodompis, "Pengaruh Kepercayaan dan Sikap Terhadap Perilaku 5M (Memakai Masker, Mencuci Tangan, Menjaga Jarak, Menjauhi Kerumunan, Mengurangi Mobilitas) Selama Pandemi Covid-19," J. Heal. Sci. ; Gorontalo J. Heal. Sci. Community J. Heal. Sci. ; Gorontalo J. Heal. Sci. Community, 5(2), 302–312 (2021).

- [5] S. M. Lestari, G. N. Azizah, D. P. Sari, and H. Maulana, “The Impact of COVID-19 Pandemic on Café Design Concept (Int. J. Res. Appl. Technol 1(2), 2021), pp. 431–438, 2021, DOI: 10.34010/injuratech.v1i2.6778 .
- [6] P. Homes, “Prophylactic Architecture : Formulating the Concept of,” DOI: 10.3390/buildings12070927 (2022)
- [7] FEMA, “Local Government Solutions Guide for COVID-19 and Beyond: Adaptive Design,” pp. 30 (2021) [Online]. Available: https://www.fema.gov/sites/default/files/documents/fema_adaptivedesign-guidance_may2021.pdf .
- [8] A. E. Sumanti, G. E. Xian, and D. Novianto, “The effect of pandemics towards sustainable architectural evolution,” *City Built Environ.*, pp. 1–14, 2023, doi: 10.1007/s44213-023-00010-3.
- [9] D. Yuniarti and D. Rosadi, “Inflation of Indonesia during the COVID-19 pandemic Inflation of Indonesia during the COVID-19 pandemic,” 2021, doi: 10.1088/1742-6596/1821/1/012039.
- [10] A. Syetiawan, M. Harimurti, and Y. Prihanto, “A spatiotemporal analysis of COVID-19 transmission in Jakarta , Indonesia on m e r c i a l u s e o n l o n e r a l,” vol. 17, pp. 1–13, 2022, doi: 10.4081/gh.2022.1042.
- [11] Ministry of Public Works and Housing of the Republic of Indonesia, other Ministries/Agencies, Experts, Associations, Republic Indonesia Voluntary National Review for Implementation of New Urban Agenda, 2021.
- [12] S. Kim, “Epidemic Cholera and Reform in the 19th Century : Crisis Management and Linkages to Big History,” 2023.
- [13] A. J. Muhammad, P. Lestari, A. Dwi, and W. Widodo, “The Ventilation-to-area Ratio and House Lighting Relate to the Incidence of Pulmonary Tuberculosis,” vol. 7, no. 1, pp. 1–5, 2020.
- [14] F. Hizra, C. Dewi, and Izziah, Houses amid COVID-19: Environmental challenges and design adaptation (IOP Conf. Ser. Earth Environ. Sci., 881(1) 2021) DOI: 10.1088/1755-1315/881/1/012033 (2021)
- [15] N. Gede and M. Putra, Spatial Pattern of Tourism Destination Areas on Bintan Island, RiauAnalysis of Proposed Adaptation of Fostered Environment and Evaluation of Built Environment in Bali in Facing Covid-19 (arj Archit. Res. J., 1(1), 2021), pp. 26–34, [Online]. Available: <https://www.worldometers.info/coronavirus/> .