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“Rethinking Built Environment: Towards a Sustainable Future”



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Department of Built Environment Studies & Technology (JABT),  
Faculty of Architecture, Planning & Surveying (FSPU)

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# **Impact of Covid-19 Pandemic to the Construction Cost in Malaysia: Construction Stakeholder's Perspective**

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## **Abstract**

World Health Organisation (WHO) has declared COVID-19 as a pandemic, which has forced most countries to an enforced lockdown. The COVID-19 has resulted in a widespread economic depression which forces many businesses across various sectors to shut down including the construction sector. As the government of Malaysia enforced a Movement Control Order (MCO) to break the chain of COVID-19, the construction sector with no exception has to bear with many problems that arise. It gives a huge impact on the ongoing project in the construction sector. Construction stakeholders are dealing with some difficulties as construction costs continue to increase as a result of workplace safety and health regulations, project suspension and termination, and productivity loss. Therefore, this paper aims to investigate the impact of COVID-19 on the construction cost in Malaysia from the perspective of construction stakeholder. The study employed a qualitative method that involves interview sessions through the Google Meet platform. 10 respondents from various backgrounds in the construction industry were involved in the interviews. The interviews offered information on their experience with the pandemic which mainly focused on the cost impact of the ongoing project in Klang Valley. All data are analysed using an atlas.ti software. The result reveals that the total cost of project, contract duration, increment of material price, additional temporary accommodation for labour and labour cost increment have an impact on the construction costing in Malaysia. These findings can raise awareness among the construction stakeholder on the impact of the pandemic outbreaks on the construction costing and help them to sustain the economic growth.

**Keywords:** *Pandemic COVID-19, Construction cost, Construction Stakeholder*

## **1.0 Introduction**

Coronavirus (COVID-19) first emerged in China in December 2019 and now has spread over the world (World Health Organization (WHO), 2021). Malaysia reported its first confirmed case on 25 January 2020 (Abdullah, 2020). Infectious respiratory droplets in direct contact with the mouth, nose, or eyes, as well as direct contact with infected people or indirect contact with infected surfaces, can all spread the disease (WHO, 2020). For that reason, the Malaysian government issued a Movement Control Order (MCO) on March 18, 2020, in response to the rapid spike in positive cases and the difficulty in identifying the contacts (Ministry of Health, 2020). Since then, Malaysia has undergone several extensions and revisions to the Movement Control Order, in accordance with the World Health Organization's rigorous recommendations (WHO). All states in the country except Sarawak were placed under the second MCO (MCO 2.0) from Jan 22 until Feb 4 which was then extended until 18th February 2021 to curb the spread of COVID-19. The government announced a third MCO (MCO 3.0) starting from 1<sup>st</sup> June 2021 until 14<sup>th</sup> June 2021 which was extended until 28<sup>th</sup> June 2021 (New Straits Time, 2021). The order imposed a general prohibition on mass movements and assemblies. All tourists and foreign visitors were also barred from entering the country (Siti A. & Peter, 2021). Following the drop in cases, the MCO was relaxed and replaced with a Conditional Movement Control Order

(CMCO) on May 4, and further relaxed under the Recovery Movement Control Order (RMCO) on June 10 (Chris F.S.N, 2020).

A study by Fernandes (2020) analysed the economic impact of the COVID-19 on 30 nations and found that some would have a 3–6% drop in GDP, while others might see a 15% drop. Every economy has aggressively embraced work-from-home or remote working techniques instead of working in offices, introducing practises such as social distancing (Baveja et al., 2020). According to Ahadzie et al. (2009), the construction industry is a major contributor to socioeconomic development.

The pandemic's impact may force some Engineering and Construction firms to consolidate debt, pursue alternative sources of funding, or risk bankruptcy (Hook, 2020). However, Kazeem (2020) stated that because of many partial or total lockdowns, the COVID-19 has had a significant impact on global construction output. Furthermore, the industry must comply with new regulations, which will increase construction costs and limit productivity (Harari, Y. N. 2020). There is no study exclusively focusing on the impact of the pandemic on the construction costing in Malaysia. Hence, this paper aims to investigate the impact of COVID-19 to the construction costing in Malaysia from the perspective of construction stakeholder.

## **2.0 Factors Affecting Construction Cost During COVID-19 Pandemic**

According to Olukolajo et al. (2013), the quality of people's health can have an impact on a country's economy, and a healthy workforce is a need for a thriving economy. Construction output is harmed as a result of strict safety measures, including social distancing, implemented to avoid disease spread during COVID-19 (Amoah and Simpeh, 2021). Based on previous studies, there are several factors affecting construction cost such as supply chain, project completion and regulatory compliance.

### **1) Supply Chain**

The supply chain consists of an organization's actions and processes relating to the transfer of cash, information, products, and services from the manufacturing centre to the final consumer (Butilca et al., 2011). In the construction sector, the supply chain is a network of different supplier-client interactions that are required to execute the project. Furthermore, every supply activity (i.e., purchasing, storing, shipping, inventory management, and etc) ends at the construction site (Serpell & Heredia, 2004). The spread of COVID-19 has severely harmed the construction sector, disrupted supply chains and causing a labour scarcity due to quarantines (ENR, 2020a). Supply and equipment shortages, late deliveries, inclement weather, and poor supplier performance all increase the chances of project schedule and cost overruns (Zhimin et al., 2020).

### **2) Project Completion**

A successful project must be completed on time while also meeting the set cost and quality standards. As a result, timely completion of a project is commonly viewed as the primary measure for determining project success (Amilcar & Luis, 2020). The construction sector has been highly disrupted due to the spread of COVID-19 which has caused construction projects to be delayed or stopped (ENR, 2020b). Due to movement restrictions and supply shortages, the most effected factor of the pandemic is the project's suspension (Gamil and Alhagar, 2020). The pandemic has not only left projects unfinished, but it has also hampered and delayed project completion (Bailey et al., 2020).

### **3) Regulatory compliance**

Regulatory compliance is critical in the building industry since failure to meet the regulation requirement means the project failed to achieve the fundamental requirement that was decided (J.D. Schwierking, 2015). To mitigate the effects of the pandemic on their operations and workforce, construction companies are implementing a variety of procedures, including providing additional personal protective equipment (PPE) to workers, disinfecting shared tools and equipment, health screening of workers, upgrading site facilities, and implementing or social distancing procedures (Raoufi and Fayek, 2020). Additional costs incurred by the contractor include the purchase of Covid-19 PPEs, hygiene kits, a wash station, cleaning tools and supplies, Covid-19 testing, masks, and

screening tools. Aside from that, they must supply health officers and invest in worker training and information about new hazards and controls (Ministry of Health Malaysia, 2021; Simpeh et al., 2021; Amoah et al., 2021).

### **3.0 Impact of Covid-19 to the Construction Cost**

Unlike other businesses, the construction industry, according to Gamil and Alhagar (2020), often demands project participants' attendance and onsite involvement. COVID-19 has also had a severe influence on Jordan's construction sector, resulting in job losses, a shortage of foreign workers, legal implications related to project delays, and a financial loss (Bsisu, 2020). Cash flow delays became a big concern during the pandemic as a result of material costs and difficulty that owners experienced making timely payments to contractors. This negatively affected material deliveries, hindered productivity, delayed project development, and even resulted in projects being suspended (Choudhari, 2020).

Authorities' legislation and preventative measures have an impact on the smooth development of construction projects (Khalfan and Ismail, 2021). In the view of Bailey et al. (2020), while the pandemic is not totally halting construction efforts, it is slowing them down, resulting in project delays, interruption, and, in some cases, project suspension. The present pandemic has caused work delays in most projects, affecting contractual commitments and negatively impacting infrastructure development; as a result, short- and long-term measures to prepare for this crisis must be implemented (Jallow et al., 2020). Furthermore, access to the necessary software packages and other tools has also been difficult to obtain by, resulting in inefficiencies and employees struggling to achieve project deadlines. (Alsharef et al., 2021).

According to Ogunnusi et al. (2020), the construction sector has challenges in the areas of workflow and supply chain disruption, new policy implementation, worker anxiety, and the evaluation of COVID-19 versus Force Majeure in construction contracts. COVID-19 has disrupted, and is expected to continue to disrupt, subcontractor scheduling as well as the delivery of products and materials (del Rio-Chanona et al., 2020). Due to social distance and quarantining restrictions, which resulted in a reduced workforce within supply chain organisations, material delays delayed overall project progress and caused major schedule disruptions.

Delays were especially noticeable when commodities or raw materials from other countries were involved in the supply chain (Fernandes, 2020). Construction production is being affected as a result of severe safety precautions, including social distancing, to prevent the spread of the disease (Amoah and Simpeh, 2021). In addition, during MCO the contractor shall reduce the number of workers to the minimum level or at least 50% from the current number needed and working hour is limited from 8.00am to 5.30pm only, 5 days a week and no extension of time is allowed (MITI, 2020). Physical distance policies targeted at decreasing virus spread have an impact on the amount of people permitted to work in a given area, how employees perform their jobs, and how project managers anticipate the working environment (Araya, 2021).

Wage Subsidy Programme was introduced by the government to assist employers who are economically impacted as a result of COVID-19 and to ensure they can continue operating their company while preventing the workers from losing their jobs. Malaysians earning less than RM4,000 a month are eligible for the subsidies with the amount depending on the size of the company's workforce. Companies that employ more than 200 people will receive RM600 per retained worker while those employing between 75 and 200 employees will get RM800. Those with fewer than 75 employees will get RM1,200 (The Star, 2020).

### **4.0 Research Methodology**

A qualitative approach is used to explore the factor affecting construction cost and impact of COVID-19 to the construction costing in Malaysia scenario. Interview results are selected to supplement the findings obtained through quantitative data analysis. Semi-structured interviews were conducted with ten (10) construction stakeholders who are involved in construction project in Klang Valley. The

interviews were conducted remotely using Google Meet due to the restriction of movement in the midst of the pandemic. Input from them are needed to establish the importance of this research. The transcription and interpretation from the interview findings are carried out using Atlas.ti© qualitative software. To ease the semi-structured interview process, the questions were prepared in an interview form.

## 5.0 Results and Discussion

This research employs the qualitative approach namely the semi-structured interview. The analysis is based on the quotations from the participants, which had been labelled as P=Participant and Q=Quotation (P:Q). The interview form consists of a cover page and three sections; (1) demographic background of the interviewee(s); (2) the factor affecting construction cost; and (3) the impact of COVID-19 to the construction costing.

### 5.1 Demographic Background

General demographic data were compiled from the participants, which include their organisation, working experience and their position at the respective organization. Table 1 presents the summary of the participants’ demographic background. Most of the participants, who represent 50 percent out of total participants, were from Quantity Surveying Firm.

**Table 1. Demographic Background of Participants**

Item	Sub Items	Frequency (N)	Percentage (%)
Organisation	Client/ Developer	3	30
	Consultant	1	10
	Contractor	1	10
	QS Firm	5	50
Position	Project Manager	1	10
	Manager	1	10
	Contract Executive	1	10
	Senior Quantity Surveyor	4	40
	Quantity Surveyor	3	30
Working Experience	Below 5 Years	1	10
	6-10 Years	7	70
	11 Years and above	2	20

### 5.2 Factors Affecting Construction Cost

Basically, for the section of identifying cost factors considered by Quantity Surveyor, it has been divided into several factors which are:

- Project completion
- Supply chain
- Regulatory Compliance

Table 2 shows that the majority of participants chose lockdown as the main factor of project completion that affect the construction cost. Restriction of movement and shortage of labour at the second and third rank. This result is also supported by Esa et al. (2020) stated MCO has had a significant negative impact on project success, affecting contributing factors such as time, cost, and resource

availability. In addition, one of the respondents also mention that changes in design development by the client due to pandemic, will lead to stop work orders or suspension of works.

For the supply chain, it is revealed that the increase of material price is considered to be the main factor that has an effect on construction cost. Shortage of material production, limited skilled worker at site and shortage of imported material were ranked at the second and third respectively. Increase of machinery tariffs has the lowest rank. It was supported by (Gamil & Alhagar, 2020) who mention that there is a scarcity of materials to support ongoing projects, as well as material price fluctuations during COVID-19 pandemic. In addition, Choudhari (2020) also mentions that due to material costs and difficulty that owners faced making regular payments to contractors during the pandemic, cash flow delays were a serious concern, severely affecting material delivery, slowing productivity, delaying project development, and occasionally even leading to project suspension.

The findings also revealed that screening of all employees entering the workplace and COVID test as a main factor affecting the construction cost. This result is supported by Esa et al. (2020) that stated the increase in project costs as a result of Covid-19 testing, which are required of all workers, particularly international workers, before they may resume work on-site. Social distancing implementation was ranked as the second and monitoring participants daily and providing support for isolating those with symptoms and transporting them to a health facility was ranked last.

**Table 2. Factors Affecting Construction Cost**

Factor	Impact	Percentage (%)	Rank
Project Completion	Lock down	36	1
	Restriction of movement	24	2
	Stop work order	12	4
	Shortage of labour due to workers are infected with COVID-19	20	3
	Suspension of project	8	5
Supply Chain	Shortage of material production	26	2
	Increase of material price	39	1
	Limited skilled worker	13	3
	Increase of machinery tariffs	9	4
	Shortage of imported material	13	3
Regulatory Compliance	Practicing personal hygiene and respiratory etiquette	13	4
	Covid test	17	1
	Screening of all employees entering the workplace	17	1
	Limited works at site in one time (implement social distancing)	16	2
	Ensure regular cleaning and disinfection of the workplace	14	3
	Providing hand sanitizers and surgical masks	12	5
	Monitor participants daily and provide support for isolating those with symptoms	2	8
	Proper maintenance of toilet facilities	6	6
	Provision of lidded rubbish bins	4	7

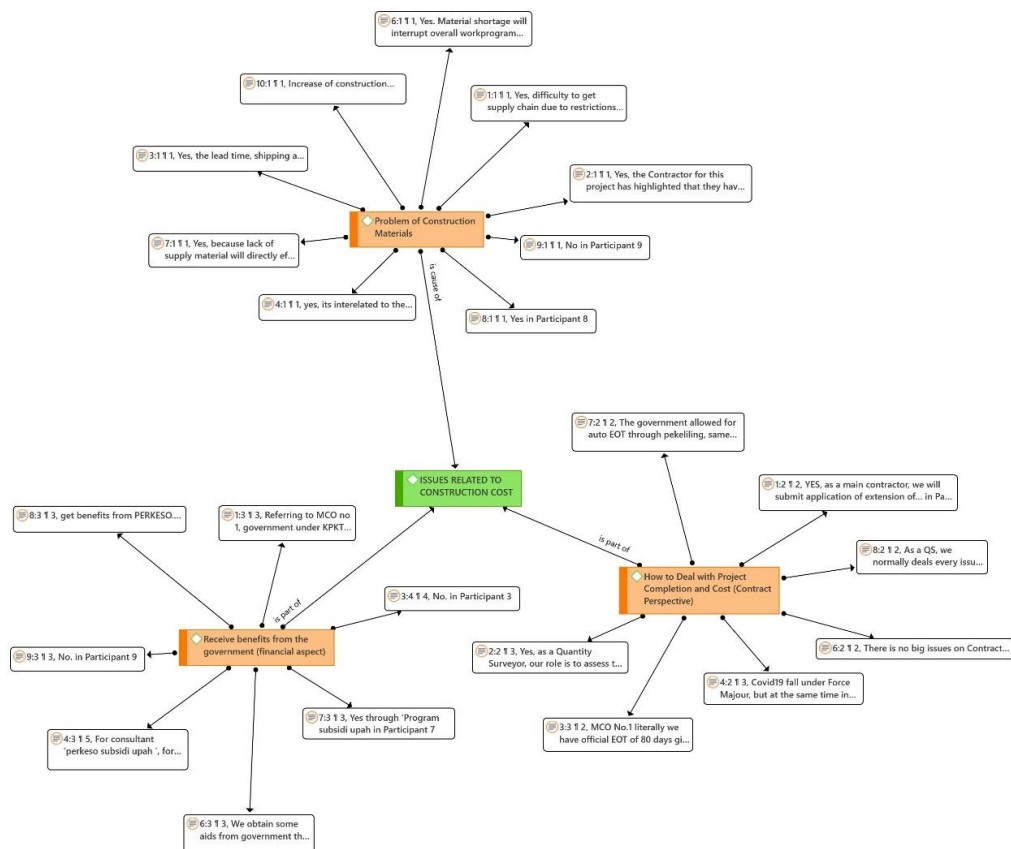
### 5.3 Impact of COVID-19 to Construction Cost

**Table 3.** Impact of COVID-19 to Construction Cost

Impact	Percentage (%)	Rank
Total cost of Project	26	1
Contract duration	24	2
Increment of material price	21	3
Labour cost increment	11	5
Additional temporary accommodation for labour	18	4

Table 3 shows that the total cost of the project has a major impact on the construction cost. Contract duration and increment of material price were at the second and third rank, while labour cost increment was at the lowest rank with 11%. This is supported by (CIDB, 2020) that the industry has to operate under new norms which definitely resulted in additional costs to construction and reduced productivity. Furthermore, the limitation of workers on-site regulation to promote social distancing gives a direct impact on the project time frame due to low productivity that eventually leads to incremental cost of the total project (Agyekum et al.,2021).

#### 5.3.1 Issues Related to Construction Cost



**Figure 1.** Issues related to construction cost



Based on the network of relationship, as seen in Figure 1, it is revealed that there is an issue on construction material where it is stated that problems to get supply chain due to restrictions of movement order and several suppliers also did not obtain approval from Ministry of International Trade & Industry (MITI) to operate during MCO as per stated by Participant 1 in Quotation 1 (P1:Q1). This is supported by the rest of participants (P2:Q1, P4:Q1, P6:Q1, P7:Q1, P8:Q1, P10:Q1). However, Participant 9 said that there are no issues on construction material because their company buy material in bulk at the early stages of project. Therefore, there is no problem related to the construction cost. In terms of the benefits received from the government, a majority of the participants had received the incentive given by the government through Wages Subsidy Program (P1:Q3; P4:Q3; P6:Q3; P7:Q3, P8:Q3). In addition, it is also revealed that that the issues on project completion can be managed by Quantity Surveyor through Extension of Time (EOT) by Participant 1, Quotation 2 (P1:Q2) and also verified by other participants in their quotations (P3:Q3, P4:Q2, P6:Q2, P7:Q2). Furthermore, Participant 2 in Quotation 2 (P2:Q2) said that the role of Quantity Surveyor is to assess the claim of Loss & Expenses (L&E) claimed by the Contractor whether it is valid or not. This is supported by Participants 8, Quotation2 (P8:Q2) which stated that Quantity Surveyor always deals with every issue based on related clauses stated in the contract.

The findings show that lockdown, increase of material price, Covid test and screening of all employees entering the workplace are the factors affecting construction cost during COVID-19 pandemic. This result is supported by Esa et al. (2020) stated the cost of their project will be increased due to the requirements noted in the SOP as well as appointing a Covid-19 team or health supervisor on the construction site. The COVID-19 pandemic also resulted in a major impact on the total cost of project, contract duration, increment of material price, additional temporary accommodation for labour and labour cost increment. The findings are also included with the studies on issues related to the construction material. The result from the participants shows that problem to get supply chain due to restrictions of movement order lead to a major problem to the stakeholder. This is supported by Zhimin et al., (2020) which stated that supply and equipment shortages, late deliveries, inclement weather, and poor supplier performance all increase the chances of project schedule and cost overruns. In addition, Wages Subsidy Program introduced by the government also involved the majority of participants during the COVID-19 pandemic. In contract perspective, most of the participants agree that Quantity Surveyor deals with the issues of project completion through Extension of Time (EOT). Besides that, another participant said that Quantity Surveyor also deal with the issues on claim of Loss & Expenses during COVID-19. Therefore, it is important for the stakeholder to be aware of the impact of the pandemic outbreaks on the construction costing.

## **6.0 Conclusion**

This paper presents the findings of impact of COVID-19 to the construction costing in Malaysia which include factors affecting the construction cost, issues on construction cost and impact of COVID-19 to the construction cost. In addition, the results shows that the impact of COVID-19 in Malaysia is also the same as other countries although there is a difference in the MCO implementation. The findings of this study may provide the basis for financial decision making in managing construction project during the pandemic. The researcher will prolong this research with other method.

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Tuan,

**PERMOHONAN KELULUSAN MEMUAT NAIK PENERBITAN UiTM CAWANGAN PERAK  
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Perkara di atas adalah dirujuk.

2. Adalah dimaklumkan bahawa pihak kami ingin memohon kelulusan tuan untuk mengimbas (*digitize*) dan memuat naik semua jenis penerbitan di bawah UiTM Cawangan Perak melalui Repositori Institusi UiTM, PTAR.

3. Tujuan permohonan ini adalah bagi membolehkan akses yang lebih meluas oleh pengguna perpustakaan terhadap semua maklumat yang terkandung di dalam penerbitan melalui laman Web PTAR UiTM Cawangan Perak.

Kelulusan daripada pihak tuan dalam perkara ini amat dihargai.

Sekian, terima kasih.

**"BERKHIDMAT UNTUK NEGARA"**

Saya yang menjalankan amanah,

**SITI BASRIYAH SHAIK BAHARUDIN**  
Timbalan Ketua Pustakawan

*nar*

*Setuju.*

*27.1.2023*

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