

The Consequences of Residential Project's Delay on Architects and Contractors during Pandemic COVID-19

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Abstract: The study focused on delayed residential projects, which were classified as architects and contractor related issue in the construction industry. In order to assure the client's pleasure and maintained the pandemic issues at the same time, the construction project must be finished within the time restriction of the contract term while also offering the greatest quality possible. The purpose of the study is to study the consequences of delays in the residential project during COVID-19 outbreak, by focusing on the contractors, in Malaysia. Specifically, these was contingent to fulfilling the two objectives, to identify the impact of delay in residential project during pandemic COVID-19 and to investigate the role of the architects and contractors on delay. A qualitative approach was used by interviewing all the respondents through phone call and video call. The result of the study found that financial issues is one of the worst consequences that they have to face during the pandemic. Based on the survey, contractors are the one who need to bear most of the risk and bad impact during this pandemic.

Keywords: COVID-19, Project Delays, Architects, Contractors

1. Introduction

The construction industry is experiencing delays throughout the world during pandemic COVID-19. Delays have become a serious issue all over the world. As a result, risk and uncertainty are more prevalent in the construction business than in other industries. Since Malaysia's industrialization, the construction industry's importance has expanded dramatically. Construction project delays have become a big issue in Malaysia's construction industry. When a construction project is completed on time and within budget, it is called a success. Delay is defined as the extension of time for the project's

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completion. It can also be defined as the failure to accomplish the project within the time frame specified. According to International Research Journal of Engineering and Technology (2017), when a project is delayed, the parties concerned need to postpone their early planning and endure the cost overrun that will arise. Inability to accomplish projects on schedule, within budget, and with excellent quality will have a wide range of unforeseeable negative consequences for project construction.

2. Literature Review

The literature review section describes all relevant literature related to the research and critically discussed. This section can be structured based on the stated objectives and focus of the study or any logical order as deemed appropriate.

2.1 The Consequences of Delays in Construction Project during Pandemic COVID-19

The COVID-19 pandemic had a significant impact on Malaysia's construction sector. Except for necessary or required operations, most construction project was halted throughout the MCO. Even after the MCO was lifted, contractors experienced major challenges, such as having to implement tight standard operating procedures on health and safety measures ("SOPs") at construction sites. As a result of the disturbance, they have been unable to complete their task as originally and routinely planned. (Driver Trett Digest, Issue 21, 2021). Throughout the early months of the crisis, almost all contractors seem unable to obtain essential items such as sand, cement, and bricks resulting in major labor limitations. In Malaysia, for example, a nationwide scarcity of steel resulted in dramatically higher prices at the moment. Moreover, funding suppliers on time has proven critical for many contractors, and it is likely to remain a priority post-pandemic. Smaller subcontractors seem to be the least able to bear threat, therefore paying them early may assist to mitigate some cash flow issues in a changing climate where the ability to mobilise rapidly is critical. Practices such as "reverse factoring," in which huge corporations negotiate deals with third-party financiers to pay their suppliers' bills early in exchange for a fee, may be reconsidered in the years ahead.

2.2 The Impact Delays on Architects and Contractors

Construction delays are among the most common complaints in the construction business, and they popularly have a negative impact on the efficacy in terms of time, cost, and quality. Throughout most situations, construction delays are mostly given the impact of consultants, contractors, and the project owner on project performance. Delays are costly to all parties involved, and they frequently lead to conflict, cost overruns, arbitration, litigation, ultimate abandonment, and project infeasibility. Construction is a hazardous sector with numerous external and internal elements influencing the progress of the project (Hj *et al.*, 2018). Therefore, delays in completing construction projects on time can spark severe issues for clients and contractors. It has a significant impact on the financial commitment, the perception of the clients and the contractor, and the environmental impact. For contractors that are currently under contract and expect or have been delayed owing to the consequence of Covid-19, material supply, or other incident, it is necessary to review the contract conditions to determine the entitlement to additional time for such delays. In which possible, the delay or danger of delay should be expressed as soon as possible, and a time extension requested. A successful extension will guarantee against delay damages, and the contractor could also be allowed to claim for financial loss and expense incurred, depending on the terms of the contract (Sketchley, 2021).

3. Research Methodology

The research methodology section describes all the necessary information that is required to obtain the results of the study. The research methodology consists of detailed information regarding workflow, strategy, and approach. The methodology adopted in carrying out the study should be well explained.

3.1 Research Design

Qualitative method has been used to obtain the data from the respondents that involves in this study which is architects and contractors in Malaysia.

3.2 Data Collection

The findings of the study were collected through interviews. Throughout the implementation of a study and in order to achieve research findings. The design of this study is critical in assisting and guiding this study in terms of how methods or procedures can be employed to acquire data, as well as providing a reference for researchers to discover the data needed to meet the study's objectives stated. This study collects information utilising two methods: primary data and secondary data, in order to achieve the objectives and aims of the study. The core data for this study was gathered using a qualitative method including residential project contractors. The results were obtained through interviews and in-depth observations.

3.3 Data Analysis

In data analysis, qualitative methodologies were applied. The goal of qualitative analysis is to gather information and interpret societal perceptions from the perspective of residential project contractors, whether as individuals or groups.

4. Results and Discussion

4.1 Results

(a) Respondent background

Table 1 shows the findings related to respondents' backgrounds. Table 1 shows that R1 and R4 are architects, and they are quite experienced in construction industry, R1 has been working for 19 years while R5 around 30 years. R2 and R5 are contractors, R5 has 20 years experiences in the industry which he can be considered as a "senior" compared to R2 which been in the industry for 3 years. As for R3, he is a quantity surveyor in the construction industry. The highest education for the respondents in this research is doctorate degree. and most of them are a master's degree holder which is R1, R3 and R5. R3's education qualification is a bachelor degree and for R4 is a doctorate degree holder.

Table 1: Respondents' Background

Respondent (R)	Academic Qualification	Job Position	Years of Experiences
R1	Master's degree	Architect	19
R2	Bachelor's degree	Contractor	3
R3	Master's degree	Quantity surveyor	3
R4	Doctorate degree	Architect	30
R5	Master's degree	Contractor	20

(b) Research Findings

Table 2 illustrates about the major issues that contribute to delay during COVID-19, all the respondents mentioned that the cause of delay is government regulations which lead to the major issues which is no progress work that can dispute most of everything in construction activity. R5 stated that financial problem is the most part that hit him as a contractor.

Table 2: Major issues that contribute to delay during COVID-19

Question	Respondents	Answers
Since March 2020, the government implemented a Movement Control Order, then another phase which is CMCO, EMCO and the last phase is RMCO. This order definitely causes issues, please elaborate why delays issues has been always faced by contractors or architects during the outbreak, and which is the major issues that contribute to delay?	R1	“No movement means no delivery of materials to site which means no progress of work. It also means workers cannot do work & when this happens, work also cannot progress.”
	R2	“First because of the restriction, project below 80% in progress is not allow to resume their work and subject to MITI approval. second is the process to remobilise resources to resume work will take some time”
	R3	“Due to MCO, CMCO, EMCO and RMCO, Government issues instruction to stop work for all the construction only for special construction and maintenance involved with safety. Major issues contribute the delay for this case is no work can be done during MCO, CMCO, EMCO and RMCO.”
	R4	“It is a government order, and by hook or by crook, we need to obey it even we face financial issues”
	R5	“the delay itself contribute to many issues especially financial problems”

Table 3 shows that whether design phase is one of the hardest parts and how to overcome to it, according to R1 and R4 as an architect, design phase is not that difficult and they stated that most of everything can be resolved through online meeting but from contractors point of view, they agree that design phase is a bit complicated because it need to involve many parties including the clients and to be worst, all type of physical meeting is hard to be held during pandemic.

Table 3: Findings related to Design Phase

Question	Respondents	Answers
	R1	“Design is not the trickiest part during outbreak as it can be discussed & resolved

Due to delay circumstances, why is the design phase is one of the trickiest parts? How do you encountered during the outbreak? and which is the major issues that contribute to delay?		via online meetings. Design works proceed as normal during outbreak..”
	R2	“Design phase will need coordination between all consultant and main con. the outbreak might cause inefficient in term of communication during the outbreak”
	R3	“My opinion for this case is not at the design stage but the delay is due to stop work. To encounter during the outbreak is Government and Contractor must fair and reasonable to apply and give EOT for the construction and to complete with the agreed new completion date.”
	R4	“online discussion with client and other parties in construction industry”
	R5	“no at all as for contractor, because design phase is not under contractors’ hands,”

Table 4 is about lack of communication and cooperation between design teams and contractors, only one respondent disagrees that misunderstanding among them due to pandemic. According to R1, all kind of meetings can be held through online communication, but other respondents stated that pandemic COVID-19 is a limitation for every communication.

Table 4: Findings related to Communication and Cooperation Issue

Question	Respondents	Answers
Lack of communication and lack of cooperation often drives to misunderstanding among design teams and contractors, do you agree? Or disagree? and if you agree, does this delay turn the situation into worse? Why?	R1	“I disagree because there was already an online communication via emails & Whatsapp Groups before the pandemic.”
	R2	“agree”
	R3	“In general, I agreed but it's not going to worst if both design team and contractor have in regular discussion or meeting to solve any problems. It can be worst if both design team and contractor have an argument and blame each other.”
	R4	“Yes, communication through media online has limitation”
	R5	“agree, not efficient due to short of time and also internet connection is unstable certain times and yes it getting worse”

Table 5 depicts the challenges to adapt the new standard operating procedure along with handling the workers, according to R3, R4, and R5 the new SOP is quite hard to be applied to the workers especially when it comes to limit the number of workers to attend the site work. This new SOP drag more time that is supposed to be achieved based on the agreement. As for the rest of respondents, they do not find any issues regarding the new SOP when it related to the workers.

Table 5: Findings related to Challenges of The New Regulations

Question	Respondents	Answers
Construction sector needs to be regularly mindful of safety and risk balanced with timely project delivery and how inflexible to handle the labour on site regarding the new standard operating procedure?	R1	“There are no issues for labourers to follow the SOP as the contractors has already allocated the time & numbers of workers on site by rotation.”
	R2	“the sop wont effect much if you follow the correct sop”
	R3	“To start the Construction, all teams including labour must comply with the SOP and aware the safety is very important and no toleration for the safety. So, according to the requirement in the Contract, the Contractor must provide every single safety's item to all teams including labour”
	R4	“Very hardy and tough. adopt new norm and sop and adjust the situation to be comfort with our duties.”
	R5	“Very hard, a lot of task and regulations need to handle such as swab test regularly, shortage of manpower since for those who is not feeling well could not attend to the workplace”

Table 6 shows that outbreak causes original time frame or submission of the project deviate and all of the respondents agree the outbreak has connection to delay and mostly related to remobilize the resources to match the new regulations. According to R1, the delays is not such a big issue because there is an answer to each problem according to the law.

Table 6: Findings related to Outbreak and The Submission of Project Time

Question	Respondents	Answers
Original time frame of project might deviate due to the outbreak, it might because of contract issues, supply issues, etc. Do you agree? Based on your experiences, why mostly	R1	“Agree but there are already remedies for it due to this MCO.
		If outside of pandemic, delays are caused by reasons such as

the original time frame strays away happened?	<p>1. Additional requirements by authorities during construction, closing of sites by authorities due to health outbreaks, discoveries of historical artefacts, non-compliance to health & safety,</p> <p>2. Changes made by the Clients during construction & late in making decisions resulting in contractors have to slow down their works.</p> <p>3. Delay by contractors due to bad financial & project planning.”</p> <p>R2 “yes. most of the reason is because the process to remobilise resources like material manpower machinery will take some time”</p> <p>R3 “Time frame for the project in MCO period will not meet the original completion period due to stop work. For any other cases it might be due to late receive instruction, payment and supply of materials.”</p> <p>R4 “yes, many thing was stuck during mco. restart the new schedule might take a time.”</p> <p>R5 “agree, many issues cause late submission because of sop that makes every task need more time to consider”</p>
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Table 7 is about handling the workers and the necessity of lay them off. R4 stated that to lay off some of the workers is a must during the outbreak to prevent any problems and unnecessary issues. R3 has two options regarding the lay off issue, he stated that it might a necessary to lay them off but it is accountable to the contractor because no one will know when the pandemic will get to end.

Table 7: Findings related to Workers Issue

Question	Respondents	Answers
Handling workers is one of the trickiest parts, regarding their salaries, the accommodations for them especially foreign workers, in your opinion, is it necessary to lay off some of the	R1	“As I am an architect, I do not have first-hand information nor any knowledge on this.”
	R2	“not necessary. it’s not worth it compare to LAD if you delay the project.”
	R3	“To lay off some labourers during the pandemic might necessary but is subject to Contractor either they need or not. It's because the Government and/or Contractor

labourers during the pandemic? Why?		did not know when actually the pandemic will end.”
	R4	“Yes, new regulations were imposed as sop for the workers might be problems to comply.”
	R5	“not necessary for the sake of humanity”

Table 8 shows the impacts of the pandemic, most of the respondents agree the pandemic give such a big impact to the industry while R1 do not agree because as an architect, she can just continue to work from home.

Table 8: Findings related to Impact of Pandemic

Question	Respondents	Answers
Based on your experienced in construction field, it is obvious that COVID-19 has been given impact for you. Is it true? Can you list us some of the impacts and what is the huge one for you that occurred in the midst of the outbreak?	R1	“No heavy impact to the architects (Graduate Architects) working in my previous office. The only difference is that we have to work from home..”
	R2	“restriction of the work to resume. always cause dispute on the contract where contractor sometime cannot get an EOT from client.”
	R3	“Yes, it's true the Covid-19 gave us the impact. The impacts such as the construction has to stop, no work for Labourers and financial become crucial..”
	R4	“Yes, the works schedule delay, payment delay, communication very hard, some project was postponed.”
	R5	“true, 1. Financial 2. work has been disputed 3. lack of supply and material 4. loss of material because get stolen at the warehouse”

Table 9 discovered the strategy to survive in the midst of the pandemic, and R1 stated that this issue will be mostly company's matters. R2, R3, R4, and R5 agreed to be sustained in the construction industry is to own a strong financial background or at least to get an incentive from the government. R2 has a good point to mention about the management crisis.

Table 9: Findings related to Sustain in Construction Industry during The Outbreak

Question	Respondents	Answers
Surviving in the midst of the outbreak is quite hard for every construction participant, how do you able to sustain and revive in term of economy during the pandemic?	R1	"That is the company prerogative. Not workers like me..."
	R2	"Financially strong and good management crisis."
	R3	"To sustain and revive the economy might get contribution from Government to assist Contractor for their financial in the construction."
	R4	"Incentive from government and to loosen some procedures especially regarding with licensing and contribution fund to company."
	R5	"Fund saving from previous profit, incentives from government, extension of time"

Table 10 represents the awareness of hygiene during the pandemic for workers on the site, as the contractors, R2 and R5 affirmed that do the spot-check frequently able for them to cope with the hygiene problem at the site. Penalization for those who breach the rules is one of the tactics for them to educate the workers on hygiene while R1 and R3 agreed by just following the SOP enacted by the government would be easier to maintain the hygiene during the COVID-19 outbreak

Table 10: Findings related to Bring Awareness among the Workers during Pandemic

Question	Respondents	Answers
Since the outbreak required more SOP, and most of foreign construction labours live in cramped places, how do you educate or spread awareness about hygiene to them?	R1	"We only notified the main contractor to follow SOP. How they do it is up to them"
	R2	"We follow procedure set by the authority on the CLQ requirement. and educate the workers during the toolbox on everyday basis and spot-check on weekly basis."
	R3	"To make it more effective hygiene, all labourers must wear mask, wash hand and have one-meter social distancing..."
	R4	NA

R5	“survey and close monitor them if they breach the rules, penalized them”
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Table 11 clarifies the possibility to do some changing on projects’ designs regarding the COVID-19 pandemic. R1 as an architect has affirmed that there will be zero possibility to change because everything will be based on Uniform Building By-Laws 1984 (UBBL 1984). According to R3, the design change process is not an easy task, it will affect the cost constantly by doing so.

Table 11: Findings related to Change in Design of The Building during The Outbreak

Question	Respondents	Answers
Due to the delay circumstances, some of the clients might change their idea regarding COVID-19 issues, is it true? Is there any design changing because of their request? Such as ventilation flow design. Why?	R1	“No. Because the idea of better ventilation (more than what is stipulated in UBBL 1984) are not catching on yet.”
	R2	NA
	R3	“Is not true to change easily once the project already become contract unless client agree to pay additional cost for their new ideas...”
	R4	Yes, to comply the new situation.
	R5	NA

Table 12 shows the potential of losing the contract due to the delay during the pandemic, most of the respondents never had any experience of it and according to R3, no chance to lose it because even EOT required reasonable justification. Once they contract is made, there will be no probability to lose it. R5 stated that he had the experiences, and it is normal in this industry and he manage to survive during the pandemic is because of the previous tender.

Table 12: Findings related to Lose of Potential Contract during The Pandemic

Question	Respondents	Answers
Loss of potential contract often occurred during this delay. Have you ever experienced it? And how you overcome with because of their	R1	“No.”
	R2	“No
	R3	“There's no loss of potential contract during the delay once the Government gave the Contractor EOT for reasonable justification. My experience to overcome this issue is the Contractor must submit their application of EOT for reasonable justification to Government for approval. Is not true to change easily once the project already become contract unless client agree to pay additional cost for their new ideas...”
	R4	NA

R5

“Yes, and it’s normal. I managed to sustain because I still have a lot of tenders”

5. Conclusion

This study scrutinised the consequences delay on the construction industry during pandemic COVID-19, as well as the impact on architects and contractors. According to the study findings, COVID-19 has an influence on the overall construction business by triggering operational and financial difficulties. The operation is impacted by project timeframes due to shortened construction operations and late permissions from relevant authorities. Furthermore, the project's operation has been hampered by a lack of experienced employees and materials, as well as logistical challenges. In addition to the present countermeasures, the government could implement further methods to mitigate the impact of COVID-19 in the building construction business. Most organisations required financial assistance when they confront financial difficulties. These findings are significant for stakeholders in the construction industry and policymakers to comprehend the unforeseen and uncontrolled outbreak in the construction industry. This will contribute in the improvement of strategic plans and the development of a new policy to deal with any unexpected occurrences. Finally, the qualitative data on the significant issues and processes can be used to create a questionnaire survey to model the features of a big population in order to obtain more thorough data on the criticality of the problems and mechanisms.

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