

THE IMPACT OF PANDEMIC: COVID-19 ON  
SPACE MANAGEMENT

BY

NURFATINAH HANIM BINTI JULAIHI

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for the degree of Master of Science (Asset and Facilities  
Management)

Kuliyah of Architecture and Environmental Design  
International Islamic University Malaysia

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## ABSTRACT

Pandemic made a huge change in space utilization where people, especially the students at higher institutions, are attending classes from home instead of sitting in the lecture hall, having lunch at the university union building, exchanging ideas at the university compound, or seeking advice from the lecturers. Since March 2020, public space and physical distancing restrictions have been the main policy measures to reduce Covid-19 transmission and secure public health. COVID-19 is likely to lead to certain permanent or long-lasting experiences. Although the online platforms could ease the daily task, as humans, we are surrounded by and use the space as a component of building rigorously. By the time, when the pandemic ends, we will probably see a new world, a new lexicon, a new social norm with far-reaching economic and social destruction. Colleges and universities are grappling with decisions of how and when to welcome students back to campus during the Covid -19 pandemic. The Covid -19 pandemic has forced many organizations to undergo significant transformation, rethinking key elements of their business processes and use of technology to maintain operations whilst adhering to a changing landscape of guidelines and new procedures. Adhering to the predicament of space utilization, this study focused on space management in IIUM aiming at the impact of Covid-19 on space management in IIUM. As a public university IIUM has been put to a halt and the usage of spaces at the campus conforms to rules accord to MCO regulations. Hence, this research applied a method of optimizing the qualitative data commonly used in social research. The secondary data from the published materials and an interview with the facility manager from DBSB. Due to limited access to the campus, the research used a purposive sample of respondents. The research also correlates with the relationship between the impacts of pandemic and space management. The research also probes into the factors affecting space management during pandemic. The study found out that there is a significant impact on the utilization of space as well as the awareness of the respondents that represent the public on cleanliness, health cautious and fear of the virus. The study also discovers the advantage of this current time to explore what enabled institutions and students to quickly shift to virtual learning, the unrecognized benefits of online learning, and how the campuses can be improved in the future. There is no doubt that the current pandemic causes several long-term changes that should also be associated with the sphere of space management. Planners, designers, architects, landscape managers and journalists are already writing about how this crisis will transform our relationship with public space. Operations and maintenance are now becoming more important as cleanliness is the top priority in maintaining the campuses. Besides that, the university leaders are facing challenges due to the pandemic. This is because they need to create a solution to adapt to changes that can accommodate social distancing more readily and efficiently than in spaces with fixed stations. By creating solutions, universities can overcome any situation that might occur in the future. Universities must develop improved experiences that can continue benefiting students when they are back on campus.

## ملخص ال بحث

أحدثت جائحة كورونا تغييرًا كبيرًا في استخدام المساحات حيث حضر الأشخاص، وخاصة الطلاب في مؤسسات التعليم العالي، الدروس من المنزل بدلاً من الجلوس في قاعة المحاضرات أو تناول الغداء في مبنى الجامعة أو تبادل الأفكار في مجمع الجامعة أو طلب المشورة من المحاضرين. منذ مارس 2020، أصبحت القيود على الأماكن والتباعد الجسدي من التدابير الرئيسية للحد من انتقال Covid-19 وتأمين الصحة العامة، حيث من المحتمل أن يتحول Covid-19 إلى تجربة دائمة أو طويلة الأمد. وعلى الرغم من أن المنصات الإلكترونية عبر الإنترنت يمكن أن تسهل المهام اليومية، إلا أننا كبشر محاطون بالمساحة ونستخدمها كعنصر من عناصر البناء بصرامة. وبحلول الوقت وعندما تنتهي الجائحة فإنه من المحتمل أن نرى عالماً جديداً ومعجماً جديداً ونسقا اجتماعيا جديدا يصاحبه تدمير بعيد المدى للبنية الاقتصادية والاجتماعية. تواجه الكليات والجامعات تحديات في اتخاذ القرارات بشأن الكيفية والزمن المناسبين للترحيب بعودة الطلاب إلى الحرم الجامعي خلال جائحة كورونا، حيث أجبرت الجائحة العديد من المنظمات إلى الخضوع لتحول كبير، وإعادة التفكير في العناصر الرئيسية لإجراءات العمل واستخدام التكنولوجيا للحفاظ على العمليات مع الالتزام بالمشهد المتغير للتوجهات والإجراءات الجديدة. وتماشياً مع معضلة استخدام المساحة، فقد ركزت هذه الدراسة على إدارة المساحة في الجامعة الإسلامية العالمية بماليزيا IIUM بهدف دراسة تأثير الوباء على إدارة المساحة فيها. وكجامعة حكومية، فقد تم إيقاف IIUM من حيث استخدام المساحات في الحرم الجامعي توافقا مع القواعد ضمن لوائح أمر مراقبة الحركة (MCO). ولذلك استخدم الباحث طريقة لتحسين البيانات النوعية الشائع استخدامها في البحوث الاجتماعية. تم التحصل على البيانات الثانوية من المعلومات المنشورة جنباً إلى جنب مع مقابلة مع مهندس المنشأة وموظفي DBSB. طبق البحث العينة الهادفة على المستجيب بسبب عدم إمكانية الوصول إلى الحرم الجامعي. ويربط البحث كذلك بالعلاقة بين أثر الوباء وإدارة المساحة. ويبحث أيضاً في العوامل التي تؤثر على إدارة المساحة أثناء الجائحة. ووجدت الدراسة أن هناك تأثيراً معنوياً على استخدام المساحة وكذلك توعية المستجيبين الذين يمثلون العامة على النظافة والاحترامات الصحية والرغبة من الفيروس. وقد كشف البحث أيضاً ميزة الوقت الراهن لاستقراء ما الذي يمكن المؤسسات التعليمية والطلاب من التحول السريع إلى التعلم الافتراضي، والفوائد غير المعروفة للتعلم عبر الإنترنت والكشف عن كيفية تحسين الجامعات مستقبلاً. وليس هناك شك في أن الوباء قد تسبب في العديد من التغييرات الطويلة المدى والتي لا بد أن ترتبط أيضاً بإدارة المساحة. حيث يكتب المخططون والمصممون والمهندسون المعماريون ومدبرو المناظر الطبيعية والصحفيون عن الكيفية التي ستغير بها هذه الأزمة علاقتنا مع الفضاء العام. وقد أصبح دور العمليات والصيانة الآن أكثر أهمية كون النظافة هي الأولوية القصوى في المحافظة على الحرم الجامعي. إلى جانب ذلك، وبسبب الوباء، يواجه قادة الجامعات التحديات لأنهم بحاجة إلى إيجاد حلول للتكيف مع التغييرات التي تحدث والتي يمكن أن تستوعب التباعد الاجتماعي بسهولة وكفاءة أكبر من المساحات ذات المحطات الثابتة. ومن خلال إيجاد حلول فإنه يمكن للجامعات التغلب على أي ظرف قد يحدث في المستقبل. وتحتاج الجامعات إلى تطوير خبرات محسنة تستمر في إفادة الطلاب عند عودتهم إلى الحرم الجامعي.

## APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Science (Asset and Facilities Management).

.....  
Khairusy Syakirin Has-Yun bin Hashim.  
Supervisor

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Science in (Asset and Facilities Management).

.....  
Julian Osman  
Examiner

This dissertation was submitted to the Department of Quantity Surveying and is accepted as a fulfilment of the requirement for the degree of Master of Science in (Asset and Facilities Management).

.....  
Sharifah Mazlina Syed Khuzzan  
Head, Department of Quantity Surveying

This dissertation was submitted to the Kulliyah of Architecture and Environmental Design and is accepted as a fulfilment of the requirement for the degree of Master of Science in (Asset and Facilities Management).

.....  
Abdul Razak Sopian Dean,  
Kuliyah of Architecture and  
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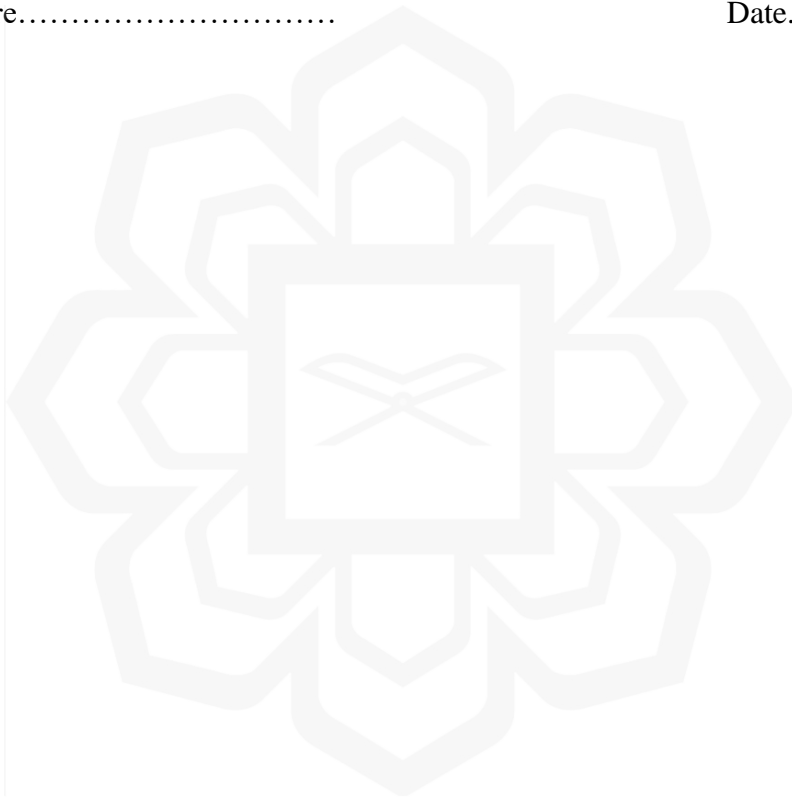
## DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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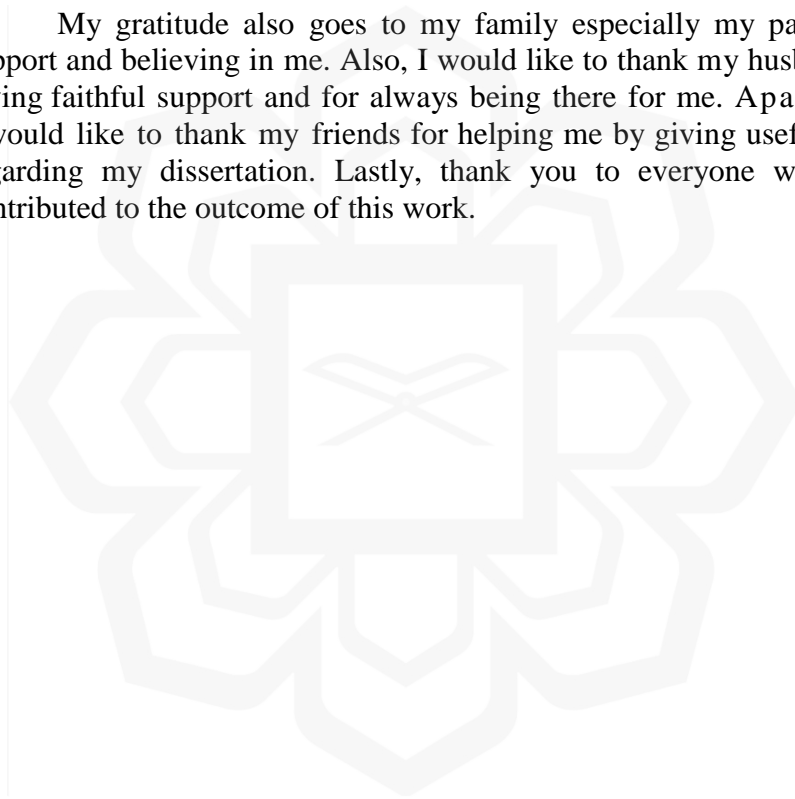
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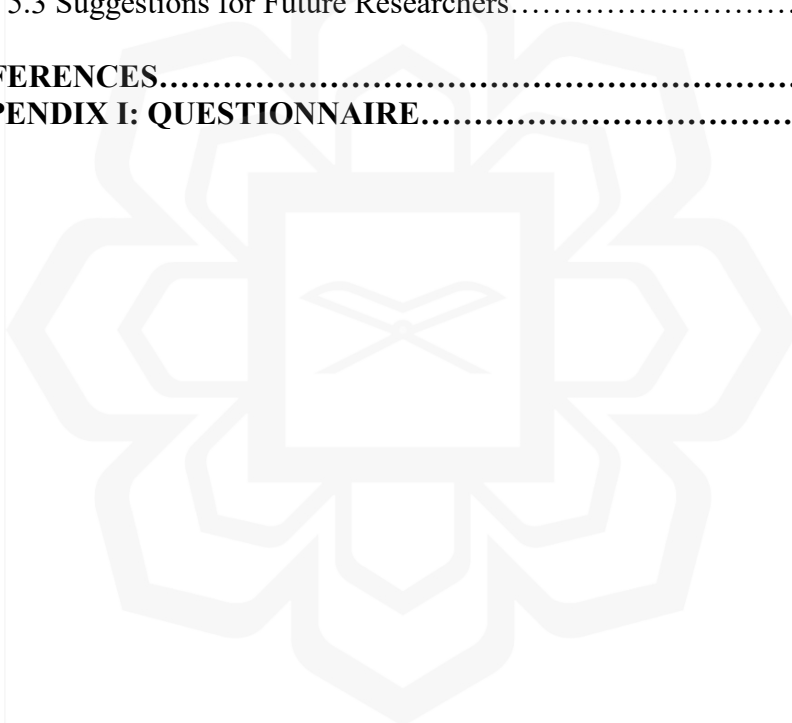


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## LIST OF ABBREVIATIONS

OSHBE	Occupational, Safety, Health, and Built Environment Department
DBSB	Daya Bersih Sdn Bhd
USA	United States of America
CPRC	Crisis Preparedness and Response Centre
FM	Facility Management



# CHAPTER ONE

## INTRODUCTION

### 1.1 INTRODUCTION

In this chapter the background and problem statement of the study are discussed. The aims, objectives and research questions of the study are listed. Then followed by the scope and limitation study, significance of the study and the organization of dissertation.

Humans spend more than 90% of their time indoor space and it influences their experience and assess the changes in the built environment (Ergan, Radwan, Zou & Tseng, 2018). Every day, we are surrounded and using the space to feel, perceived materials, sense the odours, see the colours and attended to the things we do. Since March 2020, Malaysia imposed a Movement Control order or commonly known as MCO. During the MCO, there are several stages of restricted movement were imposed. Malaysia implemented four phases of movement control where the first one is a total restriction like curfew, the second phase is limited to movement within twenty kilometres, the third one is inter-district travelling and the last phase is interstate travelling permission. Since March 2020 until September 2021, Kuala Lumpur, the capital city of Malaysia is in the third phase category.

International Islamic University of Malaysia is in the state of Selangor with the highest cases until January 2022, without further inquiry must comply to the strict movement control (Bulletin TV3, 18 January 2022). Pandemic made a huge change in space utilization where people especially the students at higher institution are attending classes from home instead of sitting in the lecture hall, sitting in a living room instead of having lunch at the university union building, watch laptop screen instead of exchange ideas at the university compound, or seeking advised from the lecturers.

The public space and physical distancing restrictions were the main policy measures to reduce Covid-19 transmission and secure public health. Public space and physical distancing restrictions were the main policy measures to reduce COVID-19 transmission and secure public health. The COVID-19 is likely to lead to certain permanent or long-lasting. By the time, when the pandemic ends, we will probably see a new world, a new lexicon, a new social norm with far reaching economic and social destruction (Kaushik & Guleria, 2020).

Colleges and universities are grappling with the difficult decisions of how and when to welcome students back to campus during the COVID-19 pandemic (Martin, 2020). Most colleges and universities have shifted their instruction online since social distancing practices began in response to the global pandemic COVID-19 (Smithgroup, 2020). The retreat from campuses and pivot to teaching remotely presents a unique opportunity for a higher education architect and a higher education design strategist, to contemplate the value of the physical campus.

It is beneficial to use this current time to explore what enabled institutions and students to quickly shift to virtual learning, the unrecognized benefits online learning and uncover on how the campuses can be improve in the future (Johnson, 2020). There is no doubt that the current pandemic causes several long-term changes that should also be associated with the sphere of space management (Mickiewicz & Nowak, 2020). Planners, designers, architects, landscape managers and journalists are already writing about how this crisis will transform our relationship with public space (Honey-Roses, Anguelovski, Chireh, 2020).

Instructional space that is well designed and furnished for flexibility can accommodate social distancing more readily and efficiently than spaces with fixed stations. Flexible spaces are also well positioned to accommodate programmatic and pedagogical changes, such as trends toward active learning environments which have been shown to achieve better outcomes (Smithgroup, 2020).

The “next normal” is a new environment that needs to be adapt. Successfully navigating towards the “next normal” will require holistically evaluating the interrelationships between people, education and research delivery processes; the physical environment; the use of technology; and financial realities. This process should begin by examining lessons learned from this interim period as society reopens with the virus’ threat still present. From this vantage, institutions can determine which strategies deployed in response to immediate needs have resulted in durable innovations that should be adopted for the long term (Smithgroup, 2020).

## **1.2 PROBLEM STATEMENT**

Due to the pandemic the university leaders are facing challenges. This is because they need to create a solution to adapt with the changes that occur that can accommodate social distancing more readily and efficiently than spaces with fixed stations. By creating solution, universities can overcome any situation that might occur in the future. Universities needs to develop improved experiences that can continue benefits the students when they are back in campus.

Author Dwivedi (2020) agree that COVID-19 pandemic has forced many organizations to undergo significant transformation, rethinking key elements of their business processes and usage of technology to maintain operations whilst adhering to a changing landscape of guidelines and new procedures.

In addition, Hopps (2020) stated that the planning of space at the higher institution correlates with the utilization and management of space and facilities. COVID-19 has set back space strategy. Due to the COVID-19, significant changes in teaching delivery mode-classroom capacities for social distance and on- campus sessions are reduced temporarily and run alongside online sessions.

To navigate a higher education institution's unique combination of constraints and opportunities to find integrated strategies that are agile, cost effective and resilient is no easy feat. It requires teams that include experts from education and research, architecture and engineering, real estate and facilities, information technology, human resources and finance. The current challenge for university leaders is to enact measures that, for a time, will limit the potential spread of the virus while preserving valuable on-campus experiences into the future.

The planning of space at the higher institution correlates with the utilization and management of space and facilities. COVID-19 has set back space strategy. Due to the COVID-19, significant changes in teaching delivery mode-classroom capacities for social distance and on- campus sessions are reduced temporarily and run alongside online sessions (Hopps, 2020). To navigate a higher education institution's unique combination of constraints and opportunities to find integrated strategies that are agile, cost-effective and resilient is no easy feat. It requires teams that include experts from education and research, architecture and engineering, real estate and facilities, information technology, human resources and finance. The current challenge for university leaders is to enact measures that, for a time, will limit the potential spread of the virus while preserving valuable on- campus experiences into the future.



### **1.3 AIM AND RESEARCH OBJECTIVES**

The aim for this research is to document on the impact of Covid-19 on space management. The research objectives of this study are as follows:

1. To investigate on the impact of Covid-19 on space management.
2. To investigate the factors affecting space management during pandemic.

### **1.4 RESEARCH QUESTIONS**

1. How has the pandemic: COVID-19 affected space management in higher education?
2. What are the factors that influence the space management with respect to pandemic COVID-19?
3. What is the action taken by the facility managers towards space management in overcoming the pandemic in IIUM?

### **1.5 SCOPE AND LIMITATION OF STUDY**

The research will be focused on facility managers that manage facilities services in IIUM. It will be carried out by using qualitative approach and will be focusing on the perspective of facility manager. The questions asked will be covering about the impact of Covid-19 on space management and factors affecting space management during pandemic.

## **1.6 SIGNIFICANCE OF THE STUDY**

This study hopes to establish an understanding on the impact of pandemic: Covid-19 on space management in university. The study shows the perspective of facility managers on space management in university during the pandemic. The study could help in decision making for space management during pandemic if this situation occur in the future. Furthermore, when managing the space management for the university facility managers are likely thinking about the space planning and facilities operations issues Moreover, the study can learn on how the facilities managers explore new opportunities in managing the space management in university.

## **1.7 ORGANIZATION OF THE DISSERTATION**

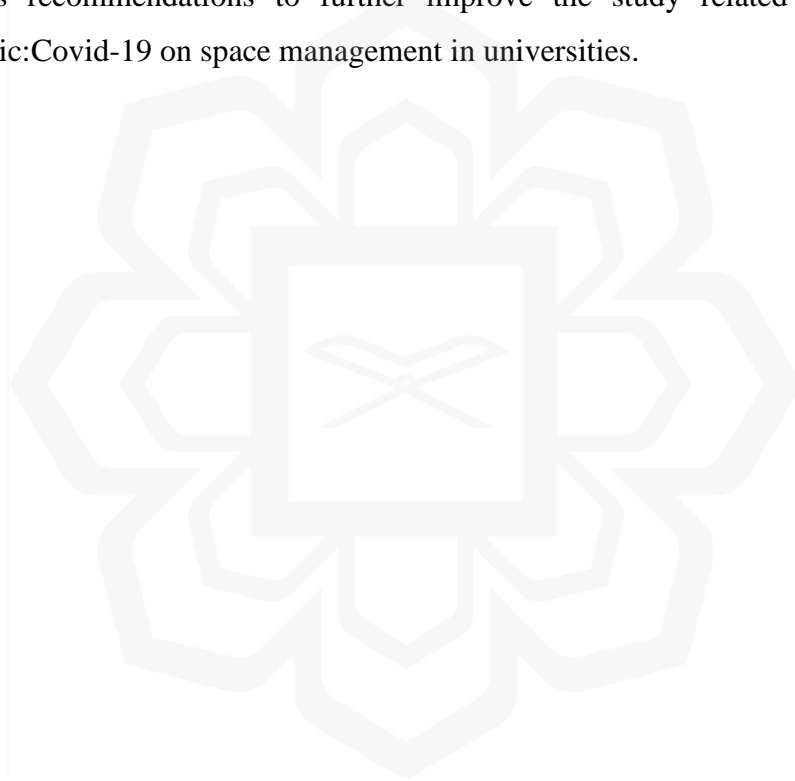
The dissertation is organized into five chapters. Chapter 1 begins with an introduction to the background of the study. It then describes the problem statements, research objectives, research questions, scope and limitation of study and significance of the study.

Chapter 2 presents a review of literature that related to the impact of pandemic: Covid-19 on space management. It begins with definition of pandemic: Covid-19 and space management. Followed by history of Covid-19. Then continued with definition of space management and space management in higher education institutions, explanation on the relationship between the impacts of pandemic: Covid - 19 and space management. Then followed with the impact of pandemic: Covid-19 on space management. Lastly, issues of physical campus spaces during pandemic and strategies to overcome the impact of pandemic: Covid-19 on space management.

Chapter 3 describes the research design and methodology used to investigate the research hypotheses. It outlines the sampling designs, instrument use, data collection approach, data analysis and limitations of the study.

Chapter 4 shows the results obtained. It discusses qualitative interpretation of results, topic discussed and limitation of study.

Chapter 5 concludes the dissertation by discussing the research results and provides recommendations to further improve the study related to impact of pandemic: Covid-19 on space management in universities.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

This chapter attempts to review the relevant literature and related research topic of the space management during pandemic: Covid-19. The outset of the chapter discussed the pandemic Covid-19, giving a definition of space management in higher institutions. The later will be further discussed on the relationship between the impacts of pandemic Covid-19 and space management. The issues of physical distancing in the campus during the pandemic was taken seriously by the university administration. Hence, all the rules and regulations imposed by the government during the pandemic adhered by the university. Furthermore, the impact of pandemic on space management and strategies became the main concern to overcome the spread of virus in the public space of the university and its impact on space management. Thus, this chapter illustrates the usage of space and precaution in its utilization in the facility management during the pandemic Covid-19.

#### **2.2 PANDEMIC: COVID-19**

The Covid -19 pandemic also known as the coronavirus pandemic represents the ongoing global coronavirus disease in 2019 (Covid-19). Covid-19 was named by the World Health Organization (WHO) to avoid stigmatizing of the virus' origin. It was first observed in China in December 2019, and by January 2020, it had spread to other countries, including the United States of America, United Kingdom, Thailand, Japan, Mexico, Europe and Asia (Aristovnik et.al., 2020). It is believed that covid-19 can spread by close contact with other people.

The incident in Europe in late 2019 and early 2020 especially in Italy, alarmed the world and in Malaysia we are taking the case seriously. It has led to the loss of human life giving an unprecedented challenge to public health and other activities in the world. The Covid-19 pandemic has affected every community in the world. It has affected the well-being of students since they are the present demographic group who are most affected by the outbreak. The virus also threatened the industry and global workforce and it change the scenario of the livelihood of the populace.

The pandemic also affecting the entire intra-accessibility with border closure and restricted the movement of the people. The rapid spread of the coronavirus pandemic has disrupted the lives of people, states, and institutions around the world. Caused great feelings of anxiety and fear. The situation presents a real and fundamental change for the university as a whole and for staffs and students.

Academic life has been rapidly restricted to the home, and everyday activities at university with face-to-face classes and learning is replaced by online learning and distance learning. In such a scenario, it is implicit to expect that university life will be much more stressful than traditional learning culture for many students. This perceived stress has a lasting effect on the student's emotions, on how they engage in the learning process and their psychological well-beings (Fuente, Pachon-Basallo, Santos, Peralta-Sanchez, Gonzalez-Torres, Artuch-Garde, Paoloni, and Gaetha, 2021). Even though they are not at high risk of getting the illness, they have had to adapt to the changes brought about by it (Aristovnik et.al., 2020).

The decision to close schools and universities during the outbreak was an effective way to reduce the spread of the virus, but it led to various problems for individuals and society. In the long run, the closures were likely to have a negative impact on the economy.

### 2.2.1 History of Covid-19

In late December 2019, Hunan Wholesale Seafood Market in Wuhan, Hubei Province, China, experienced a mysterious pneumonia outbreak characterized by fever, dry cough and fatigue alongside with occasional gastrointestinal symptoms. The first outbreak was reported in the market in December 2019 and affected around 66% of the staff there. The market closed on January 1, 2020, after the local health authority issued an epidemiological warning on December 31, 2019 (Yi-Chi et.al, 2020). The chart below shows country-by-country breakdown of total cases since January 2020.

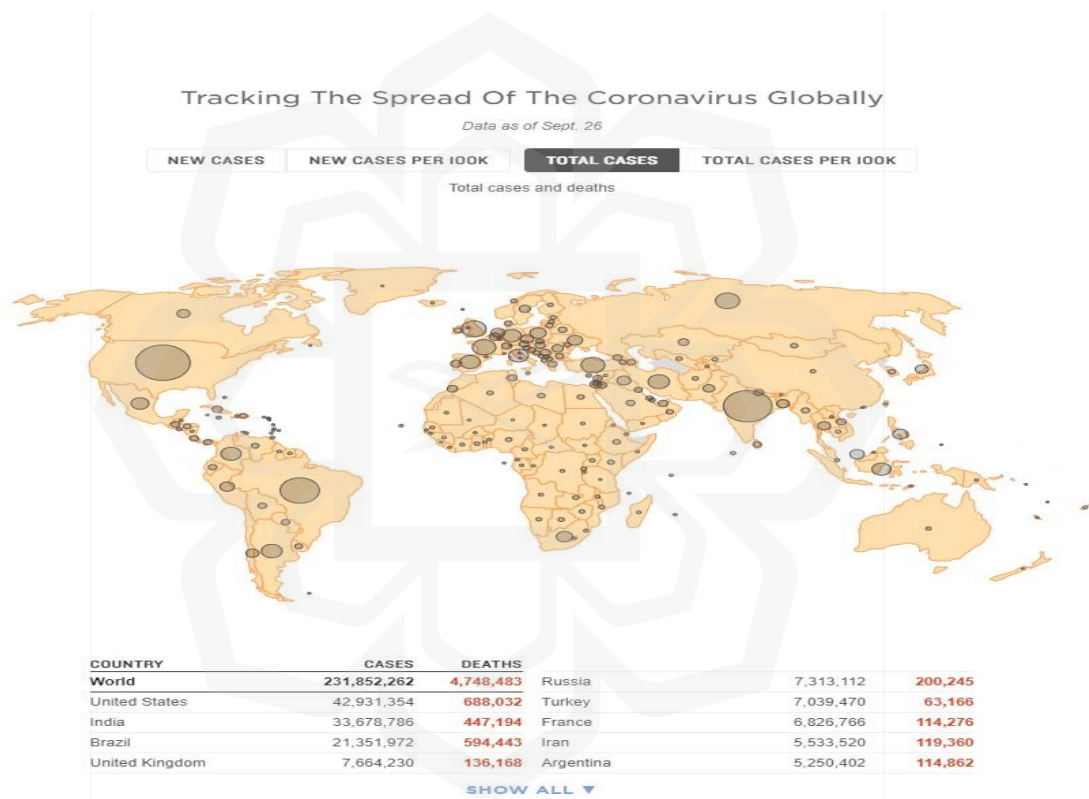


Figure 2.1: Coronavirus World Map: Total cases and death globally.

Source: Centre for Systems Science and Engineering at Johns Hopkins University (2021)

However, in the following month (January), thousands of people in China were attacked by the rampant spread of the disease including many provinces such as Hubei, Zhejiang, Guangdong, Henan, Hunan, etc. and cities like Beijing and Shanghai. Despite that, the disease has also spread to other countries such as Thailand, Japan, South Korea, Vietnam, Germany, USA and Singapore. As of February 6, 2020, WHO has documented a total of 28,276 confirmed cases with 565 deaths in at least 25 countries. The epidemic later was identified as a novel beta coronavirus named the 2019 novel coronavirus (2019nCoV) (Yi-Chi et.al, 2020). As the pandemic has spread around the world, the virus left its death mark. The deaths in Europe and North America exceed those in Asia. In Latin America, South America and the Caribbean, the worldwide death rate continue to rise. The chart below shows the total cases in Malaysia by states.

Table 2.1: Number Covid-19 Cases by state, as of 30<sup>th</sup> September 2021.

KAPASITI & PENGGUNAAN KATIL HOSPITAL COVID-19 (KEMASKINI SEHINGGA 29 SEPTEMBER 2021, 5:00 PM)					BILANGAN KES COVID-19 MENGIKUT NEGERI (SEHINGGA 30 SEPTEMBER 2021, 12:00 TENGAH HARI)		
NEGERI	Jumlah Katil Bukan ICU	% Penggunaan *	Jumlah Katil ICU	% Penggunaan *	NEGERI	BILANGAN KES BAHARU	BILANGAN KES KUMULATIF
SELANGOR	2,313	54%	204	77%	SELANGOR	1,940	677,662
SARAWAK	1,420	74%	171	64%	SARAWAK	2,487	209,624
SABAH	1,830	60%	213	57%	SABAH	993	197,973
JOHOR	2,753	54%	110	75%	JOHOR	1,241	195,845
WP KUALA LUMPUR	837	42%	88	58%	WP KUALA LUMPUR	258	186,060
KEDAH	1,259	33%	130	61%	KEDAH	1,033	134,835
PULAU PINANG	864	65%	88	95%	PULAU PINANG	763	130,209
KELANTAN	951	84%	89	82%	KELANTAN	1,232	115,308
PERAK	1,090	70%	114	79%	PERAK	913	102,229
NEGERI SEMBILAN	1,084	25%	88	16%	NEGERI SEMBILAN	132	97,244
PAHANG	709	56%	81	41%	PAHANG	697	64,717
MELAKA	651	33%	88	45%	MELAKA	194	58,345
TERENGGANU	491	61%	38	79%	TERENGGANU	726	55,645
WP LABUAN	106	2%	18	11%	WP LABUAN	1	9,963
WP PUTRAJAYA	112	50%	14	7%	WP PUTRAJAYA	28	6,144
PERLIS	211	78%	11	91%	PERLIS	97	3,892
<b>MALAYSIA</b>	<b>16,681</b>	<b>55%</b>	<b>1,545</b>	<b>63%</b>	<b>MALAYSIA</b>	<b>12,735</b>	<b>2,245,695</b>

Sumber: CPRC Kebangsaan & CPRC Hospital, KKM

\* Tidak termasuk kes bukan COVID-19. Data katil dan ICU di COVIDNOW adalah termasuk penggunaan untuk kes bukan COVID-19.

30 September 2021

Source: CPRC Kebangsaan & CPRC Hospital, KKM.

As of 30<sup>th</sup> of September 2021, number of new cases stated 12,735 cases and cumulative number of cases stated 2,245,695 cases.

As of September 2021, almost two years after COVID19 was first identified, there were more than 200 million confirmed cases and more than 4.6 million died from the disease. Here, we will take a closer look at the history of COVID 19, from the first recorded cases to the current efforts to contain the disease epidemic in a global immunization program (Moore, 2021).

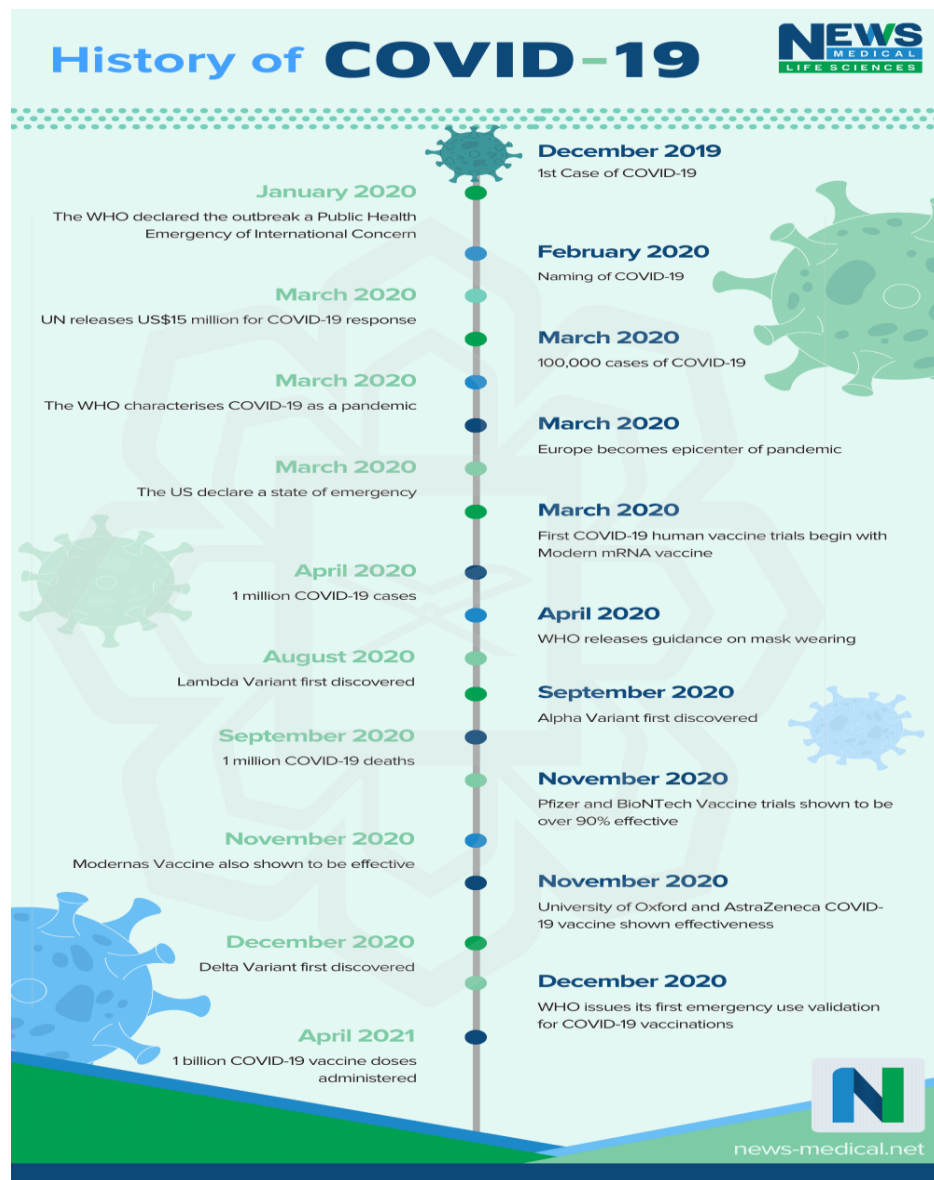


Figure 2.2: Timeline history of Covid-19.

Source: News Medical Sciences, Moore (2021).